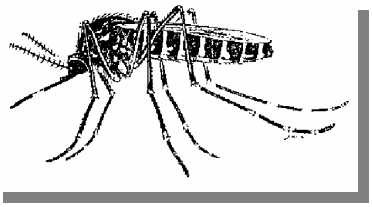
NEW ORLEANS MOSQUITO & TERMITE CONTROL BOARD

AUGUST-DECEMBER 2005



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HURRICANE KATRINA SPECIAL REPORT

The following report informally covers the period from August 29, 2005 through December 31, 2005--Hurricane Katrina in New Orleans and her aftermath.

This hurricane was the worst natural disaster in the recorded history of our country. Approximately 80% of the city was damaged or destroyed by floodwater or wind. This resulted in approximately 3,000 City government employees lost due to layoffs, resignations and even death from the storm's effects. The NOMTCB lost six staff members who chose not to return. The city's population four months post-Katrina is only c.30% of that before the storm. The future of rebuilding and repopulation will present quite a challenge.

A tidal surge of 10-20' swept over (but mostly through) the NOMTCB's Lakefront buildings; the aircraft hangar had substantial damage to equipment and tools, exterior walls and hangar doors, as well as the Grumman Ag-Cat airplane. The administration building had windows and the metal storm panels blown out, 99% of the contents were shreaded and soaked, and the roof was blown off by the force of Katrina's winds. The building may be damaged beyond repair.

All lakefront classrooms, office space and laboratory areas were destroyed by the wind-blown tidal surge. The central shop building likely will not be renovated. Twenty-three vehicles were either totaled by floodwaters or went missing.

Rodent Control's building on Jourdan Road was completely flooded and the interior destroyed, as it was adjacent to a major breach in the Industrial Canal levee. The surrounding neighborhood was the most heavily devastated in New Orleans (the Lower 9th Ward). World- renowned musician Fats Domino's home was less than a dozen blocks from this building and was also completely flooded and heavily damaged.

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Our 2006 operating budget was pared, especially supplies, materials and equipment. We were most fortunate to have saved our seven spray trucks, our forklifts, backhoes, bulldozer, dump truck and an additional 13 vehicles by moving them before the storm. Additionally, we were able to salvage, under extremely adverse conditions, all of our mosquito insecticide inventory.

With the assistance of Dr. Janet McAllister of CDC and Major Mark Breidenbaugh of the Air Force Aerial Spray Flight based at Eglin Air Force Base, we were able to begin mosquito and fly control operations two weeks post Katrina. Rodent control operations began in the French Quarter three weeks post Katrina, with the augmentation of our staff with volunteers from our friends in the pest control industry.

Grants and contracts are even more important to the continued operation of our program and in general the funding for these programs has actually expanded.

For the time being, the NOMTCB is fortunate to have temporary office space in the CAO office at City Hall and a trailer at the Levee Board Facility on Franklin Avenue. We continue to maintain and clean up the Lakefront facility and hangar for deliveries and storage. Rodent Control is presently working from the Oscar Medrano Health Department building on North Rampart Street.

The dedication and hard work of our staff is directly responsible for the survival, restoration and continued expansion of the City of New Orleans Mosquito and Termite Control Board.

Edgar S. Bordes, Director

MOSQUITO FIELD OPERATIONS
Steve Sackett

THE STORM

On August 27, 2005, as hurricane Katrina approached New Orleans, personnel hurried to move equipment to higher ground and to secure our facilities. Fog trucks, heavy equipment, and other vehicles were transported to the N.O. Levee Board warehouse. Hurricane shutters were bolted over the plate glass windows of the administration building, and portable equipment and insecticides were elevated as high as possible. Our spray plane was initially moved to the Lafayette airport, but later moved to Jackson, Mississippi, as hurricane Rita came into southwest Louisiana. Most employees evacuated and scattered across the country. Katrina hit August 29, destroying most of the buildings and equipment at our facility. Multiple levee breaks occurred across the city, causing massive flooding, death, and destruction. On a positive note, our airplane and fog trucks survived, and all of our insecticide drums were recovered.

MOSQUITO SURVEILLANCE/TREATMENT

Following the storm, most mosquito populations were devastated as flood waters were pumped out and larvae were displaced. The exceptions were the container-breeding species, such as *Aedes aegypti* and *Ae. albopictus*, which were located in areas of the city that did not flood. In these areas, container indeces were high in the unkept yards of our evacuated citizens and the mosquito populations bloomed. The biggest insect problem post-Katrina though was actually the millions of flies that were feeding on the rotting food from freezers and refrigerators left in homes, businesses, or deposited on the streets. The CDC initiated three city-wide aerial treatments (midday) with Dibrom for fly control, and ground ULV spot treatments with permethrin were utilized when necessary. Ground ULV mosquito treatments were also conducted in the populated sections of the city during October as the numbers of *Culex quinquefasciatus* began to swell.

As electricity slowly made its way back into the city, we began to run New Jersey light traps twice a week in the populated sections and utilized gravid traps (for quink sampling) at the same sites. Mosquito captures at most sites have been minimal. Abandoned swimming pools have become major breeding sites throughout the city, and one of our top priorities is to locate and treat as many of these pools as possible. Over 500 pools have been inspected to date since the storm, with approximately 25 percent of these producing mosquitoes. Vectolex WDG is being utilized for larviciding in hopes of getting residual effects from the bacteria. Larval samples were examined from many of the pools, with *Cx. salinarius* and *Cx. quinquefasciatus* the predominant species. Several pools in the lakefront area were found to contain a mosquito species that has not been detected in New Orleans for many years. *Culex tarsalis*, the primary vector of WNV in the western states, was collected from these pools and brought to the lab for identification. Samples were also sent to the University of Arkansas for verification. We intend to monitor the distribution of this species closely and hope that they do not add to the potential for WNV transmission in our area.

BIOLOGICAL CONTROL
Greg Thompson

The hurricanes brought all of our field and lab research to a close. However, we hope to be returning to our interrupted work by spring.

The Bio-Lab staff has been conducting a city wide survey of swimming pools in an effort to limit mosquito breeding. The storms drove away our citizens and shut off pool pumps leaving each pool a potential breeding site for many thousands of mosquitoes. We are treating all pools found to be breeding with Vectolex.

NOM&TCB had a limited list of about 30 pools scattered across the city that were periodically monitored for breeding activity. We have now expanded this list to more than 500 but there are probably at least 500 more unvisited pools in New Orleans.

The neighborhoods initially targeted for visits were those areas affected by the flood that also bordered neighborhoods where residents were returning. The purpose was to control breeding in pools close to where people were living. Our efforts are now being expanded to those areas that are currently still uninhabited but that may soon again have full-time residents.

There are two findings from our pool survey that are worth mentioning.

The first finding is of great concern. *Culex tarsalis* larvae have been collected in many of the pools. This is the first report of this major vector of West Nile virus (WNV) in our area.

The second finding is how quickly many flooded pools converted to active swamps. The flood water brought duckweed, fish and other aquatic flora and fauna throughout much of the city. Pools in the areas that received the greatest flooding developed the appearance of long-time ponds within a matter of weeks. Like all healthy swamps, these pools were not breeding sites for mosquitoes.

ENCEPHALITIS SURVEILLANCE
Greg Thompson

The hurricanes ended the Bio-Lab's encephalitis surveillance program for 2005, but we will be up and running by May of 2006.

We sent 217 blood serums to be tested for arbovirus antibodies. These serums that were drawn from our sentinel chickens during the spring and summer before the flood arrived.

There were 14 samples that tested positive (approximately 6%) among the blood serums submitted. The positives tested demonstrated that two arboviruses were present in New Orleans. Eleven of the samples tested positive for West Nile virus (WNV) and three tested positive for Saint Louis encephalitis (SLE).

We also processed and sent to be tested 71 mosquito pools. Only one pool tested positive for WNV.

SOURCE REDUCTION
Brooks Hartman

On Saturday, August 27, 2005, Source Reduction and other Mosquito Control personnel were summoned to our Lakefront facility to prepare for Hurricane Katrina.

Our backhoe, dump truck, crawler dozer, forklift and all spray trucks were transported to the Orleans Levee District storage building on Franklin Avenue and Lakeshore Drive where they miraculously survived.

Upon our return to New Orleans some weeks after Hurricane Katrina, it was learned that some of our equipment had been procured for use by the military. A special request for the return of our equipment was honored a short time later.

Needless to say, the devastation to the NOMTCB facility and equipment was monumental. The tremendous task of cleanup and recovery began. Cleanup on a smaller scale is still ongoing at this time.

We were fortunate to have obtained a temporary trailer and have it set up at the Levee Board Facility on Franklin Avenue. Source Reduction personnel has been involved in preparing, securing, and assembling office furniture for the trailer for use by the staff.

We will be inspecting source reduction areas as time permits to insure they will be operational during the upcoming mosquito season.

Source Reduction staff will continue to assist the plant maintenance supervisor with in-house projects.

AVIATION
Joseph Riedl

Due to the impending threat of hurricane Katrina, I flew the twin-engine Islander to Alexandria, Louisiana and took refuge in Lafayette, Louisiana. After a few days, I moved the plane to Lafayette. When the threat of Rita was eminent, once again I moved the airplane—this time to Jackson, Mississippi. There it was housed in a hangar until it was safe to return it to Lakefront Airport in New Orleans.

Since the storms, we've been very busy, initially, operating out of Baton Rouge and going to and from New Orleans. We retrieved records, tools and equipment from the office, hangar and the shops. Care was taken to salvage what we could. Damaged materials were cleaned out of the buildings and surrounding areas. This process is still ongoing.

Preparations are being made for the upcoming spray season. Public notice has been given for our intentions to aerial spray for mosquitoes over Orleans Parish in 2006. A plan of operation for the Federal Aviation Administration is completed. Insurance forms are filled out. The annual inspection for the airplane is under way.

VECTOR RODENT CONTROL
Joseph Yurt

Following Hurricane Katrina, rodent control activities restarted on September 26 when four of our eleven employees returned to New Orleans. The initial thrust was to recover pesticides and supplies from the destroyed headquarters building on Jourdan Avenue.

Rodent abatement began on September 28 and expanded as additional employees returned.

In the last quarter of 2006, the program surveyed 4611 properties and responded to 32 complaints. A total of 603 burrows and 3153 sewers were baited using 9282 bait blocks and 1177 packs of pelletized rodent baits.

TERMITE ENTOMOLOGY
ED FREYTAG

Before hurricane Katrina arrived, I finished reviewing a manuscript for the Journal of the American Mosquito Control Association, inspected Fire station 7 for termite activity with Chief Beba, inspected in-ground stations at Lake Pontchartrain park, inspected in-ground stations at Spanish Fort Blvd., inspected a building in Lakeview with Gary Wehlen of E&G Pest Control and Matt Messenger of Dow AgroScience, inspected the Audubon Zoo in-ground stations with Chip Anderson of Bayer, inspected trees with the Videoprobe in City Park with Maureen Wright of USDA, and finished a report for a laboratory test of treated wood consumption with Formosan termites. We also had the conference room remodeled and a new electronic projector and audio system installed in August. We had one seminar presented by the Louisiana Department of Agriculture before the disaster struck our facility.

I evacuated from the Hyatt hotel in downtown New Orleans to Houston the second day after Katrina hit, after it became apparent that the flooding downtown was going to shut down all means of transportation. I did not return to New Orleans until September 12 to initiate salvage operations. We had to get a special letter and pass to allow clearance through the state trooper check points.

Most of September and October was dedicated to salvaging paper files, books, cars and trucks, chemical drums, inspection equipment, computers, and whatever equipment that was damaged by the storm surge. I took pictures of the damage to all of our facilities, including Rodent Control, to have a record of the destruction and the material loss. A lot of equipment was missing due to the commandeering by the National Guard and Reservist from local and out of state troops and it was problematic to recover it. Following the recovery and cleanup, we spent a great deal of time taking inventory and pricing the damaged equipment to submit to FEMA for replacement.

It has been a great challenge to continue working under extremely emotional and stressful conditions. Most of us experienced flooding in our homes; anywhere from two inches to above the roofline, with partial to complete loss of personal property such as automobiles, furniture, clothing, etc. The facilities at the Lakefront airport was literally destroyed by a storm surge that was probably 10-15 feet high. We did not have an office or place to stay and had to commute from as far away as Houston to come to work. We were also relying on the National Guard and Red Cross for water and food in the form of MRE's (meals ready to eat).

Once the two Carnival cruise ships docked at the Convention Center and rooms were made available for City workers, we at least had a place to sleep, eat and shower.

TERMITE RESEARCH
Claudia Riegel

The termite group at the City of New Orleans worked hard in 2005. Their hard work has allowed our department to be highly successful and productive. With their effort, we have achieved great success at treating subterranean termites in city owned buildings and green spaces in Orleans Parish. The members of the team include: Barry Yokum, Ed Freytag, Aaron Mullins, Carrie B. Owens, Perry Ponseti, Gus Ramirez, and Barry Lyons. I appreciate their hard work and dedication.

City Properties

A City-wide survey was conducted to determine the subterranean termite damage and infestation at City buildings. The survey was sent to all departments and many were returned identifying buildings with termite damage and active termite infestations. Many of these buildings were included in operational research trials at no cost to the City of New Orleans for the termite treatments. A list of the buildings was compiled and NOMTCB inspectors will inspect buildings that require attention. Properties included in studies are NOPD canine unit, NOPD office building next to the stables, the public warehouse, the Youth Center, Public Works properties, Stallings Playground, Kirsch Rooney Stadium, and several more.

City properties and historic trees at City Park that have a termite treatment managed by New Orleans Mosquito and Termite Control Board had few to no problems during this year. The stations around the buildings are checked every month. Full termite inspections were done at the Cabildo, Presbytere, Pharmacy Museum, City Hall, Civil Court Building, Gallier Hall, Nix Library, Upper Pontalba Apartments, City Hall, Civil Court building, and others. There were no signs of active termite infestations in all the inspected buildings except the Upper Pontalba Apartments and Gallier Hall. Many of the sites have had termite activity in bait stations outside the structure. Formosan termites were found in bamboo in a courtyard of the Upper Pontalba Apartments and a Formosan subterranean termite infestation was found in the attic of Gallier Hall during a yearly interior inspection. These infestations were treated. The operational research conducted at the Nix library on Carrollton Avenue, City Hall, and Civil Court building was completed and New Orleans Mosquito and Termite Control Board will continue to service the property as a commercial sites.

The Downtown Development District project on the renovation of Canal Street began in March. Canal street will be remodeled from the Mississippi River to the Carrollton overpass. New Orleans Mosquito and Termite Control Board will provide subterranean termite treatment for the 150 twenty-five foot palm trees that will be planted. Concrete core covers were installed and bait stations were installed in planters. Unfortunately, hurricane Katrina damaged the planters and bait stations so all the bait stations will be reinstalled in 2006.

Operation Full Stop

New Orleans Mosquito and Termite Control Board has continued to inspect properties in the French Quarter for Operation FullStop. All reports were sent to the USDA-ARS. Inspections of structures in the French Quarter were scheduled throughout the year. The sizes of the buildings varied from a hotel with several hundred rooms to smaller two, three, and four story structures. New Orleans Mosquito and Termite Control Board was involved with all aspects of the inspection from scheduling with the property owners and the pest control professional managing the termite contract to doing the inspections and writing the reports that are submitted to the USDA. These inspections were rigorous and involved the use of the infrared camera and the PestFinder. Total access of the property was needed and all areas of the property were inspected visually and with the infrared camera. If an area was suspect to have termite activity, the area was inspected with all the tools currently available. If termites were found, termites were collected and sent to the USDA with a final report of the inspection. Inspections were stopped after hurricane Katrina because our termite detection tools were destroyed by the flood.

New Orleans Mosquito and Termite Control Board participated in the Operation Full Stop technical meeting in March 2005. Data regarding of Decatur Street railroad project was presented. A project was initiated in January 2002 with NOMTCB and Dow AgroSciences LLC to access and then reduce the termite pressure along the railroad tracks and the adjacent levee planters

along the French Quarter between the Mississippi river and the flood walls. This was an area that never received any kind of termite treatment and the evidence of Formosan subterranean termites (FST) and damage was evident. Because of the high termite pressure, high precipitation, and lack of treatment in this area, the creosote treated railroad ties were highly damaged. Four hundred and eighty Sentricon®Stations (®Registered trademark of Dow AgroSciences LLC, Indianapolis, IN) were installed along the mile of track and on the levee around the wooden planters. Foraging territories of detectable colonies were determined using a mark-recapture technique. Colony identity, social structure, and colony relatedness is currently being determined by microsatellite genotyping. Termite bait using 0.5% noviflumuron began at the railroad tracks in September 2003 and baiting at the planters began in February 2004. This research is in progress and it is providing valuable information about the characteristics of termite colonies along the railroad track. The FST aggressively consumed the bait and the population density declined and was eliminated. The original colonies were eliminated and reinvading colonies have been detected and termite bait using 0.5% noviflumuron was again introduced. Detectable termites in Sentricon® stations are collected from each active bait station for colony identification at Louisiana State University. This project has made a significant contribution in 2005 termite population along the riverfront railroad and it is aiding in the ongoing efforts of termite management in the French Quarter. The USDA-ARS has seen a 90% reduction in 2005 due to NOMTCB's efforts along the railroad and levee.

Operational Research

New Orleans Mosquito and Termite Control Board is aggressively participating or exploring the possibilities of operational research projects with several corporations. Projects include the evaluation include subterranean termites with liquid termiticides and baiting systems. The benefit of participating in these projects is that NOMTCB stays on the cutting edge of termite treatment technologies. Since the this division is recognized throughout the world as an expert in FST biology, management, and treatment many manufactures and pest control professionals request our time to participate in projects or provide information on termites. The benefit to the city of New Orleans is that many city buildings with termite infestations are treated successfully without a fee for the treatment. In 2005, many city properties with termite infestations were included in operational research trials.

Many studies have been conducted in the field and in the laboratory to evaluate new a new bait matrix, evaluate components baiting systems, in addition to other projects. We are currently cooperating with Dr. Claudia Husseneder at two research sites to evaluate an active ingredient in a newly formulated bait matrix. We are also cooperating with Dr. Husseneder on several projects from termites in the French Quarter and throughout flooded regions of Orleans parish.

Two provisional positions (Entomologist I and Entomologist II) were created that were funded by the USDA-ARS Operation FullStop grant. These positions are two-year appointments. Carrie Owens from Arkansas State University filled the Entomologist I position. She is evaluating the genetic diversity of Formosan subterranean termites at the French Market and she is evaluating the effects of flooding on FST. A postdoctoral research position (Entomologist II) was advertised at New Orleans Mosquito and Termite Control Board. The objective is to evaluate, develop, and validate best practices for management, control, and detection of termites with emphasis on Formosan subterranean termites (FST). Dr. Kenneth S. Brown was hired and is expected to work with program managers and other scientists to develop and employ area-wide strategies for the suppression of and control of FST.

Extension and Technology Transfer

We offer information to the public about termites and termite control. We received many calls from the community to obtain information about termites and other insects. The majority of the calls were received in April and May which is the swarming season of Formosan subterranean termites; however, the calls remain steady throughout the year.

Several presentations were made in 2005 at the Louisiana pest control technician recertification meetings in Harahan, Metairie, and Lafayette. Topics included: termite biology and control, area-wide management of termites, ants, and West Nile virus. Presentations were also made at the Georgia pest control annual conference and at the Purdue pest control workshop, and others. Data about the Riverfront Railroad was presented at the annual meeting in Fort Lauderdale.

Hurricane Katrina

The weeks following hurricane Katrina were spent locating our employees, pulling important files from the NOMTCB administration building, locating our vehicles, and making plans to assess the pest levels (rodents, mosquitoes, flies, and termites). The top priority immediately following the hurricane was to have a team at our Lakefront facility recovering salvageable items such as chemicals, equipment, data, and files and securing our facilities. In addition, locating all our vehicles was a priority. Many vehicles were damaged by water or have been commandeered. Many attempts were made to recover vehicles that were commandeered by the National Guard and Army to return our vehicles, especially the fog trucks. Several vehicles were lost but many were recovered. Another priority was to conduct surveys and providing treatment for flies, mosquitoes, and rodents. Surveys were conducted each week in order to have the data necessary to make decision on treatments. The surveys will continue in 2006.

NOMTCB is eligible for FEMA reimbursement. We have working with FEMA and the State of Louisiana to complete the project worksheets (PW). The NOMTCB employees have worked together to complete inventories of items in the buildings, vehicles lost, and maintaining good records on duties performed. The completion of the PWs are critical for an infusion of money to our department in order to replace some of the items that were lost because of the hurricane. The process of completing the PW will last well into 2006.

USDA OPERATION FULL STOP
CARRIE B. OWENS

TRAINING: Since arriving at New Orleans Mosquito and Termite control Board, I have spent time in the field learning the termite and mosquito operations. In addition, I have expanded my knowledge of molecular techniques. Dr. Claudia Husseneder (Louisiana State University) is a cooperator and is an expert in microsatellite genotyping on termites. I have spent time in Dr. Husseneder's laboratory learning her protocols for DNA extraction, PCR, and analyzing gels.

GENETICS LABORATORY: The first project I will be working on at New Orleans Mosquito and Termite Control Board is to evaluate the effects of flooding on colonies of *Coptotermes formosanus*. New Orleans has never experienced a natural disaster such as Hurricane Katrina and it is unknown how the severe flooding that occurred has affected Formosan subterranean termite colonies. Microsatellite genotyping on *Coptotermes formosanus* samples collected from areas pre and post-flooding will be used to determine changes in colony structure after the flooding. Areas evaluated will include the French Quarter, which did not flood, the French Market, which had little flooding, and City Park, which was flooded with 3 to 4 feet of brackish water. Many samples collected before Hurricane Katrina were recovered, and post-Hurricane samples have recently been collected. The study will be conducted at the NOMTCB Biolab which is in the process of being prepared to conduct genetic studies and at Dr. Claudia Husseneder's laboratory at Louisiana State University.

NOMTCB now has the capability to conduct genetic studies. I have also been setting up a genetics laboratory at our Biolab facility in New Orleans East. DNA extractions, PCR, and running agarose gels can be conducted. This process has involved pricing equipment, establishing new vendors for the city, and obtaining approval for purchasing some of the equipment. About 80% of lab equipment needed to conduct genetic studies has been purchased at this time.

HURRICANE KATRINA ACTIVITIES:
Fly Surveillance: Three weeks after the hurricane, we started fly surveillance in areas of New Orleans that were being repopulated. These areas included Algiers, the French Quarter, and Uptown. There were large piles of garbage in these areas that had attracted large populations of filth flies, such as bottle flies and house flies. We monitored these fly populations using sticky traps, and sprayed selected areas using fogging trucks and hand foggers. A C-130 spray plane was also commissioned by the Centers for Disease Control to fly over the City to manage these fly populations. Once trash collection commenced in New Orleans, the fly populations greatly decreased.

SCIENTIFIC MEETINGS:
Entomological Society of America Meeting: From December 15 through December 18, I attended the national Entomological Society of America meeting in Ft. Lauderdale, Florida. I presented a poster entitled, "Population Genetics of *Aedes vexans* from New Orleans." The research presented here was conducted in the spring of 2005.

BUG WORLD
GREG THOMPSON

Here are some poems written by Kristi Betts in Haiku form.

Sir praying mantis
Goes to his lady knowing
He will lose his head!

Virginal aphid
With nary a male in sight,
Mother's generations!

Snowy white egret
Searches muddy waters in
Yellow rubber gloves!

Three shiny leaflets
Smile their poisoned message,
"Remember Me? Don't touch!"