



**MOSQUITO CONTROL SERVICES, LLC**

**JEFFERSON PARISH  
ANNUAL REPORT  
2015**

The following is a report to the Jefferson Parish Council on its mosquito control program for the period of January through December, 2015. A detailed report of the yearly activities follows this narrative.

A more normal winter combined with rather mild climatic conditions in the months following, provided for a moderate spring insect populations in 2015. With the exception of one springtime surge, expected population densities and control responses continued late into the summer months. Heavy rainfall and high tidal movement resulting from the remnants of Hurricane Patricia combined to flood many bordering salt marsh and woodland sites in the fall. These events (accompanied by unseasonably warm temperatures) re-activated a great number of summertime breeding sites and subsequently produced higher levels of adult mosquitoes in October and early November. Although mosquito populations would normally sharply decline during this time of year, mosquito numbers sharply rose and even surpassed those population spikes observed during the summer months. As a response, each aspect of our abatement plan was elevated to best affect the unseasonable bloom in the pest mosquito population. Weather conditions forced crews to slightly adjust control techniques and the timing of applications for optimal control. Many areas were addressed with treatments during multiple intervals (pre-dawn, late afternoon, and evening) to further expedite the reduction of these very pestiferous insects. For the first time in more than five years, a significant mosquito population was present in December and required the continuation of elevated ground operations throughout the month.

Except for a couple of weeks following Hurricane Patricia, we were able to maintain mosquito populations at acceptable levels throughout most of the year. Hatches of mosquitoes were normally all but suppressed after a few days. There were periods when adult mosquitoes became a significant problem but through control efforts these populations were reduced in as timely a manner as possible, albeit through considerable effort as outlined in this report:

## **LARVICIDING**

Although this aspect of the mosquito control program may not be noticed by the bulk of the public, larviciding is one of the most critical parts of any mosquito control program. It is simply defined as the use of agents to control the larval or immature mosquitoes. This year, most of these larviciding treatments were “natural” with little or no effect on non-target species. Inspectors used several types of bacteria that when sprayed into water are toxic to immature mosquitoes and, for practical purposes, harmless to other organisms. Crews relocated hundreds to thousands of the native mosquito fish (*Gambusia affinis*) into semi-permanent and permanent water sites low in organic content for the control of larval mosquitoes. These top-feeding fish have a vigorous appetite, each fish can consume more than 250 larvae a day, and are a good means of extended control. Insect growth regulating hormones and surface films were also employed to prevent the immature mosquitoes from becoming adults.

Each of these larviciding methods mentioned has a different mode of action and several of them work by attacking specific stages of larval development. As a result, crews were able to target specific types or stages of larvae with the product best suited for the particular situation. During the 2015 season, inspectors treated more than 58,000,000 square feet of surface water with these bio-larvicides. Supplemental control was provided by using herbicides to facilitate drainage. Approximately 2.5 million linear feet of roadside ditch were treated to aid control.

Use of larvicides effectively reduces the number of adult mosquitoes that emerge, however, it is impossible to control all of the immature mosquitoes. Those mosquitoes that escaped larviciding measures were controlled through spray operations known as adulticiding.

## **ADULTICIDING**

Ground and aerial adulticiding is the control of adult mosquitoes using, truck-mounted, hand-held, ATV mounted or aerial sprayers. During the 2015 season, adult mosquitoes were experienced in quantities slightly higher than that of the previous year. In addition to this overall increase, moist conditions and mild temperatures extended this year’s mosquito season well into the month of December. Periodic peaks in this population were observed following heavy rains and as a result of the dramatic weather events. A combination of several adulticiding methods and increased control frequency was needed to expeditiously bring the blooms in the mosquito population down to acceptable levels.

Truck-mounted sprayers are the part of the program with which people are most familiar. Although it is just one aspect of our integrated pest management program, it is one with visible results. These truck-mounted units are effective in controlling mosquitoes in areas accessible by roadways. This year, truck sprayers treated more than 641,000 acres and covered nearly 17,500 linear miles of road.

Twin engine aircraft supplemented ground efforts by treating more than 63,000 acres that were otherwise inaccessible. These sprayers were vital in combating large mosquito hatches due to heavy rain events or for helping to suppress disease mosquito populations.

## **EXPERIMENTAL PROGRAMS**

Testing of the effectiveness of chemicals or efficacy testing was performed on the mosquito control products used during the spray season. Caged mosquitoes were subjected to adulticides in operational conditions in order to test the effectiveness of aerial and truck applied products. Larval chemicals were tested in the field at label rates with pre and post counts defining control. Individual tests were performed on the control products at varying rates. Ten of these experiments were performed using mosquitoes caught and reared in Jefferson Parish. All operational rates were tested and achieved favorable results in excess of ninety percent mortality.

Other experiments were performed to test the killing ability of a pesticide over time. These bottle bioassay or resistance tests were performed on our mosquito adulticide products. Adult mosquitoes were introduced into a pesticide-coated bottle and observed over specific time intervals until all mosquitoes had died. A graph of mortality was produced for each adulticide tested. These graphs were again compared to the graphs of past years to determine if local mosquitoes have gained tolerance to the insecticides in our mosquito control arsenal. To date, these comparisons have not indicated any significant tolerance to any of the chemicals tested.

## **ENCEPHALITIS SURVEILLANCE**

During the 2015 season, gravid adult mosquitoes and sentinel flocks of chickens were again used as indicators of encephalitis activity. Since most of our mosquito-borne encephalitis disease cycles involve birds, the disease often appears in the chicken population prior to humans or other animals. For this reason, representative chicken flocks were maintained in 22 locations throughout the Parish. Three birds were placed in each flock and blood samples were taken every week from June through October. Flocks were sampled in a staggered pattern to provide more uniform coverage. The LSU Animal Disease Diagnostic Laboratory confirmed all resultant samples. Adult mosquitoes that had already taken a blood meal were also collected each week from January through December. These mosquitoes were also sent to the LSU Laboratory and tested for several types of encephalitis. Any encephalitis follow-up mosquito samples were retained and tested in our laboratory for quicker results. Upon receipt of any positive results, the control measures outlined in the expanded virus protocol were initiated.

This year, as in the past, West Nile Virus Encephalitis (WNV) was the most common type found with St Louis Encephalitis (SLE) appearing in certain regions. Although, human cases of encephalitis in the nation were much lower than epidemic years, WNV activity was still confirmed at moderate levels with 2,060 people infected resulting in 119 deaths. The highest numbers of cases were experienced in California and Texas with 730 cases occurring in California and 252 in Texas. In our State, encephalitis activity in humans was roughly half the amount seen in 2014. Surprisingly, positive bird and mosquito sample activity was actually slightly higher than that of the previous few years. Louisiana observed 43 human WNV cases and four of them resulted in a fatality. Jefferson Parish observed two human cases and saw significant encephalitis presence in birds and mosquitoes. Thirty-four events were initiated due to mosquito-borne disease activity. Our encephalitis suppression protocol was initiated upon receipt of each confirmation.

## **PUBLIC EDUCATION**

It is the goal of our public education program to help the parish residents identify and eliminate breeding sites in their own backyards. Again, as in previous years, several different methods were employed in order to reach a wide number of people. Each of our staff members takes an active role in the education of the parish residents. Through the use of several interactive PowerPoint presentations, we have been able to more effectively convey material to schools, civic associations, network television/radio, and general meetings. We have used this technology to increase public awareness of mosquitoes, their breeding sites, and the diseases they transmit. We again employed individuals with experience in the education field to present our message to the public.

Additional education was provided by radio public service announcements encouraging people to take precautions when exposed to mosquito biting times and to eliminate potential mosquito harborage and breeding sites around their home. Many of these PSA's were used just prior to the peak of encephalitis season in August. Our crews further spread the message by using door-to-door distribution of pamphlets during the encephalitis season. Our personnel used these distributions as an opportunity to visually inspect the yards of residents for any obvious mosquito breeding. These inspections with literature distribution proved to be very effective as many people were educated first-hand on potential mosquito problems.

Sincerely,

Steven G. Pavlovich  
Entomologist  
General Manager