NEW ORLEANS MOSQUITO & TERMITE CONTROL BOARD

2013 Annual Report - January through December

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DIRECTOR'S REPORT

Report on the activities of the City of New Orleans Mosquito, Termite and Rodent Control Board from January 1 to December 31, 2013

It is still a dream that we have a new administration building. This building has become a tremendous asset for the our department and for the City of New Orleans. It has increased our efficiency and allowed for better communication among employees, thus improving the management of our operations.

The 2013 mosquito and West Nile virus (WNV) season was quiet. However, we continued to examine every part of the operation. We determined new spray equipment was needed and we found the resources to increase the number of light traps used. In addition, a new employee was added to the mosquito team.

In 2013, we placed an emphasis on partnering with various agencies to solve difficult rodent control problems. In addition, resources have been allocated to rodent trapping and surveillance of rodent-borne diseases so that we can better understand the threat posed by commensal rodents in Orleans Parish.

Details of our 2013 activities and accomplishments follow in this report.

Respectfully submitted,

Claudia Riegel

Claudia Riegel, Ph.D.
Director

OPERATIONS AND FACILITIES
CLAUDIA RIEGEL, Ph.D.

Employees

We welcomed Lawrence Eloie (Pest Control Inspector 2) to the NOMTCB family in February (Fig. 1). Lawrence has worked primarily with mosquito control. He has learned quickly and has an excellent work ethic. He passed the Louisiana Department of Agriculture 8A mosquito applicators test and has passed his probation period. He assists with all aspects of mosquito control including insecticide loading of the airplane and the spray trucks.

Figure 1. Lawrence Eloie helped prepare the mosquitoes used in the identification laboratory for the Mosquito Control Academy.

Four summer interns were hired this summer. We had to severely decrease the number of internships available due to budget cuts. Interns assisted our staff during the busiest time of the year. The interns assisted with mosquito light trap collections, rodent baiting, and special projects such as school integrated pest management (IPM) and rodent trapping.

Figure 2. Summer interns, Daniel Schwank and Abby Balleiverio , participated in the school IPM workshop.

Daniel Schwank (summer intern) assisted me with rodent trapping this summer. He created a standard operating procedure (SOP) based on our currently trapping and necropsy methods. He worked with Ed Freytag (Research Entomologist) to include a step-by-step picture guide to rodent necropsies. He also organized all the rodent tissue samples in the –80 C freezer and prepared collection kits for future trapping.

Bryan Wirth (Automotive Mechanic 2) resigned during the second quarter. He accepted a higher paying job with a company that does off shore hydraulic repairs. During the time Bryan worked with NOMTCB he overhauled most of our vehicles and repaired a front-end loader. We wish him future success in his career.

An automotive mechanic is an extremely important position for our department. We have approximately 45 vehicles, heavy equipment, two off-road vehicles, and spray units. We conduct most of our repairs in house and without a mechanic we had to use commercial repair companies which was expensive. We had to limit what could be repaired due to the cost of the repairs. We started looking for a mechanic immediately after Bryan resigned. Fortunately, we were able to find and excellent candidate that would be hired in January 2014.

Andrew Ruiz (Entomologist 1) resigned in the third quarter to take a position with the Massachusetts Department of Health to conduct arboviral surveillance. He was knowledgeable in GIS and created all the maps and other documents. I wish him great success in his career.

Greg Thompson (Entomologist 2) retired in the third quarter. Greg had been with NOMTCB, Mosquito division for 18 years. Greg emphasized education and outreach during his employment with us.

Administration building

The training room in the new building continues to

be used by a variety of City of New Orleans departments and other organizations. Perry Ponseti (Pest Control Specialist 2) continues to do an excellent job coordinating all the events. More than 4,500 people used the facility in 2013. Perry, LJ Kabel (Pest Control Specialist 3), and Jimmy Jesse (Pest Control Inspector 1) clean the building and maintain the facility and in great working order.

We obtained quotes to upgrade the audiovisual equipment in the training room. After a year of use, we determined that additional screens, microphones, and other items are needed. A PW for contents will pay for the upgrades.

We continue to purchase office furniture as money is made available. Several offices were completed this summer. We hope to have furniture for the entire building purchased by the second quarter of 2014. Furniture is needed for the conference rooms, copy room, entryway, and a few offices. Much thought has been placed on the design and needs of each room. The content PW will pay for the remainder of the furniture needed.

Warehouse

We are still operating from the middle shop and the back shop but these facilities will eventually need to be demolished. It has been a challenge to secure a piece of property for the warehouse. We have seriously explored more than five properties with no success. The issue is that FEMA and GOSEPH are putting pressure on the City to find a warehouse or the City will lose $3.3 million in funding that was used for the administration building. In addition, we need to relocate pesticides out of the V-Zone at the current location. Finally, the City of New Orleans does not own the current location.

Operations

Vehicles

NOMTCB purchased new trucks in 2013. Two, Ford Transits, two F-150s, one F-250, and a Nissan Frontier. We surplused five Dodge trucks and a Ford Taurus to EMD. The Dodge trucks were sent to auction due to the poor condition of the vehicles. The Taurus was placed into service by EMD. The goal over the next several years to have a young fleet so the cost of repairs are kept low. Preventative maintenance will be the key to a safe and long lasting fleet. NOMTCB used its extramural funding to purchase the vehicles. No general fund dollars were expended to acquire the vehicles.

311

NOMTCB was onboarded in the first quarter and we were incorporated into the city's 311 program. Sarah Michaels (Mosquito Control Supervisor), Joyce Brown (Rodent Control Supervisor), and I have been leading the effort to ensure that our customer service and our ability to disseminate accurate information to the public would not be compromised. We wrote scripts and frequently asked questions and created call flow charts that were needed.

It was imperative for 311 to understand that we provide a lot of information to the person calling for service. In addition, we had a variety of calls that were not appropriate or efficient for 311 to handle. A solid technical background is critical to understanding the nature of the calls and if the service request needs special attention. For example, callers often do not understand the implications of improperly using rodenticides or how they are supposed to be used. They may not ask a specific question about rodenticides, but our employees know that they must discuss safety and the risks associated with the use of rodenticides.

Employees from 311 listened to our calls to better understand the nature of the operation. It was agreed that 311 would not take all our calls but only the mosquito and rodent service requests. NOMTCB needed to purchase new Cisco phones with expanded capability to handle a variety of phone numbers. The forms in Lagan were modified and need regular modifications.

NOMTCB and 311 meeting weekly for months in order improve and resolve technical issues in call taking. The 311 management have listened to our concerns and have tried to resolve issues. We improved our service request forms during this process. Implementation has required a significant time commitment from our staff so that all the issues are clearly documented so they can be corrected by 311. After, three quarters we report issues as they occur.

Website

After many years, NOMTCB finally has a website! The NOMTCB staff worked with Sara Hudson (ITI) and Eric Ogburn (ITI) to provide the information needed to get a site started. It was launched in late April and Eric Ogburn provided training on how to modify the website as needed. We have been short on time due to the many projects, but minor modifications and updates will be made in the future.

Training and Certifications

Figure 3. Mr. Ernie Esteve provided the training regarding the changes in the Hazardous Communication document.

NOMTCB held a training session in to discuss the Updated EPA Hazardous Communication document. This was a mandatory training that needed to be completed by December 1st. Mr. Ernie Esteve from Billiot Pest Control provided the training. Mr. Esteve has extensive experience with pesticides and hazardous materials. Individuals from several parishes, pest control companies, and 100% of our staff attended.

NOMTCB continues to increase the training opportunities for our employees. Monthly seminars, pesticide training opportunities, etc. are offered regularly. Increased training will decrease accidents, increase employee accountability, increase job opportunities thereby increasing job satisfaction.

Cooperative Projects

Fleas and Plague

Captain Rusty Enscore and Mr. John Montellieri from the Centers for Disease Control visited our facility the first week of May. They spent several days with our Rodent Control division. We initiated a plague bioterrorism project in New Orleans. The goals of the project include:

1. Determine the risk of a plague outbreak in the event of a bioterrorist event, particularly at the Superdome and the Convention Center.
2. Based on the rodent pressure and their oriental flea load, control strategies will be implemented.
3. Have an SOP if a plague event occurs.

Captain Enscore and Mr. Montellieri provided hands-on flea identification training (Fig. 4). In addition, they participated in a Bioterrorism workshop in which over 60 people attended.

Figure 4. Flea expert, John Montellieri, provided hands-on flea training during the Bioterrorism Workshop.

Rodent trapping

May was also the beginning of an aggressive new rodent trapping, necropsy, and parasite collecting project. The project partners us with Tulane and the CDC in an effort to identify and limit the public's contact with pathogens and parasites carried by rodents. Both live and dead animals were collected from sites all across the parish. Returning intern, Daniel Schwank, was a driving force on the project often performing a majority of the trapping (Fig. 5), necropsy, and data entry duties. This is a multi-year project.

Figure 5. Twenty-six Norway rats were caught in one night along the Mississippi riverfront.

School IPM

A competitive grant ($113,000) was awarded to NOMTCB in 2012. The grant is an Environmental Protection Agency School Integrated Pest Management (IPM) demonstration. The project focuses on reforming the pest control standard operating procedures in three schools in the Recovery School District (RSD) in order to alleviate chronic pest problems. Ms. Janet Hurley, a colleague from Texas AgriLife Extension, is a partner in this project. Ms. Hurley has implemented IPM programs in numerous school districts in Texas. The project will have a two year duration.

In the first quarter of 2013, we continued implementing a verifiable school IPM program in the RSD demonstration schools. The goal of the project is to reduce human exposure, particularly in children, to harmful pests by 60% and to reduce human and environmental exposure to pesticides by 40% and finally the adoption of a verifiable school IPM program to be implemented in all Orleans Parish schools, bringing them into compliance with the Louisiana Department of Agriculture and Forestry school IPM laws and incorporating IPM best practices

In the second half of the year, many of required milestones were reached. Each school is in a different stage due to incorporation in the project. However, monthly pest pressure data, quarterly inspections, reduction of pesticide use, pest log use by the school staff, and training were completed at each school. Planning sessions with school principals or IPM coordinator and project assessment by cooperators (Janet Hurley (Texas AgriLife and Marc Lame (Indiana University) were conducted.

The schools were selected for this project were John McDonogh High School (John Mac), Henry Schaumburg Elementary School, and Mildred Osborne Elementary. In the early stages of the project, we reduced pest populations and the pesticide exposure at the schools. We have been monitoring the pest pressure using glue boards, bringing the results back to the lab, and Eric Guidry (Pest Control Inspector 4) identifies the pests. After several months of gathering information and building a database, we are able to identify exactly what pest we are dealing with, rather than doing a blind pesticide assault. We are able to take care of the problem by isolating the specific pest, rather than the use of non-targeted use of pesticides. Mildred Osborne Elementary was added to the project in the spring of 2013. This is a new school and already has its challenges.

Janet Hurley spent a week in New Orleans with our group in April. We inspected schools, met with administrators, and prepared documents required for the project (Fig. 6).

Figure 6. Janet Hurley (Texas A&M AgriLife Extension) assisted NOMTCB in a presentation to Encore Academy. She discussed bats and other commercial vertebrate pests.

Henry Schaumburg Elementary School

Phil Smith (Pest Control Inspector 2) and Timmy Madere (Pest Control Inspector 4) conducted most of the pest remediation at the school. L.J. Kabel (Pest Control Specialist 3) assisted in pest-proofing the buildings. Henry Schaumburg Elementary School's lawn has been treated for red imported fire ants, the outdoor drains were treated for mosquitoes, and holes under the downspouts were filled with sand in order to prevent mosquito breeding in standing water (Fig. 7).

Figure 7. Most downspouts had eroded soil and water accumulated created mosquito breeding areas at Henry Schaumburg. All the holes were filled with sand and covered with a concrete paver to prevent erosion.

Emphasis was placed on cleaning the kitchen area and organizing the lost and found area. Cleaning has been improved in critical areas (kitchen, storage areas). Supplies (racks) were purchased in the second quarter to organize the closets and storage areas. A washer and dryer was purchased and installed in the event bed bugs are encountered at the school.

Henry Schaumburg Elementary School changed management July 1 from the Recovery School District (RSD) to the ReNEW Charter School. Meetings were held and Claudia Riegel had phone conferences with the administrator to request continuation of the project. Based on the data that showed a reduction in pest activity and the project's goals, the administrator wanted us to continue working at the school. Their 2013-2014 IPM plan was submitted on time.

John McDonogh High School

At John McDonogh we have discovered through inspections that the school had rodent and termite infestations. We have installed the Sentricon Termite Elimination System at the building. The school was neglected for many years, but after careful analysis, we have decided to use this baiting method with the use of the above-ground stations.

We trapped rodents with snap traps and live catch traps. Bait (in tamper-proof stations) was used as needed and it was placed in areas where the students did not have access. We also discovered rodent activity above the ceiling tiles.

A major problem at John Mac was conducting cost effective exclusion (closing up all of the holes and broken windows in the school). It was built in 1897, so repairing a school that is over one hundred years old has been difficult. The envelope of the building was closed in the second quarter of the year. Over 25 people (NOMTCB and the pest control industry volunteers) contributed many man hours to pest-proof the building (Fig. 8).

Figure 8. Eric Guidry (Pest Control Inspector 4) prepared the concrete for patching holes at John McDonogh High School.

By simply sealing up the building, pests were restricted from entering the building. This seems very logical but unfortunately is often overlooked by many pest control operators and school employees.

Mildred Osborne Elementary School

This school was included in the program in June. An evaluation (inspection) of the school was conducted by several pest management professionals. The inspection was conducted by: Dr. Marc Lame (Indiana University), Ken McPherson (EPA), Janet Hurley (Texas AgriLife), Fudd Graham (Auburn University), Kim Pope (Louisiana State University), Claudia Riegel (NOMTCB), Phil Smith (NOMTCB), and Timmy Madere (NOMTCB).

Training and Education

IPM

A meeting with the operations manager was held July 24, 2013 to finalize the details of the program to provide a timeline, and to request information about their services. No pest control company had been contracted so I will serve as the commercial applicator for the site. Pest monitoring was initiated to obtain baseline data.

The Write your IPM Workshop was held July 25th. Leading IPM specialists from across the nation participated in the workshop. In addition, EPA leadership from Region 6 also attended, showing their commitment to the importance of IPM. As a result of this meeting, a generic IPM plan was created. This generic plan was in Word format so that school administrators could simply plug in their school's information and they would have a robust plan. This plan was sent to over 100 school administrators in New Orleans. I know that approximately 15 schools used the generic plan because of direct
communication with our department. Additional school employees continued to make contact throughout the end of the year with our group asking for assistance.

Louisiana Mosquito Control Association

The City of New Orleans Mosquito, Termite and Rodent Control Board in cooperation with the Louisiana Mosquito Control Association held the first Mosquito Academy April 22-24 at the NOMTCB building in New Orleans.

The three-day Academy offered comprehensive and in-depth information in all areas of mosquito biology and control. The Academy placed emphasis on field training and mosquito identification. Thirty-four people from all over Louisiana and one university of Georgia student and another person from Mississippi attended the class. There were several people with many years of experience and there were others that were new to the industry.

The Mosquito Academy was a collaborative effort of several parishes. I would like to thank Cheri Vining and Dennis Wallette (Tangipahoa Parish MAD) for assisting with the registration and accounting. Cindy Krohn (NOMTCB) and Carrie Cottone (NOMTCB) also were invaluable with reg-

Figure 9. The first graduating class and instructors of the of the NOMTCB and LMCA Mosquito Academy held April 22-24, 2013.

istration and preparing the materials for the course. We had a variety of speakers with many years of experience in addition to having a lot of personality which was critical in keeping the audience engaged.

Our local experts included: Dr. Dawn Wesson (Tulane University), Viki Taylor (St. Tammany MAD), Sarah Michaels (NOMTCB), Dr. Gary Balsamo (DHH), Christine Scott-Waldron (DHH), Patrick Sutton (Adapco), Dr. Mike Carroll (NOMTCB), Randy Vaeth (East Baton Rouge MRC), Ernie Esteve (Billiot Pest Control), Charles Allen (City of New Orleans), and Marty Poussan (LDAF). The two out-of-state speakers included Dr. Janet McAllister (Centers for Disease Control) and Mark Latham (Manatee Country Mosquito Control). We appreciate their time and commitment to education and to the mosquito control profession in Louisiana. Finally, I would like to thank the NOMTCB staff for putting in many hours to prepare the labs and field demonstrations. The evaluations were very positive and the LMCA board approved an academy in 2014.

The LMCA voted to have their 2014 annual meeting at the Hilton Riverside in New Orleans. This meeting will coincide with NOMTCB's 50th anniversary. The banquet will be held at Gallier Hall.

Georgia Pest Control Association

I spoke at a Georgia Pest Control Association (GPCA) meeting in 2012 in Tifton and I had the opportunity to meet many pest professional from that state. The GPCA offers a field trip each year and they selected New Orleans in 2013. Twelve members of the GPCA visited New Orleans November 15-16th. Several of staff members gave presentations regarding their area of expertise. We also took the group to the French Quarter to discuss the pest challenges we battle each day. The Greater New Orleans Pest Control Association hosted a joint event at Rock-N-Bowl.

Pest Control Academy

The 5th City of New Orleans and Greater New Orleans Pest Control Association was a success. Dr. Gary Bennett (Purdue University) was our invited speaker. Dr. Bennett was a tremendous addition to the Academy because of his knowledge and experience. Ed Freytag (Senior Research Entomologist) interviewed Dr. Bennett. Ed Freytag filmed the interview. Dr. Bennett is originally from Louisiana and was a graduate student during the time the Formosan subterranean termite was identified in New Orleans and Lake Charles.

Dr. Rodney Jung

Dr. Jung passed away this year. Dr. Mike Carroll, Mr. Ed Bordes and I attended Dr. Jung's service on October 14th. Dr. Jung was a long time board member. He made numerous contributions to mosquito control and public health. Dr. Brobson Lutz recently wrote an article for New Orleans Magazine about Dr. Jung. The article can be found at the link below.

http://www.myneworleans.com/New-Orleans-Magazine/January-2014/The-Legacy-of-Dr-Rodney-C-Jung/

MOSQUITO FIELD OPERATIONS
SARAH MICHAELS

Mosquito Control

The very cool winter temperatures and wet conditions in the spring of 2013 made for lower mosquito activity. The usual broods of floodwater mosquitoes in rural areas and urban parks were noticeably absent in the spring. We did not initiate any ground ultra low volume (ULV) treatments until May because high winds and frequent heavy rain showers.

In 2013, we completed the treatment of 153 zones using ULV ground treatments of Fyfanon® (Cheminova, malathion) and aerial applications of Dibrom® (AMVAC, naled) based on surveillance indicators (mosquitoes and arbovirus activity) which decreased from 2012.

We updated 7 of the 10 spray units on our spray trucks with Adapco's Guardian 190ES and Monitor 4 GPS. The Monitor 4 GPS equipment allows us to record the actual treatments paths including truck speed and when the spray equipment is on and off. The data collected allows us to precisely record the pesticide application, increase efficiency and ultimately increase the safety for drivers and the public.

Overall in 2013, 408 service requests were called in by phone or sent by email, a decrease from 2012 when over 575 were submitted. Most of these requests were regarding standing water and preventative mosquito control in yards and parks.

Surveillance Activities

West Nile virus surveillance focuses on collecting *Culex quinquefasciatus* (southern house mosquito) using gravid traps baited with an infusion. The infusion can be made of water and fish oil, grass or hay, or a combination of both. NOMTCB has been using a week-old, rancid fish oil infusion. This species is attracted to water with high organic content for suitable place to lay eggs (Fig. 10)

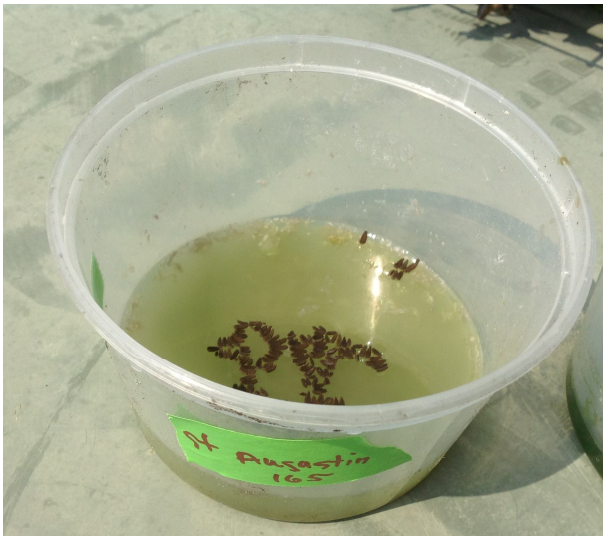

Figure 10. Egg rafts collected using the most attracting combination of grass and hay infusions.

This season, we increased the number of gravid trap locations (25 to 33) and optimized the infusion we use for baiting the gravid traps. Mieu Nguyen (Pest Control Specialist 3) tested a variety of infusions made from local grasses, hay, and fish oil. Through lab and field testing, she determined peak timing of attractiveness for each infusion. Mieu presented on her research at the LMCA Annual Meeting in Marksville (Fig. 11) and we are incorporating her work into our surveillance program.

Figure 11. Mieu Nguyen presented the results of an infusion study at the Louisiana Mosquito Control Association meeting in Marksville, LA in December of 2013.

Culex quinquefasciatus populations were generally low and West Nile virus (WNV) activity absent until late November (CDC Week 47), when 6 positive pools were collected [minimum infection rate

(MIR) 1.0]. This likely coincided with migratory birds populations returning to our area. This is a striking difference from the magnitude of WNV activity in 2012 (181 WNV positive pools beginning in April). No human cases were reported in 2013.

We have also begun to optimize collection methods for *Aedes albopictus* and *Ae. aegypti* using dry-ice baited CDC light traps and lure-baited BG Sentinel® traps. Understanding the effectiveness of each of these mosquito traps is necessary in order for us to conduct adequate surveillance for these species and to test effectiveness of control measures. These species are especially important given the continuing advance of dengue in Florida and the recent identification of Chikungunya in the Caribbean.

Education

In April, NOMTCB co-hosted a 3-day Mosquito Academy in conjunction with LMCA. It offered a comprehensive hands-on training program in mosquito biology, identification and control. Presentations were made by Mr. Mark Latham from Manatee County Mosquito Control District and Dr. Janet McAllister from the U.S. Centers for Disease Control and Prevention. Mosquito Control employees ran hand-on sessions in mosquito identification, resistance testing, use of personal protective equipment and truck calibration (Figs. 12 and 13). The over 35 attendees came from around the state and region. The Academy will be offered again on April 22-24, 2014.

Figure 12. Cynthia Harrison and Sarah Michaels demonstrating surveillance equipment during the Mosquito Academy.

Figure 13. The Mosquito Academy provided hands-on sessions including lessons how to use microscopes and identifying commonly found mosquitoes.

In the fall, Cynthia Harrison (Pest Control Specialist 3) assisted a number of local high school senior students from Ben Franklin High school on developing science fair projects. Cynthia enjoys working with high school students and the community (residents) to teach them about the importance of mosquito biology and control.

AVIATION
ED FOSTER

The start of 2013 was also the start of the yearly major inspection and repair period for the spray aircraft. One of the major tasks for this year was removing and replacing several port (left) wing skins, stringers and miscellaneous small parts (Figs.14 and 15). Various areas of corrosion were also treated and a modification that extended the stringers was incorporated.

Figure 14. Wing skins removed for corrosion repairs.

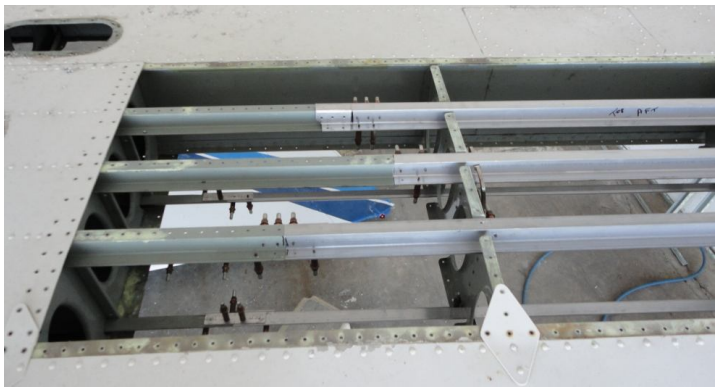

Figure 15. New stringers and mod being installed.

In January, I attended an aerial application safety seminar held by the National Agricultural Aviation Association in Lake Charles. Aircraft and chemical safety as well as accident prevention strategies were discussed by various experts in the field including the Federal Aviation Administration. Our insurer recognizes the value of this seminar by granting a premium discount for attendance.

In mid-February I attended the Gulf South Aviation Maintenance Seminar. This FAA sponsored event enables aircraft mechanics to recertify their credentials, learn about new techniques and keep abreast of regulatory changes occurring in the industry.

As the annual training events were completed focus shifted back to getting the aircraft ready for the 2013 season. Inspections and maintenance were finished on the aircraft and we calibrated and tested the chemical spray system.

The second quarter of the year is typically the most active time for us as mosquito activity begins to peak and we also enter hurricane season. We were fortunate in that activity in both of these areas was remarkably benign. In fact, the National Weather Service reported that as of early August, the 2013 Atlantic hurricane season was one of the least active in recorded history.

The initial forecasts and predictions for Invest 92L (an area of disturbed weather that was tracked by the US Navy and various hurricane centers) did concern us enough to activate our preliminary evacuation preparations. This involved fueling vehicles, the airplane, elevating equipment/supplies to avoid rising water and identifying a safe location for evacuating the airplane. Thankfully 92L fizzled out and the preparations resulted in nothing more than a good refresher exercise for us.

While the pace of activity was slower than anticipated, we conducted aerial spray flights throughout this second quarter, the first of which took place in early July. We also have a new addition to the aircraft chemical loading team, Mr. Lawrence Eloie (Pest Control Inspector 2). In addition to his other mosquito responsibilities, Lawrence has adapted quickly to the loading process and is proving to be a valuable member of the department.

Early in the third quarter we had a visit from the

Environmental Protection Agency (EPA) for a facilities inspection and process review relative to regulatory compliance. The EPA employees inspected the warehouses and the hanger and were primarily concerned with storm water runoff violations related to the MS4 permits for the City of New Orleans. They noted that we were in compliance, pesticides were properly stored, and that we had no violations.

Just as it appeared we would exit hurricane season unscathed, Tropical Storm Karen (Fig. 16) entered the picture. Most models and predictions indicated that we would be in the path and could expect rising water on the airport. Based on this, the evacuation plan was exercised once again and the aircraft evacuated to New Iberia.

New Iberia Mosquito Control Director, Herff Jones, allowed us to house the airplane in their hanger. The cooperative endeavor among various public mosquito control districts including New Iberia facilitates these arrangements. Fortunately, the storm did not develop as forecasted and only light weather conditions were experienced. The airplane was returned home and we quickly resumed normal operations.

November-December found us winding down from peak mosquito activity and beginning the cycle of yearly maintenance and recertification training in preparation for the 2014 season.

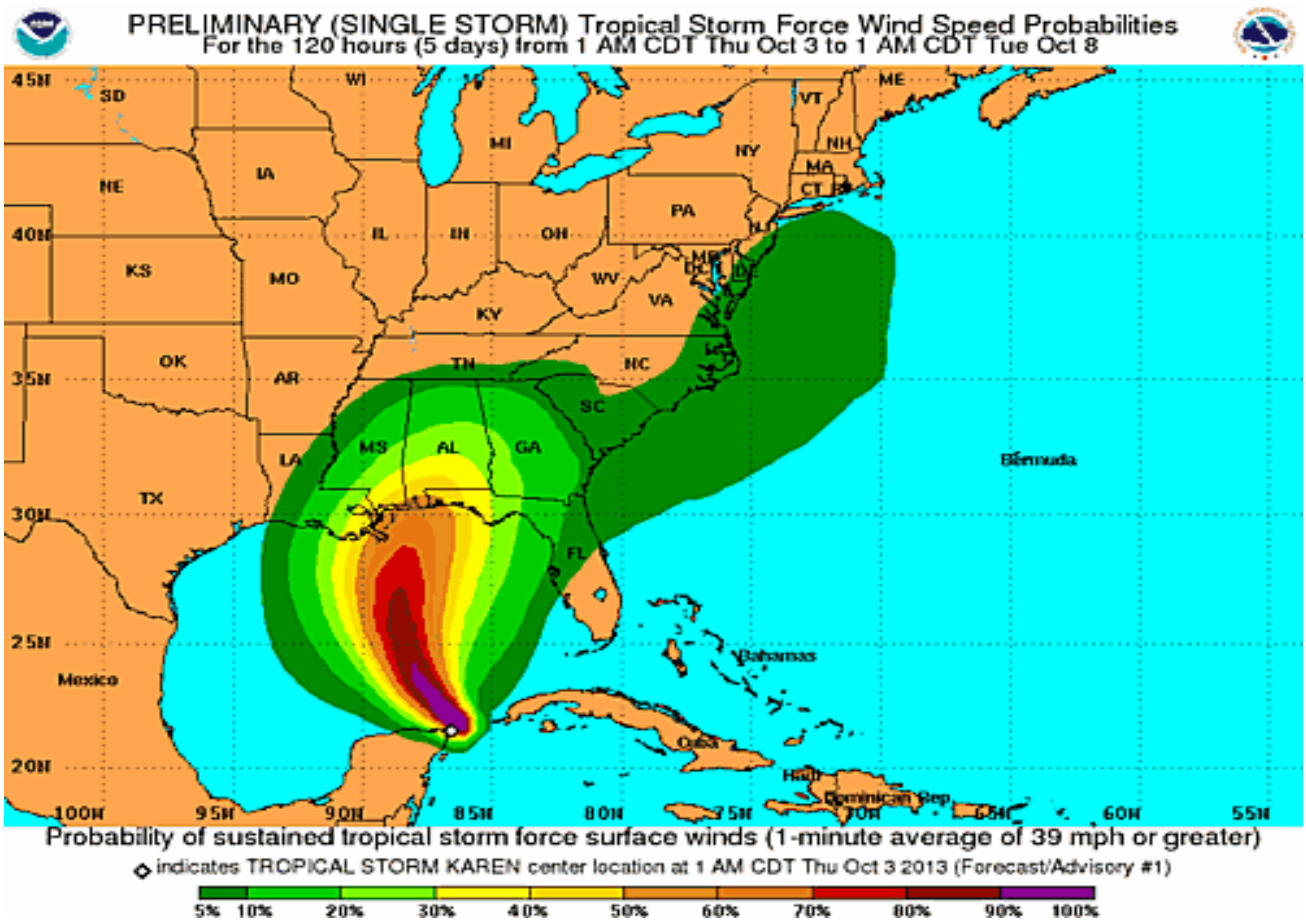

Figure 16. Projected path of Tropical Storm Karen that was analyzed in order to make decisions regarding plane evacuation and facility preparations.

VECTOR/RODENT CONTROL
JOYCE BROWN

Service Requests

In 2013, NOMTCB/Rodent Control Program received 1,073 rodent complaints by e-mail, 311, and calls to the office. Of the 1,073 rodent complaints, 78 residents (186 burrows were found) (Table 1). All service requests were followed with an inspection and treatment if needed. If activity was found on the property, the residents were re-inspected.

Inspectors visited several homes where residents have been complaining about mice, raccoons, opossums, rats, and other unwanted pests that entered their yards and homes. We have a variety of fact sheets we give to residents, so that they will read it and increase their knowledge of the rodents, various pest, pest-proofing, and conducive conditions. If the resident is home during the inspection, the inspector discusses the inspection results and ways to improve their situation. I spend many hours with residents on the phone discussing rodent issues.

There are often several code violations such as high grass (Fig. 17) trash and debris accumulation located at these vacant lots and vacant houses. These violations are reported to Code Enforcement.

Figure 17. A vacant lot with high grass next to a house.

2013 Requests for Service by Month:			
Month	Inspections	Re-inspections	Total
Jan	92	4	96
Feb	37	3	40
Mar	56	7	63
April	60	5	65
May	115	8	123
June	115	9	124
July	122	9	131
Aug	132	9	141
Sept	111	6	117
Oct	137	9	146
Nov	67	4	71
Dec	29	5	34
Total	1,073	78	1,151

Table 1. Service request received by NOMTCB by month in 2013.

Storm Drains Treatment
Residential

Rodent inspectors treated 3,489 storm drains. Areas were selected based on "rodent hot spots" or service requests inspection results.

NOMTCB inspectors treated 434 storm drains in the French Quarter in January and a reinspection was conducted in February. The area from Bourbon St. at Esplanade Ave. to Canal St. to Decatur/ St. Peters (to the river) is a rodent active part of the French Quarter due to the high number of commercial establishments and high volume of trash/ garbage produced. Another treatment in this area was performed in July 2013.

Additional areas with elevated rodent activity received storm drain treatments. These area included: 1) Jasmine St./People Ave/Clovers St./ Clematis St., 2). Hope St/Elysian Field Ave/N. Rocheblave St./Annette St., 3) Humanity St./ Elysian Field Ave/Lafreniere St./Spain St., and 4). Abundance St./Industry St./Clouet St./Press St.

Special Assignments

Upper Pontalba Apartment

NOMTCB/Rodent inspectors inspected the apartment hallways of the Upper Pontalba building located in the French quarter for mice, rats, roaches and other pests. Rodent inspectors placed 14 bait stations in the halls of each apartment which were visited by an inspector once a week for monitoring the activity of the pests, and re-treat if necessary.

NOLA for Life

NOMTCB inspectors participated in the NOLA for Life Program. The site was Norwood Thompson Playground in Gert Town. Storm drains were treated around the playground and in the neighborhood prior to the event. We passed out informational brochures during the event in the neighborhood.

2013 District Council Meeting

The NOMTCB director, and rodent and mosquito control employees attended all Mayor's Community meetings which were held in 5 districts (A, B, C, D, and E). These meetings allowed the residents to ask questions and provide feedback on several city issues and policies. NOMTCB employees would set up a table to give free information to the public, including brochures and handouts on how to avoid mosquitoes, rodents, and general pests around the home. Personnel were available to answer questions regarding biology and control of these pests.

City Facilities

Numerous city facilities that have been treated for pests in 2013 are presented in Table 2. These sites are scheduled on quarterly, monthly, twice a year or as needed visits. City agencies call our office if they suspect there are pest issues in a city facility. We always identify the pest and we often offer them a solution by explain that the conducive condition contributing to the pest issue should be eliminated.

Monthly Inspections

Due to the decrease in rodent signs, several sites have been placed on a quarterly inspection (rodent burrows, rat runs etc.). Employees inspected and treated (if needed) 16 other city sites on a quarterly routine or as much as needed. These sites included, City Hall, Juvenile Court, Civil Court, State Building, NO Public Library, Lafayette Square, Lee Circle, Treme Center, Riverview, and City Park (Amusement Park, Greenhouse Garden.) Bait stations were placed at various sites, (City Hall, Juvenile Court, and New Orleans Public Library). As a safety precaution, the bait stations are checked and re-treated every month or as needed. Rodent inspectors also treated and inspected the city maintenance building located at 5034 Tchoupitoulas St., Louie Armstrong Park (Municipal Auditorium), the central bus station, and Tulane and Charity hospitals.

The red imported fire ant is a pest of concern. NOMTCB employees inspect playgrounds and the ants were treated when encountered (Table 3).

We started preparing for Green Shield certification. Green Shield recognizes that an agency utilizes integrated pest management techniques. The goal is be cognized by the third quarter of 2014.

Table 2. 2013 City facilities service requests and inspection results.

Site name And address	Room	Pest(s) reported	Date inspected	Pest Identified
ALGIERS COURTHOUSE - 225 Morgan St.		spiders/ants	8/20/2013	cellar spiders/big headed ants
ALVAR LIBRARY - 913 Alvar St.			1/7/2013	rats, mice, roaches
			3/13/2013	mice, german roaches
ARMSTRONG PARK		ants	1/4/2013	red imported fire ants
ARTS BLDG.- 745 Howard Ave.		roaches/rats	8/28/2013	Norway rats/no roaches
AUTHERMONDAY BLDG - 1111 Newton		roaches/ants	5/17/2013	American roaches
	HS Ruth	fleas	6/18/2013	none found
	Dentist	roaches	6/21/2013	american roaches
	Dentist	ants	7/29/2013	none found
AUTO POUND - 10200 Almonaster St.		ants	8/5/2013	crazy ants
BARROW STADIUM - 6403 Press Dr.		spiders	6/13/2013	cellar spiders
BEHRMAN CENTER - 2500 Gen. Meyer Ave.		live squirrel in gym	8/28/2013	squirrel not found
BIOLAB - 13200b Old Gentilly Blvd.		ants	5/17/2013	fire ants
		ants	6/13/2013	fire ants
		ants	6/13/2013	fire ants
		ants	7/31/2013	fire ants
		ants	8/29/2013	crazy ants
		ants	10/30/2013	crazy ants
CHILDREN'S RESOURCE CTR - 913 Napoleon Ave.		ants	7/1/2013	crazy ants
CITY HALL - 1300 Perdido St.	1EO9	gnats	3/5/2013	overfed plants
	1W15	rats	5/3/2013	norway rats
	1W05	gnats	6/14/2013	none found
	1W40	gnats	6/14/2013	none found
	2W60	termites	2/5/2013	Formosan termites
	2W84, 89	Paper fleas?	6/14/2013	phorid flies
	1W24	roaches	7/2/2013	none found
	2W01	ants	7/11/2013	red imported fire ants
	3rd flr-ITI	ants	9/13/2013	crazy ants
	3W03	ants	8/7/2013	crazy ants
	4W07	termites	2/5/2013	Formosan termites
	5EO3	spiders	11/19/2013	spider
	8W03	ants	3/18/2013	ants
	8th flr	termites	2/5/2013	Formosan termites
	BE10	ants	12/11/2013	ants
CIVIL/JUVENILLE COURTS - 421 Loyola Ave.		ants	8/22/2013	crazy ants
CRIMINAL COURTS - 2700 Tulane Ave.	SECT A	termites	6/20/2013	Formosan termites
		ants	8/1/2013	crazy ants
CUTOFF CENTER - 6600 Bellgrade		rats	8/28/2013	mice
DELGADO HEALTH UNIT - 517 N. Rampart St.		rats	4/30/2013	Norway rats

Table 2. 2013 City facilities service requests and inspection results– continued.

Site name And address	Room	Pest(s) reported	Date inspected	Pest Identified
EAST N.O. LIBRARY - 6641 Read Blvd.		mice	4/23/2013	house mouse
		bees	5/6/2013	bees were swarming, gone
EMS - 3711 Gen. Meyer Ave.		fleas	6/13/2013	cat fleas
EVIDENCE ROOM - 1116 Magnolia St.		rats/mice	8/1/2013	norway rats
FIRE CENTRAL	Central	ants	11/25/2013	crazy ants
FIRE COMM. BUILDING - 701 Rosedale		roaches/ants	4/4/2013	roaches/ants
FIRE STATION - 2920 Magazine St.	Engine 01		5/31/2013	Inspection
FIRE STATION - 4500 Old Gentily Blvd.	Engine 06	roaches/ants	8/16/2013	American roaches/fire ants
FIRE STATION - 1441 St. Peter St.	Engine 07	roaches	1/8/2013	American cockroaches
		ants	7/29/2013	rover ants
FIRE STATION - 3300 Florida Ave.	Engine 08		5/15/2013	Inspection
FIRE STATION - 14069 Morrison Rd.	Engine 10		5/29/2013	Inspection
FIRE STATION - 5600 Franklin Ave.	Engine 12		2/21/2013	Inspection
			5/9/2013	Inspection
FIRE STATION - 987 Robert E. Lee Blvd.	Ladder 13	bees, ants, rats	4/9/2013	Carpenter ants, Norway rats
FIRE STATION - 200 S. Robertson St..	Engine 14		5/30/2013	Inspection
FIRE STATION - 1211 Arabella St.	Engine 15		5/15/2013	Inspection
FIRE STATION - 4115 Woodland Ave.	Engine 17	ants	5/15/2013	red imported fire ants
FIRE STATION - 3940 Paris Ave.	Engine 21	roaches	5/9/2013	German cockroach
FIRE STATION - 1040 Poland Ave.	Engine 24	rats	5/30/2013	Norway rat
FIRE STATION - 436 S. Jefferson Davis Pkwy.	Engine 26		5/21/2013	Inspection
FIRE STATION - 19808 Chef Menteur Hwy.	Engine 31	spiders	5/29/2013	cellar spiders
		spiders	7/1/2013	cellar spiders
		spiders	7/5/2013	cellar spiders
FIRE STATION - 3340 Gen. Meyer Ave.	Engine 33	fleas	6/18/2013	cat fleas
FIRE STATION - 964 N. Carrollton Ave.	Engine 35		5/21/2013	Inspection
FIRE STATION - 13400 Chef Menteur Hwy.	Engine 37		5/29/2013	Inspection
FIRE STATION - 4940 Clara St.	Engine 38	mice	4/2/2013	house mouse
		roaches/ants	7/15/2013	none found
FIRE STATION - 2500 Gen. DeGaulle	Engine 40		5/28/2013	Inspection
FIRE STATION - 2430 S. Carrollton Ave.	Ladder 07		5/17/2013	Inspection
FIRE STATION - 2000 Martin Luther King Blvd.	Ladder 08		6/14/2013	Inspection
FIRE STATION - 5401 Read Blvd.	Ladder 13		5/9/2013	Inspection
FIRE STATION - 6900 Downman Rd.	Squirt 04		5/30/2013	Inspection
FIRE STATION - 425 Opelousas St.	Squirt 20	rats	8/5/2013	none found
FIRE STATION - 2118 Elysian Fields Ave.	Squirt 27	ants	3/7/2013	Argentine ants
		ants	5/31/2013	Argentine ants

Table 2. 2013 City facilities service requests and inspection results– continued.

Site name And address	Room	Pest(s) reported	Date inspected	Pest Identified
FIRE TRAINING FACILITY - 13400 Old Gentilly		mouse, wasps	1/3/2013	house mouse, paper wasps
		mouse, wasps	6/4/2013	house mouse, paper wasps
		mouse, wasps	10/2/2013	house mouse, paper wasps
		mouse, wasps	12/4/2013	house mouse, paper wasps
FIRE SUPPLY - 821 Magazine St.		mouse, wasps	6/3/2013	Inspection
FRENCH MARKET - 1 French Market Place		roaches	7/1/2013	American roaches
GALLIER HALL - 545 St. Charles Ave.		rats	4/4/2013	Norway rats
HARRELL PLAYGROUND - 2202 Leonidas St.		ants	8/28/2013	tawney ants
HEALTHCARE CLINIC - 2222 Simon Bolivar	2nd Floor	gnats	6/18/2013	drain/phorid flies
HOMELAND SECURITY - 1960 Lafyette St.		wasps	8/28/2013	yellow jackets
JOE BROWN PARK - 5601 Read Blvd.		ants/spiders/roaches	1/2/2013	red imported fire ants
	shelter	ants	1/3/2013	red imported fire ants
	Pool	roaches	3/5/2013	American roaches
		ants, roaches	8/27/2013	crazy ants/American roaches
LYONS CENTER - 624 Louisiana Ave.		rats	7/2/2013	Norway rats
MAIN LIBRARY - 219 Loyola Ave.		rats	2/21/2013	Norway rats
		rats/ants	8/20/2013	crazy ants
MIRABEAU PLAYSPOT - 11 Chatham Dr.		ants	11/7/2013	rover ants
NORDC OFFICE - 800 Race St.		ants	6/6/2013	Argentine ants
		ants	5/6/2013	crazy ants
NORMAN MAYER LIBRARY - 3001 Gentilly Blvd.		roaches	6/20/2013	American roaches
OSCAR MEDRANO BLDG. - 517 N. Rampart St.		roaches	2/15/2013	American roaches
		roaches	8/5/2013	American roaches
PARKS & PARKWAY - 2829 Gentilly Blvd.		roaches, spiders	4/22/2013	American roaches
		spiders/ants	6/20/2013	rover ants/no spiders
POLICE AUTO POUND - 400 N. Claiborne Ave.		rats	2/8/2013	Norway rats
		rats	5/1/2013	Norway rats
POLICE HEADQUARTERS - 727 S. Broad St.		ants/gnats	5/28/2013	crazy ants
POLICE (NCIC) - 715 S. Broad St.		mice	6/6/2013	mice
POLICE STATION - 2405 Sanctuary Dr.	4th Dist.		5/8/2013	Inspection
POLICE STATION - 10100 Dwyer Rd.	7th Dist.	mice	8/26/2013	mice
READ PUBLIC LIBRARY		bees	5/6/2013	honey bees
		ants	10/2/2013	crazy ants
ROSA KELLER LIBRARY - 4300 S. Broad St.		roaches	2/21/2013	American roaches
SMITH LIBRARY - 6301 Canal Blvd.		termites	6/17/2013	Formosan termites
STALLINGS PLAYGROUND - 1581 Gentilly Blvd.		rats	5/30/2013	Norway rats
SWB PUMPING STATION - 2501 S. Broad St.		termites	6/18/2013	Formosan termites
TAYLOR PLAYGROUND - 2600 S. Roman St.		rats	8/1/2013	recommended trash disposal

Table 2. 2013 City facilities service requests and inspection results– continued.

Site name And address	Room	Pest(s) reported	Date inspected	Pest Identified
TAYLOR PLAYGROUND - 2600 S. Roman St.		rats	8/1/2013	recommended trash disposal
TRAFFIC COURTS - 727 S. Broad St.		ants	1/31/2013	phorid flies
		gnats	5/28/2013	phorid flies
TREME REC CENTER - 900 N. Villere St.		gnats/flies	6/6/2013	house flies
VIEUX CARRE COMMISSION - 334 Royal St.	2nd Floor	mice droppings	6/20/2013	house mouse
YOUTH STUDY CENTER - 1100 Milton St.		rats, mice, roaches	4/4/2013	Norway rats, house mice

Table 3. Red imported fire ants (RIFA) are a pest of concern and playgrounds with the ants are treated in order to protect the children using the facilities.

2013 Red imported fire ants treatments	
Location	Insecticide
Delcazel Park	Amdro Ant Bait
East Shore Playground	Amdro Ant Bait
Easton Playground	Amdro Ant Bait
Harrell Playground	Amdro Ant Bait
Harrell Stadium	Tempo SC
Hunters Field Playground	Amdro Ant Bait
Joe Brown Park	Amdro Ant Bait
Kingswood Playground	Amdro Ant Bait
Leman Playground	Amdro Ant Bait
Maria Goretti Playground	Amdro Ant Bait
Palmer Park	Tempo SC
Pontchartrain Park	Tempo SC
St. Patrick Playground	Amdro Ant Bait
Wisner Playground	Amdro Ant Bait

PEST CONTROL
TIMMY MADERE

My responsibilities at NOMTCB include management of special rodent and termite research projects, implementation of control strategies for difficult pest problems at city facilities, and extension activities such as presenting technical talks at recertifications and at the NOMTCB academies. In addition, I conduct termite inspections for the pest control industry and manage our commercial rodent accounts. My job duties require a broad knowledge base and good organizational skills in order to manage the large case loads and variety of issues.

City Facilities and Partner Agencies

The French Market and the rodent issues are a constant concern for the Pest Control division. In May, we moved the burrow treatment schedule up from once a month, to biweekly and this adjustment is still in effect now as well as inspections on alternate weeks in order to assess treatment success and locate areas to focus future treatment efforts. During the biweekly burrow treatments, a rodent bait station run, which begins at Jax Brewery and extends along the flood wall until the US Mint, is also monitored and rebaited as needed. The storm drains throughout the French Market are baited biweekly as well as or as needed. In June, we patched numerous large holes in the outside, back wall of the restaurant Galvez in Dutch Alley. These holes were providing rodents with access to the restaurant and since being patched, have aided in the elimination of the rodent issues there.

In June, the Pest Control Division began addressing the issue of invasive aquatic plants in the lagoons of City Park. If left unchecked, these plants would quickly choke the waterways; leading to stagnation and then mosquito breeding. With the hard work and guidance from Dr. Mike Carroll and Brooks Hartman, the invasive aquatic plant population has been reduced to an acceptable level.

June ended with a bee call at Lafayette Square. The colony had moved in to the base of a light pole near the "Rabbit" statue. The hive was successfully removed at night by rodent inspector, Steve Ollar, and specialist, Timmy Madere.

In early July, NOPD's 2nd District Station House called regarding a possible termite infestation in their building. Inspectors arrived that day and found a large Formosan termite carton nest beneath the building. Multiple above ground termite bait stations were installed in areas with termite activity and the stations will be monitored until the infestation is eliminated.

In late July, the Pest Control division responded to a cockroach complaint at Gallier Hall. Upon inspection, several sanitary and pest proofing issues were found. A majority of the pest proofing issues were remedied on the spot and we are continuing to work closely with Property Management to address the sanitation situation.

August began with a bee call in Joe Brown Park at their swimming pool. Eric Guidry's expertise was critical in the successful removal of the colony without any incident. August ended with a mouse clean-out at the Fire Department's Headquarters on Decatur in the French Quarter. Over the course of two weeks, more than a dozen mice were removed from the station through the use of snap traps.

Technical Support and Assistance

On January 30, 2013, members of the Greater New Orleans Pest Control Association, members of the Mayor's Council on the Homeless, and members of our staff (Ed Freytag, Steve Ollar, Phillip Smith, and Timmy Madere) met at the Mission/Homeless Shelter located at 1130 Oretha Castle Haley Avenue in Central City, to perform a treatment for a massive German cockroach infestation that was occurring in both the men's and women's shelters. The buildings were inspected and treated thoroughly with pesticides donated by Univar of Harahan. The roach populations in both buildings has been dramatically reduced thanks to the work performed at this time. The site is still being monitored and treated as needed to avoid further serious infestations.

Research Projects

Our Pest Control Division was involved in several special projects over the past quarter. May marked the return of our statewide Formosan termite survey. The purpose of this trip was to not only document the distribution of Formosan termites across Louisiana, but also to obtain new insect specimens for our teaching collection. This year's survey focused on the northwest portion of the state and yielded numerous wonderful new specimens; but no new Formosan termite populations were discovered. May was also the beginning of an aggressive new trapping, necropsy, and parasite collecting project. The project partners us with Tulane and the CDC in an effort to identify and limit the public's contact with pathogens and parasites carried by rodents. Both live and dead animals were collected from sites all across the parish. Returning intern, Daniel Swank, was a driving force on the project often performing a majority of the trapping, necropsy, and data entry duties. This project is still on going.

The final quarter of the year was a busy time. Ongoing collaborators from Michigan Tech returned in October to monitor their research sites conducted throughout the city. The research involves wood preservatives and Formosan termites.

In November, a representative from Xcluder, a company that produces high quality pest proofing products with a focus on rodent prevention, visited our EPA IPM demonstration schools, as well as the French Market. The company has agreed to donate some of their products to our IPM schools and we are currently discussing future research projects with them.

In December, Termimesh was requested to seal an inaccessible expansion joint at the construction site of the new NORD building, "Sanchez" located in the Lower Ninth Ward. After working with the Termimesh technicians, it was determined that members of our staff should receive training with Termimesh in order to become accredited applicators. Termimesh is a stainless steel screen material generally used in pre-construction to prevent termites from entering structures through the slab penetrations and seams. This provides us with not only another tool in termite control, but also future opportunities to generate revenue by contracting out our certified technicians.

Meetings and Education

I attended the annual AWPA Conference in Hawaii in order to promote termite research opportunities in the city of New Orleans. I also attended talks to obtain the latest details on current chemicals and procedures used to treat and protect wood from termite attacks.

Also in November, I attended the New York City Rodent Control Academy. While there, I was able to learn new techniques for rodent trapping and exclusion as well as new information regarding rodent behavior and biology. I was able to meet with Dr. Robert Corrigan, the worlds' leading rodentologist, to discuss future cooperative research studies between our two cities.

Photography, Termite Inspections, Building Maintenance, Source Reduction & Auto Repair
Ed Freytag

Photography

The digital picture database had to be completely reorganized and reformatted from scratch due to an unexplained error in the category function of IMatch, the program selected for ease of use and great organizational and search functions. I collected all the digital pictures stored in every hard drive and computer in my office and rebuilt the digital picture database so that there were no duplicate images. This includes every single image since I started using digital cameras.

Previously, the images were searched from several hard drives, and this involved redirecting the program to each individual hard drive in order to use the images. How the database became corrupted, including backups, is a mystery, but fortunately no images were lost, just the categories under which each image was placed in order make queries for particular images. The program allows multiple images to be selected to each category, so the rebuilding of the database, although time consuming due to the enormous number of images, was relatively easy.

Egg rafts of *Culex* sp. mosquitoes were collected in gravid traps and separated in individual containers in order to take close up pictures of eggs and the raft (Figs. 18 and 19). The purpose of the pictures was to determine if the shape of the egg raft is unique to each *Culex* species of mosquito. A set of 54 egg rafts were photographed individually (top view only), allowed to hatch and develop and then identified with the microscope. Identification of the larvae from the egg rafts was completed, but the data has not been summarized. One important observation was that size of the egg raft was not indicative of the species, as that may be more a function of the size of the blood meal and the size of the mosquito.

I attended the Summit Integration Systems 8th Annual Technology Showcase at the Best Western Landmark Hotel in Metairie, where new multimedia equipment, software and hardware is showcased every year. This year there were more vendors with better and faster presentation equipment. I was particularly interested in the SMART interactive whiteboard and audience response system presentations so that we can start adapting our PowerPoint presentations and become more interactive with the audience. It will take some time to adapt to the SMART board since one has to be more creative in presenting the information. The SMART board is like a giant touch tablet and is more demanding when using it in front of a large group. Done correctly, it will allow the audience to participate in the lectures and enhance the learning experience.

Figure 18. Side view of a *Culex* sp. egg raft collected for data collection.

Figure 19. Top view of a *Culex* sp. egg raft collected.

All the videos that we have produced including seminars, webinars, events, research, etc. were compiled and stored in a single hard drive for easier retrieval. A new program was also purchased in order to edit the videos and convert them to a format that can be viewed in all the computers. The program is called PowerDirector 11 by CiberLink (approximately $200) and was chosen based on all the positive reviews we read on the internet. It is much easier and simpler to navigate than Adobe Premier, plus it comes with ColorDirector and WaveEditor 2. ColorDirector allows color correction of the video while WaveEditor allows editing of voice-overs and music.

The new program has been extremely useful in making short b-rolls of events, and with the ability to place a watermark, we can send the video for review and not have to worry that the video may be used by a television station, institution or company without permission. We also purchased Umark 4.3 by Uconomix Technologies Private Limited ($40) which allows watermarking of digital pictures for copyrighting purposes. It is very user friendly and allows watermarking of multiple pictures at once without affecting the resolution. It is also very flexible in creating personalized watermarks that can be saved as a template. Because a lot of the photography that we are generating has great appeal for publications, advertising or because it's unique, there is also a great potential for the images to be copied and used without permission. We are now watermarking all images to prevent copyright infringement.

A special assignment was contracted with Dr. Bob Davis of BASF to photograph and videotape several species of insects with and without treatment to be used in their exhibition both at the National Pest Management Association (NPMA) held in Phoenix, AZ. The following arthropods were obtained for the pictures: Formosan subterranean termites, native subterranean termites, drywood termites, American cockroaches, German cockroaches, bark scorpions, two-striped scorpions, fire ants, carpenter ants, and bed bugs. Additionally, I took detailed pictures and video of the Advance Termite Bait System (ATBS) with Formosan termites feeding on the wood monitors and the bait cartridge.

It was a very challenging assignment but Dr. Davis and the marketing department of BASF were very pleased with the results and many of the images and videos were used at their booth at the National Pest Management Associations annual meeting. Additionally, a BASF marketing calendar was published using the images. BASF purchased the images and rights to the pictures and videos and will therefore be able to use them as many times as they wish. All images will be property of BASF and will not be watermarked or referenced to NOMTRCB. The revenues generated from this project will help offset cuts in our budget or they will be used for purchasing more photographic equipment.

Infrared (IR) Inspections

In 2013, we performed twelve IR inspections for the local pest control companies. DA Exterminating, Billiot Pest Control and E&G Pest Control contracted our services for inspecting either commercial or homeowner residences. We increased our hourly rate from $125 per hour to $150 per hour for the use of the infrared camera, PestFinder (motion detector), moisture meter and Videoprobe flexible borescope, with a one hour minimum. Most of the companies request our assistance when they have problems with moisture issues or conducive conditions. It also helps them establish which treatment methodology to employ– liquid treatment or bait system– based on the results of our inspection findings. We are not limiting ourselves to conducting inspections only in Orleans parish, as the pest control companies in New Orleans cover multiple parishes and even other states.

The most common problem we encounter with termite infestations is usually the result of faulty construction designs where the architect did not take into consideration the behavior of subterranean termites or shortcuts by the construction company. This includes conditions such as leaving wood form stakes in the concrete slab that are in contact with the ground, incorrectly installed EIFS (Exterior Insulating Finishing System) (Fig. 20), or architec-

tural flaws where expansion joints are not accessible for drilling for treatment. Other issues are related to bad moisture management practices such as water leaks resulting from plugged gutters, moisture from AC compressor lines and air ducts, roof leaks, leaky bath tubs and improper flashing installation on chimneys and windows, to name a few.

Figure 20. Termite damage to the plywood behind the EIFS. This Formosan termite infestation was caused by a roof flashing issue allowing rain to percolate.

Building and Equipment Maintenance

LJ Kabel (Pest Control Specialist 3) has been extremely busy maintaining the equipment and conducting grounds-keeping in five separate buildings, which included the new Administration building at 2100 Leon C. Simon Dr., two large metal buildings that house materials and equipment at the Lakefront airport, an airplane hanger, and the Biocontrol Laboratory. Most maintenance on the buildings involve routine issues such as replacing AC filters and belts, replacing light bulbs or fixing the ballasts for the fixtures, ordering cleaning and janitorial supplies, changing or replacing doors and door locks, unclogging sewer lines and toilets, cleaning and rearranging supplies and equipment, helping with the Termite and Mosquito Academies, washing brick walls on the new building, taking vehicles to repair shops, installing tool boxes in vehicles, cleaning and painting walls, assisting the Termite division with heavy equipment for installation of wood preservative studies in the field, and any other requests that may arise at any moment. LJ also designed and constructed a cage for storing and locking the supplies for the termite caps (Fig. 21).

Figure 21. Termite cap cage for storing all the supplies required to build the caps. Note large double door which allows bringing heavy pallets with the fork lift.

Mr. Kabel continues to make repairs and adjustments to our new facility at 2100 Leon C. Simon Dr. Two light fixtures had to be ordered and replaced in the hallway due to faulty ballasts and a faucet had to be repaired in one of the ladies restrooms.

A door was installed between the Director's office and the Director's conference room to make using the room more accessible. This required cutting the sheet rock to make an opening, cutting and reinstalling metal studs and moving electrical lines to relocate an existing outlet and install a new outlet. The new door had to be purchased as a special order to match the existing doors. The trim, the door and the new sheetrock were repainted to blend with the existing walls.

The fluorescent lights in the parking garage stay on all night and attract lots of flying insects, requiring cleaning of the lenses and replacing the light tubes. The emergency lights that operate with expensive rechargeable batteries stopped working, so Mr. Kabel rewired the lights to bypass the emergency batteries, which last without power for only a few hours.

The linoleum floors also were showing wear and tear, and had to be stripped and waxed. This is a big project that had to be done in sections, as the building is as long as a football field and almost as wide. Sev-

eral faucets as well as drain pipes had to be replaced at the Biological Control laboratory in New Orleans East, and the evaporator drain line for one of the A/C units had to be cleaned out.

The large trailer for hauling the front end loaders and other heavy equipment was in bad shape as the old boards were damaged and needed replacing. Quotes for a new trailer were in the vicinity of $20,000, so Mr. Kabel and Mr. Hartman removed all the old boards, sanded and repainted the metal trailer, and replaced the decking with all new boards to the tune of less than $2,500 (Fig. 22). The trailer metal structure was actually in good repair so it was worth fixing it rather that purchasing a new one. The undercarriage was reconditioned by scraping all the rust and sandblasting it prior to repainting (Fig. 23).

Mr. Brooks Hartman (Pest Control Specialist 3) has spent most of his time this spring (he works two days per week) conducting maintenance with Bryan Wirth (mechanic) on the heavy equipment such as the front-end loader, backhoes, and the dump truck. This involved changing air and oil filters, dismantling, cleaning, and re-greasing wheel bearings, changing or adding hydraulic fluid to the hydraulic systems, and retightening screws and fasteners that hold the components together. Maintaining the equipment in top shape is essential for its longevity

Figure 22. LJ installing new boards on the backhoe trailer.

and prevents downtime in the field. The backhoes unfortunately spend a lot of time exposed to the environmental forces such as the damaging heat from

Figure 23. Brooks Hartman wearing protective equipment while sandblasting the undercarriage of the backhoe trailer.

the sun, rain and freezing cold when they are working in the field. Our current building situation does not allow for all of the heavy equipment to be stored under a roof, which accelerates the rate of decay of the equipment. (Figs. 24 and 25).

Source Reduction

Mr. Hartman has been using the front end loader/backhoe to clear the brush and vegetation at City Park for conducting aquatic weed treatments on the lagoons. Dr. Mike Carroll (Director Emeritus) and Brooks Hartman battled the hyacinth and alligator weed in City Park with herbicides (Figs. 26 and 27). If the spraying is interrupted, alligator weed and hyacinth (both exotic introduced species) can re-emerge and choke the ponds and waterways. Continued surveillance of the ponds is essential to main-

Figure 24. Dump truck and front end loader/backhoe waiting for work orders at the Mosquito Control yard at the Lakefront airport

Figure 25. Front end loader backhoe out of commission until the front tire can be replaced.

tained it suppressed, so monthly inspections of the ponds are required to make sure the aquatic plants do not grow out of control.

Figure 26. Mike Carroll spraying a pond choked with hyacinth in City Park.

Figure 27. Suppression of alligator weed and hyacinth after herbicide spraying at City Park.

A large partially undeveloped property bounded by Downman Rd., Dwyer Rd. and Jourdan Rd. (Fig. 28) has large wooded areas that at times flood and produce large numbers of mosquitoes. Mr. Hartman has been trying to acquire permission from Entergy Corporation to enter the property with a backhoe and excavate the existing drainage ditches that he put in place in the past. Previous Entergy management had given our agency permission and accessibility to the property, but since hurricane Katrina the area has been inaccessible. New fences were put up on the Dwyer Rd. side of the property next to the Entergy equipment storage facility (bottom left of the picture). During this process they blocked drainage culverts and created a mosquito breeding issue. The Bunny Bread facility area (upper right area of the picture) is also inaccessible to heavy equipment.

Auto Maintenance and Repair

The Homeland Security bus used for Emergency Preparedness was brought to the attention of our mechanic, Mr. Bryan Wirth (Automotive Mechanic 2), to repair a malfunctioning door handle and to buff and polish some scuff marks on the side of the vehicle. All repairs and restorations were conducted in a timely fashion and the bus is back with Homeland Security.

The tailgate landing on the dump truck was repaired using a blow torch to heat up the metal and hammered back into shape. All the grease zerks (fittings) were replaced with new ones. New grease was applied to all the fitting for a complete lubrication procedure. A fuel problem was fixed by removing the moisture in the fuel.

Several vehicles required front end repairs, which involved removing and replacing all the components, including ball joints, linkages, bushings and nuts. Many of the trucks also required wheel bearing maintenance and/or replacement. As the fleet

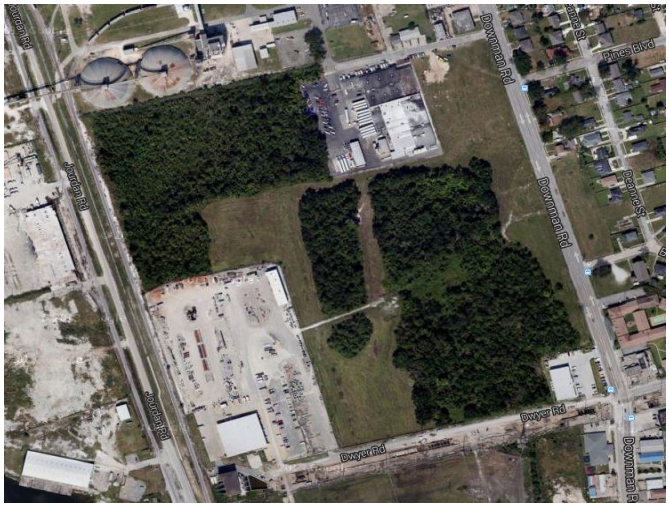

Figure 28. Aerial view (Google maps) of the property owned by Entergy Corp. Wooded areas (dark green) will require reditching to prevent mosquito breeding. The Bunny Bread facility is on the top right and the Entergy operations is on the bottom left.

gets older with higher mileage accrued on rough roads, repairs are almost guaranteed on these vehicles. All the vehicles are now properly labeled on the outside by the driver's side with the MCS (asset) number.

Four new mosquito ULV spray units were installed on existing Ford F-150 pickup trucks. The old units were removed and placed in storage as spares. New strobe lights were installed on top of the trucks with better wiring routing to the inside of the cabin. The wiring of the spray units was also modified so that a switch inside the cabin can be used to turn the spray unit computer off if the unit is only being driven to the gas pump and not to spray a neighborhood. The way the units were wired by the installer, a short trip on the truck would cause the computer to start up, but if it did not complete its boot-up cycle, it would shut down the system. The driver can now flip the switch for the sprayer computer on demand, avoiding the boot-up shutdowns.

Bryan Wirth, resigned from the position to work as a mechanic with the petroleum industry. He is going to be greatly missed as he got the vehicle fleet in great working order and was able to repair the hydraulics of the front end loaders. He was a very talented mechanic that could take on just about any engine challenge, including the fogging units.

Because of the mechanics departure, we initiated a service agreement with a local repair company. We also send vehicles to the city's EMD (Equipment Maintenance Division) and also to Lamarque Ford dealership for repairs. For simple repairs and for scheduled maintenance, a service arrangement was procured with Take 5 Oil Change. The assigned driver or each vehicle is responsible to bringing his or her unit to the nearest Take 5 service center when the service is due either by miles driven or time since last service.

TERMITE RESEARCH
CARRIE COTTONE, Ph.D.

Louis Armstrong Park

All detectable termite colonies within Louis Armstrong Park are still being treated with Sentricon® Recruit HD Always Active bait as part of an area-wide termite colony baiting study we are conducting as a collaboration between our group and Dr. Nan-Yao Su from the University of Florida. This is the second time within a decade that all detectable termite colonies within the park have been treated. Genetic analysis confirmed that the colonies that are currently being treated are different from those present at the time of the first round of baiting. The objective of this current baiting study is to determine the amount of high density bait formulation required to achieve area-wide management of termite populations in an urban environment with historically high termite pressure.

Eric Guidry (Pest Control Inspector 4) has done an outstanding job at servicing all 808 monitoring stations within the park each month. When a monitoring station exhibited actively foraging termites during a monthly check, it was immediately replaced with bait to treat the colony. A total of 32 bait tubes were applied to in-ground stations during 2012. Termites were observed foraging within three previously inactive monitoring stations in May, and in four stations in June of this year. These termites could have originated from colonies outside the park that had expanded their foraging territories, or they could have been from previously undetected colonies within the park that had moved into the stations from neighboring areas. All in-ground monitoring/baiting stations will continue to be serviced monthly during 2014.

Canal Street

We have also been documenting termite activity within unbaited stations at a control site for the baiting study at Louis Armstrong Park, as this is an excellent indication of whether the lack of termites observed in the park is caused by application of treatment or if there is a natural fluctuation of foraging due to environmental conditions. Canal Street has served as this control site since baiting in the park began due to the high termite pressure in the area and its close proximity to Louis Armstrong Park. There are a total of 1,280 in-ground monitoring/baiting stations located along the sidewalks and neutral ground on Canal Street from Convention Center Boulevard to Claiborne Avenue. All monitoring stations are serviced each month by Barry Lyons (Pest Control Inspector IV), Steve Ollar (Pest Control Inspector 2), Phil Smith (Pest Control Inspector 2), Eric Guidry, Mr. Timmy Madere (Pest Control Inspector 4), and Mr. Frank DiGiovanni (Pest Control Inspector 4) (Fig. 29).

Figure 29. From left to right, Timmy Madere, Phil Smith, Frank DiGiovanni, Barry Lyons, Steve Ollar, and Dr. Carrie Cottone walk along the neutral ground of Canal Street checking monitoring stations for termite activity.

Though Canal Street serves as a control site, our group still addresses concerns regarding damage that termite colonies can cause to historic buildings and ornamental landscaping along Canal Street. We decided to delineate all detectable colonies and selectively bait them so that all but four colonies would be eliminated. Therefore, four distinct colonies could remain untreated and serve as a control for the Louis Armstrong Park baiting study while giving us the opportunity to protect trees and structures against further termite damage.

At the time bait was applied to monitoring stations along Canal Street, a total of 51 termite colonies had been delineated. Seventeen of these abandoned their foraging territories prior to baiting. A total of 43 bait tubes have been employed to eliminate all but four of the remaining colonies.

Prior to baiting, there would be active foraging termites observed in almost 200 in-ground stations each month. Since treating termite colonies with bait, we have observed a great decrease in relative termite activity (Fig. 30). It is our goal to continue checking these stations for termite activity in 2014, as eliminated colonies may be replaced by previously undetected neighboring colonies that are expanding their foraging territories.

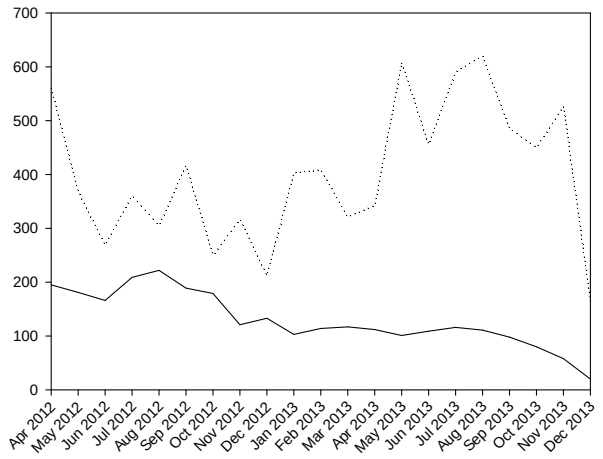

Figure 30. Relative termite activity on Canal Street, April 2012-December 2013. The solid line represents the number of active stations, and the dotted line represents the average number of termites observed within the active stations.

Industry-Supported Research

Our organization has conducted several field research studies and laboratory bioassays as part of agreements made with collaborators such as Dow AgroSciences, BASF, Syngenta, the University of Florida, and the American Wood Protection Association (in collaboration with researchers from Michigan Technological University). We also initiated projects with West Virginia University and Copper Care, with whom we had not previously collaborated.

These product testing agreements have allowed us to bring in outside funding to supplement our budget while fortifying our professional reputation in the urban entomology community. Barry Yokum (Entomologist I) has done an outstanding job at managing multiple field research sites for cooperators from Dow AgroSciences, BASF, Syngenta, and the University of Florida. Timmy Madere (Pest Control Inspector 4) has done a great job at facilitating field research with cooperators from Michigan Technological University, West Virginia University, and Copper Care. Mr. Eric Guidry (Pest Control Inspector 4) has done a fantastic job coordinating all the industry-funded termite bioassays in the laboratory.

Historic and City-Owned Properties

Our organization continues to control termite populations in historic structures, trees, and city facilities by employing baiting technology. All of these sites have been converted to those that require quarterly inspections to those that require only yearly inspections. This is possible through a new bait formulation, which is composed of a high density, highly durable bait matrix and is label rated for servicing in-ground stations at a minimum of every 12 months. Mr. Barry Lyons has been doing an excellent job at managing these sites and has been servicing them after the one-year period.

During several inspections, it was apparent that there was some bait consumption, but no live termites were observed within the stations. This is indicative of termites locating the bait through their natural foraging behavior during the course of the year and demonstrates the need for continuous termite protection. When these termites fed on the bait, they would have shared it with their nestmates, and the entire colony would have been eliminated. Table 4 summarizes all the inspections that Mr. Lyons has completed this year.

Meetings

Dr. Carrie Cottone (Research Entomologist), Mr. Ed Freytag (Research Entomologist), and Mr. Timmy Madere attended the American Wood Protection

Table 3. Termite inspections of historic and city facilities in 2013.

Site	Location	Month	Observations
Parks & Parkways Building	2829 Gentilly Blvd.	January	No termite activity
Decatur Fire Station	317 Decatur St.	January	Feeding on bait, but no live termites observed
Carrollton Cemetery	Hillary & Green	January	Feeding on bait, but no live termites observed
City Park Tree, Dueling	City Park	February	Feeding on bait, but no live termites observed
City Park Tree, Flying	City Park	February	Feeding on bait, but no live termites observed
Algiers Point Library	725 Pelican Ave.	March	Feeding on bait, but no live termites observed
Latter Library	5120 St. Charles Ave.	March	Feeding on bait, but no live termites observed
Fire Station #18	778 Harrison Ave.	March	Feeding on bait, but no live termites observed
City Park Tree, Grand Jean	City Park	April	Feeding on bait, but no live termites observed
City Park Tree, Almighty	City Park	April	Feeding on bait, but no live termites observed
City Park Tree, Delauzon	City Park	April	Feeding on bait, but no live termites observed
City Park Tree, Delgado	City Park	April	Feeding on bait, but no live termites observed
City Park Tree, Childrens	City Park	April	Feeding on bait, but no live termites observed
New Orleans Courthouse	2700 Tulane Ave.	April	Feeding on bait, but no live termites observed
City Park Tree, Taylor	City Park	May	Feeding on bait, but no live termites observed
City Hall	1300 Perdido St.	May	Feeding on bait, but no live termites observed
Civil District Court	421 Loyola Ave.	May	Feeding on bait, but no live termites observed
Fire Station #7	1441 St. Peter	May	Feeding on bait, but no live termites observed
City Park Tennis Center	951 Marconi Dr.	May	Feeding on bait, but no live termites observed
City Park Admin Building	1 Palm Dr.	May	Feeding on bait, but no live termites observed
City Park Tree, McGeehee	City Park	June	No termite activity
City Park Tree, Storyland	City Park	June	No termite activity
HDLC	830 Julia St.	June	No termite activity
Vieux Carré	516 Chartres St.	June	Feeding on bait, but no live termites observed
Bella Luna	914 N. Peters	June	No termite activity
Madam John's Legacy	623 Dumaine	June	Feeding on bait, but no live termites observed
Lower Pontalba	500 St. Ann	June	No termite activity
Rosedale Police Station	801 Rosedale	July	Feeding on bait, but no live termites observed
Perserverance Hall	901 N. Rampart St.	July	Feeding on bait, but no live termites observed
Nix Library	1401 Carrollton Ave.	July	No termite activity
Cabildo	701 Chartres St.	August	Feeding on bait, but no live termites observed

Table 3 continued.

Site	Location	Month Inspected	Observations
Upper Pontalba	500 St. Peters	August	No termite activity
Presbytere	751 Chartres St.	August	No termites activity
Rosa Keller Library	4300 S. Broad St.	August	Feeding on bait, but no live termites observed
City Park Tree, McDonough	City Park	September	Feeding on bait, but no live termites observed
City Park Tree, Lulla	City Park	September	No termite activity
City Park Tree, Alferez	City Park	September	No termite activity
Jackson Square	601 Decatur St.	September	Feeding on bait, but no live termites observed
Algiers Regional Library	3014 Holiday Dr.	September	No termite activity
Algiers Fire Station #20	425 Opelousas Ave.	October	Feeding on bait, but no live termites observed
Algiers Courthouse	225 Morgan	October	Feeding on bait, but no live termites observed
Stern Tennis Center	4025 S. Saratoga	October	No termite activity
Municipal Academy	401 City Park Ave.	November	Feeding on bait, but no live termites observed
Gallier Hall	545 St. Charles Ave.	November	No termite activity
Norman Meyer Library	3001 Gentilly Blvd.	November	Feeding on bait, but no live termites observed

Association (AWPA) annual meeting in Honolulu, Hawaii from April 29-May 2. We were able to meet with cooperators regarding current and future industry-funded research projects, and we met with potential collaborators who were interested in conducting field trials in New Orleans with our organization. During our stay, we were able to visit the Entomology Department at the University of Hawaii, at which time Ed Freytag and Dr. Carrie Cottone gave presentations for the department's seminar series.

From September 2-6, members of NOMTCB including Dr. Claudia Riegel (Director), Dr. Carrie Cottone, Ed Freytag, Sarah Michaels Entomologist), and Cynthia Harrison travelled to Fort Collins, Colorado to visit with members of the Centers for Disease Control and Prevention (CDC) We met with Dr. Janet McAllister, Captain Russell Enscore and others to learn protocols used to test mosquito pools for diseases such as West Nile virus, as well as testing for insecticide resistance. We also gained training in flea identification. The training we received at the CDC will allow us to be more capable of conducting in-house diagnostic testing of vectors collected in New Orleans.

Several members of NOMTCB attended the National Pest Management Association (NPMA) annual meeting in Phoenix, Arizona from October 21-25. We were able to meet with collaborators regarding industry-funded research projects, as well as attend educational seminars on rodent control, cockroaches, bed bugs, termites, and advances in the pest control industry.

Dr. Carrie Cottone, Dr. Claudia Riegel, and Eric Guidry all gave presentations at this year's annual Entomological Society of America (ESA) meeting in Austin, Texas from November 10-13. Drs. Carrie Cottone and Claudia Riegel gave oral presentations, and Mr. Eric Guidry participated in the undergraduate student poster competition, for which he won second place.

Our group also had an exhibitor booth for both the National Pest Management and ESA meetings. We displayed informational brochures, live animals, and merchandise available for sale. Having booths at these meetings gave us a wonderful opportunity to network with other exhibitors and meeting attendees while further enhancing our reputation in the pest control community.

Alate Trapping

This year, our organization continued trapping Formosan subterranean termite swarmers, or alates, in the French Quarter during the annual swarm season. Every year, typically from April through June, winged termites of the reproductive caste take flight after dusk. These termites will pair, mate, and seek a location in which to start a new colony. In the past, the USDA SRRC also conducted their own alate trapping in the French Quarter as part of Operation Full Stop. Because funding for Operation Full Stop ceased in 2012, it was extremely important for us to continue to monitor termites in the French Quarter, as many historic buildings may now be unprotected against termite damage. Continuing the monitoring of alates now and in future years can allow us to determine relative termite pressure and abundance in that area of the city over time.

We collected alates by attaching sticky traps to street lights in the French Quarter, as alates can be commonly observed flying around street lights during swarm season. The sticky traps consisted of glue boards mounted on clipboards and encased by a wire cage to prevent lizards and birds from becoming stuck to the traps while attempting to feed on termites. Frank DiGiovanni worked with Barry Lyons, Steve Ollar, Phil Smith, and Denzel Millon (summer intern) to install a total of 35 traps, change the glue boards twice a week, identify any alates on the traps, and collect data (Fig. 31).

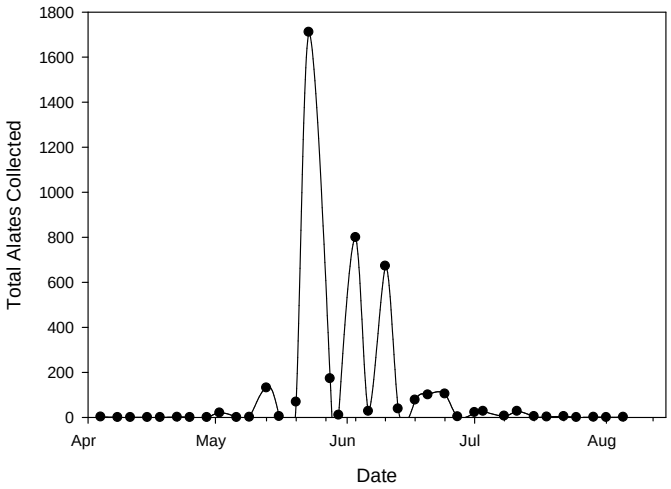

Figure 31. Number of total alates collected for all 35 traps throughout the swarm season. There were three nights of high termite swarm activity from mid-May through mid-June.

Academies

Our annual Termite Academy was held from February 26-28 and was extremely well-attended. Guest speakers for this year's academy included Dr. Ken Grace (University of Hawaii), Dr. Todd Shupe (Louisiana State University), Mr. Eric Hobelmann (Dow AgroSciences), Mr. Ron Landis (Terminix New Orleans), and Mr. Dan Foster (Terminix Houma). Our annual Pest Control Academy took place from October 8-10. This year, our guest speakers included Dr. Gary Bennett (Purdue University) and Mr. Bob Kunst (Fisher Environmental). For both academies, Mr. Milton Schleishmann (Louisiana Department of Agriculture and Forestry), Mr. Gary Whelen (E&G Pest Control), and Mr. Ernie Esteve (Billiot Pest Control) also gave presentations. Members of NOMTCB speaking at the academies included Drs. Claudia Riegel and Carrie Cottone, Mr. Ed Freytag, Mr. Timmy Madere, Mr. Eric Guidry, Ms. Sarah Michaels, and Mr. Ed Bordes. Mr. Perry Ponseti, Mr. L.J. Kabel, and Mr. Barry Lyons did an excellent job organizing the outdoor hands-on learning portion for the Termite Academy, and Mr. Eric Guidry did an outstanding job setting up the laboratory identification portions for both academies.

Every year, each academy is highly praised by the participants and registered attendees. Many had claimed they wished to return for future academies or send their employees to our academies.

Termite Dye Bioassay

This summer, our group initiated a laboratory bioassay to evaluate the use of dyed agar and dyed filter

paper for marking Formosan subterranean termites (Fig. 32). Typically, a lipid soluble dye is introduced into termites via dyed filter paper. In general, dyes used to mark termites are those that persist for extended periods and do not cause significant mortality. Currently, three dye markers that meet these criteria are used to mark field colonies of termites. These are Nile Blue A, Neutral Red, and Sudan Red 7B. Feeding these lipid soluble dyes to termites has become a widely used and successful practice to mark individual termites, allowing researchers to study termite ecology, delineate foraging territories, and estimate colony size.

Figure 32. From top to bottom: Frank DiGiovanni, Dr. Carrie Cottone, Eric Guidry, and Steve Ollar prepare Petri dishes with agar dyed with Nile Blue A for the termite dye bioassay.

Our group has been feeding dyed agar instead of dyed filter paper to termites to mark termites for many years. The purpose of this study was to determine which feeding substrate allows termites to acquire dye faster, and which one causes the lowest mortality. In other words, we wanted to know if our method for marking termites is actually the better method.

We placed groups of field-collected termites into Petri dishes with either filter paper or agar containing one of the three dyes currently used to mark termites. We allowed groups of termites to feed for either 3, 7, or 10 days. Following this, we evaluated these groups of termites for coloration and mortality at 3, 7, 14, 21, and 30 days.

Our data has shown that termites dyed with the agar substrate acquire coloration faster and retain it longer than those fed on dyed filter paper (Fig. 33A,B). Also, termites fed either Nile Blue A and Neutral Red on both agar and filter became dyed faster and retained their coloration for longer periods than those fed Sudan Red 7B.

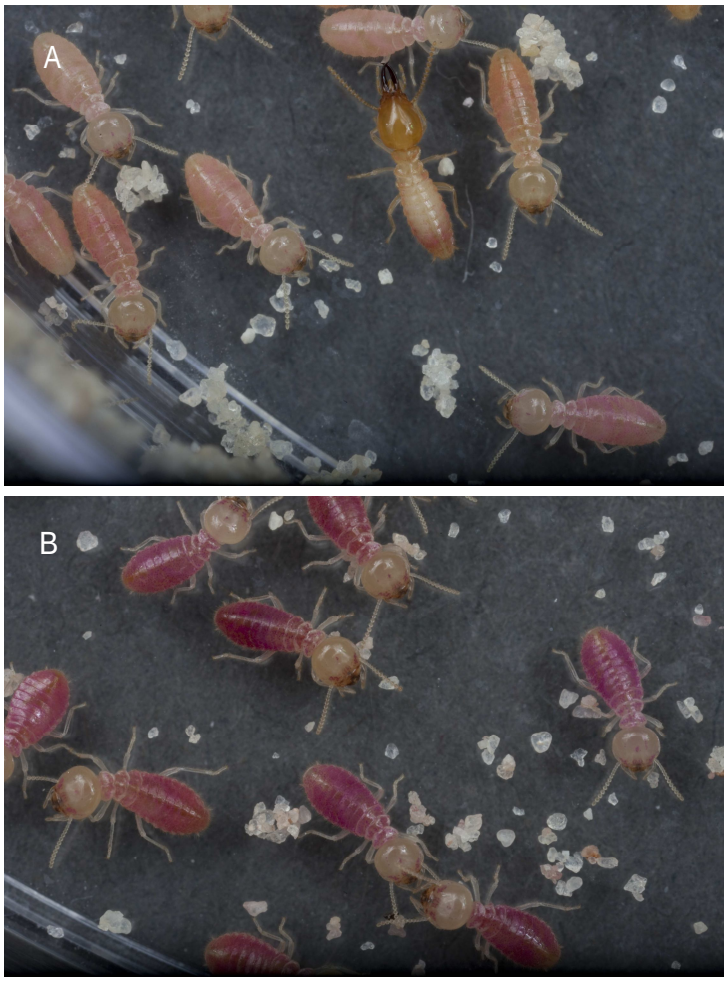

Figure 33. Termites fed filter paper dyed with Neutral Red for 7 days acquired a pink hue (A), while those fed for the same length of time on agar dyed with Neutral Red exhibited much brighter coloration (B).

However, mortality for agar-fed termites was higher than those fed on filter paper. Even so, our group still employs the dyed agar method for delineating termite colonies because this method requires less time and because simple colony delineation can still be accomplished with moderate termite mortality. We plan to reevaluate the methods of this protocol and may rerun it during the summer of 2014.

Extension, Technology Transfer and Education

Insect Identification

The Tawny crazy ant, *Nylanderia fulva*, (Fig. 34) has gradually expanded its range, primarily thought to be via unintentional human assistance and natural dispersion, since first reported in Houston, Texas (Harris County) in 2002. In February 2010, New Orleans Mosquito, Termite, and Rodent Control (NOMTRC) employees documented the invasive species in Port Allen, LA (West Baton Rouge Parish). In 2013, ant specimens collected by NOMTRC employees in Orleans parish and submitted by pest control professionals from St. Tammany and Jefferson parish to NOMTRC, were positively identified as Tawny crazy ant. Species identification was confirmed by Texas A&M Urban entomologist, Dr. Roger Gold. Current known Louisiana distribution of Tawny crazy ant includes the three previously mentioned parishes, as well as, Calcasieu, Ascension, and Terrebonne parishes.

Tawny crazy ants do not sting, but can become a serious nuisance to homeowners and business owners because of their ability to form extremely large colonies sometimes referred to as a supercolony. The ants are approximately 1/8 inch long, reddish brown in coloration, and form loose foraging trails often times (Fig. 35), but not always, following structural guidelines. Our employees continue to monitor pest ant species within the city to help monitor for these newly invading insects.

Figure 34. The Tawny crazy ant is approximately 1/8th of an inch and does not sting.

Figure 35. Tawny crazy ants can trail long distances.

Refereed Journal Publications

Lenz, M., B. Kard , J. W. Creffield, T. A. Evans, K. S. Brown, E. D. Freytag, J.-H. Zhong, C.-Y. Lee, B.-H. Yeoh, T. Yoshimura, K. Tsunoda, C. Vongkaluang, Y. Sornnuwat, T. A. Roland, Sr., and M. Pommier De Santi. 2013. Ability of field populations of *Coptotermes* spp., *Reticulitermes flavipes*, and *Mastotermes darwiniensis* (Isoptera: Rhinotermitidae; Mastotermitidae) to damage plastic cable sheathings. Journal of Economic Entomology, 106(3):1395-1403.

Extension Bulletin

Freeman, A., J. S. Brown, and C. Riegel, 2013. Pest proofing: best rodent control for your home- guidelines for property owners and tenants. The City of New Orleans Mosquito and Termite Control Board extension bulletin Doc. NOMTCB 1-2013.

Trade Journal Publication

Martin, G., C. Harrison, M. Nguyen, S. Sackett, G. Thompson, M. K. Carroll, and C. Riegel. The New Orleans Experience: Using *Gambusia* to Control Mosquito Larvae in Abandoned Swimming Pools. Wing Beats, Vol 23, No 1; 27-35.

Presentations

Riegel, C. January 17. Vector pest management. Purdue University Centennial Seminar Series. Purdue University,, West Lafayette, IN.

Madere, T. January 23. How to perform a kitchen inspection. NOMTCB Seminar Series, New Orleans, LA.

Madere, T. February 7. Rodent biology and Control. Louisiana Department of Agriculture and Forestry 7B/D Recertification. Metairie, LA.

Madere, T. February 7. Cockroach biology and control. Louisiana Department of Agriculture and Forestry 7B/D Recertification. Metairie, LA.

Riegel, C. February 7. School IPM, best practices. Louisiana Department of Agriculture and Forestry 7B/D Recertification. Metairie, LA.

Cottone, C. February 26. Wood-destroying organisms: beetles, ants, and fungi. NOMTCB & GNOPCA Termite Academy. New Orleans, LA.

Freytag, E. February 26. Inspection and Inspection Tools. NOMTCB & GNOPCA Termite Academy. New Orleans, LA.

Freytag, E. February 26. Demonstration of inspection tools. NOMTCB & GNOPCA Termite Academy. New Orleans, LA.

Guidry, E. February 26. Introduction to entomology. NOMTCB & GNOPCA Termite Academy. New Orleans, LA.

Freytag, E. February 27. Tree treatments. NOMTCB & GNOPCA Termite Academy. New Orleans, LA.

Madere, T. February 27. General pest control. NOMTCB & GNOPCA Termite Academy. New Orleans, LA.

Madere, T. February 27. Calibration, calculations, and site map. NOMTCB & GNOPCA Termite Academy. New Orleans, LA.

Madere, T. February 27. Liquid treatments. NOMTCB & GNOPCA Termite Academy. New Orleans, LA.

Madere, T. February 27. Post construction treatment NOMTCB & GNOPCA Termite Academy. New Orleans, LA.

Cottone, C. February 28. Termite foraging. NOMTCB & GNOPCA Termite Academy. New Orleans, LA.

Riegel, C. March 4. Mosquito control. National Environmental Health Association's Biology and Control of insects and rodents. Columbia, SC.

Freytag, E. March 21. Bed bugs in multi unit dwellings. Greater New Orleans Pest Control Association recertification. New Orleans, LA.

Madere, T. March 21. Rodent biology and control. Greater New Orleans Pest Control Association recertification. New Orleans, LA.

Madere, T. March 21. Cockroach biology and control. Greater New Orleans Pest Control Association recertification. New Orleans, LA.

Riegel, C. March 23. Larvicides. Louisiana Mosquito Control Association and NOMTCB Mosquito Academy. New Orleans, LA.

Riegel, C. March 23, 2013. The label. Louisiana Mosquito Control Association and NOMTCB Mosquito Academy. New Orleans, LA.

Freytag, Ed. March 26. Termite biology and control. Recertification class sponsored by the Greater New Orleans Pest Control Association. New Orleans, LA.

Madere, T. March 26. Rodent biology and control. Recertification class sponsored by the Greater New Orleans Pest Control Association. New Orleans, LA.

Madere, T. March 26. Cockroach biology and control. Recertification class sponsored by the Greater New Orleans Pest Control Association. New Orleans, LA.

Cottone, C. April 17. Survival and behavior of Formosan subterranean termites after prolonged flooding. NOMTCB Seminar Series. New Orleans, LA.

Freytag, E. April 30. Challenges and frustrations photographing insects" American Wood Protection Association 109th Annual Meeting. Honolulu, HI.

Cottone, C., and E. Freytag. May 1. Termite Research after a natural disaster. University of Hawaii. Honolulu, HI.

Riegel, C., May 1. Rodent biology and control. Bioterrorism Workshop. New Orleans, LA.

Madere, T., May 13. Rodent biology and control. LDAF recertification at House Call Pest Control. Harahan, LA.

Madere, T., May 13. General pest control. LDAF recertification at House Call Pest Control. Harahan, LA.

Madere, T., May 13. Termite treatment methods. LDAF recertification at House Call Pest Control. Harahan, LA.

Madere, T., May 18. Nuisance wildlife issues of New Orleans. New Orleans, LA.

Riegel, C., May 23. Mosquito control. NEHA and CDC Biology and control of Insects and Rodents. Boston, MA.

Freytag, E. June 12. Termite biology and control. East Bank Regional library, Metairie, LA.

Madere, T., June 18. Rodent biology and control. LDAF recertification at NOMTCB. New Orleans, LA.

Madere, T., June 18. General pest control. LDAF recertification at NOMTCB. New Orleans, LA.

Riegel, C., June 25. School IPM– best practices. Write your IPM plan workshop. New Orleans, LA.

Riegel, C. August 7. Mosquito control. National Environmental Health Association's Biology and Control of insects and rodents. Anchorage, AK.

Cottone, C. October 8. Insect anatomy and biology. NOMTCB & GNOPCA Pest Control Academy. New Orleans, LA.

Cottone, C. October 8. Flies. NOMTCB & GNOPCA Pest Control Academy. New Orleans, LA.

Guidry, E. October 8. Stinging insects. NOMTCB & GNOPCA Pest Control Academy. New Orleans, LA.

Cottone, C. October 9. Wood-destroying beetles. NOMTCB & GNOPCA Pest Control Academy. New Orleans, LA.

Riegel, C. October 9. School IPM. NOMTCB & GNOPCA Pest Control Academy. New Orleans, LA.

Freytag, E. October 9. Termite biology and control. NOMTCB & GNOPCA Pest Control Academy. New Orleans, LA.

Freytag, Ed. October 9. Spiders. NOMTCB & GNOPCA Pest Control Academy. New Orleans, LA.

Riegel, C. October 9. School IPM. NOMTCB & GNOPCA Pest Control Academy. New Orleans, LA.

Madere, T. October 10. School IPM. The Annual School Maintenance professional's annual meeting. Marksville, LA.

Cottone, C. October 31. Using the Sentricon® System against Formosan subterranean termites in New Orleans. Dow AgroSciences meeting. New Orleans, LA.

Riegel, C. October 31. Formosan subterranean termites and above-ground stations**.** Dow AgroSciences meeting. New Orleans, LA.

C. Cottone. November 13. Evaluation of dyed agar vs. dyed filter paper for marking Formosan subterranean termites. Entomological Society of America annual meeting. Austin, TX.

Riegel, C. November 13. Verifiable IPM in New Orleans. Entomological Society of America annual meeting. Austin, TX.

Riegel, C. November 13. Mosquito control response after hurricane Katrina. Entomological Society of America annual meeting. Austin, TX

Riegel, C. November 15. Verifiable IPM in New Orleans, Presentation to the Georgia Pest Control Association, New Orleans, LA.

Michaels, S. R., A. Ruiz, S. B. Jameson, J.K. Davis, C. Riegel, and D. Wesson. December 4. Comparison of adult trapping methods for *Aedes* in New Orleans. 56th Annual Louisiana Mosquito Control Association Meeting. Marksville, LA.

Michals, S. R., and C. Riegel. December 4. Stormwater mitigation, urban development, the MS4, and mosquito control. 56th Annual Louisiana Mosquito Control Association Meeting. Marksville, LA.

Nguyen, M., C. Harrison, P. King, C. Riegel, and S. R. Michaels. December 4. Optimizing gravid trap infusions for *Culex quinquefasciatus* collection. 56th Annual Louisiana Mosquito Control Association Meeting. Marksville, LA.

Riegel, C., and S. R. Michaels. December 5. First Annual City of New Orleans and Louisiana Mosquito Control Association Mosquito Academy. 56th Annual Louisiana Mosquito Control Association Meeting. Marksville, LA.

Wesson, D., A. C. Morrison, V. A. Paz Soldan, R. M. Moudy, K. Long, L. Ponnusamy, J. Davis, H. Astete, E. S. Halsey, Coby Schal, T. W. Scott, and C. S. Apperson. December 5. Validation of an attractive lethal ovitrap (ALOT) for dengue control in Iquitos, Peru. 56th Annual Louisiana Mosquito Control Association Meeting. Marksville, LA.

Riegel, C. December 5. New Orleans Mosquito and Termite Control Board: a multifaceted approach. First Annual City of New Orleans and Louisiana Mosquito Control Association Mosquito Academy. 56th Annual Louisiana Mosquito Control Association Meeting. Marksville, LA.

Madere, T. December 12. School IPM. New Orleans Garden Club. New Orleans, LA.

Freytag, Ed. December 19. Bed bug biology. Dr. Dawn Wesson's public health class from Tulane. New Orleans, LA.

Posters

Guidry, E., C. Cottone, and C. Riegel. November 11, 2013. "Selective Treatment of Formosan Subterranean Termite Colonies in a Highly Urbanized Area of New Orleans." Entomological Society of America annual meeting, Austin, TX.

Meetings

Freytag, Ed. Attended monthly meetings at the University of New Orleans IACUC (Institutional Animal Care and Use Committee). University of New Orleans, New Orleans, LA.

Sarah Michaels. Attended monthly meetings in preparation for the Municipal Separate Storm Sewer System (MS4) Audit by the Environmental Protection Agency (EPA).

Sarah Michaels. May 30. Louisiana Mosquito Control Association Director's Meetings. Baton Rouge, LA.

Sarah Michaels and Claudia Riegel. August 20. Louisiana Mosquito Control Association Director's Meetings. New Iberia, LA.

Sarah Michaels. March 21, 2013. Bee Keeper and Mosquito Control Groups Meeting with Louisiana Department of Agriculture and Forestry. Baton Rouge, LA.

Sarah Michaels, Princeton King, Cynthia Harrison, Mieu Nguyen, Lawrence Eloie, Claudia Riegel, and Michael Carroll. December 3-5. Louisiana Mosquito Control Association Annual Meeting. Marksville, LA.

Community Outreach and Education

Cynthia Harrison and Lawrence Eloie taught students at local schools and summer camps about mosquito biology an natural predators. Cynthia is also mentoring Ben Franklin High School students and assisting them with the development of testable hypothesis for science fair projects.

Cynthia Harrison & Princeton King. Spring Garden Show at New Orleans City Park. 1st place award, Government Agency Division.

Media

C. Riegel. Interview with National Public Radio on October 9 and November 1. The program is aired on All Things Considered on **November 11th.**