

ANNUAL REPORT 2011

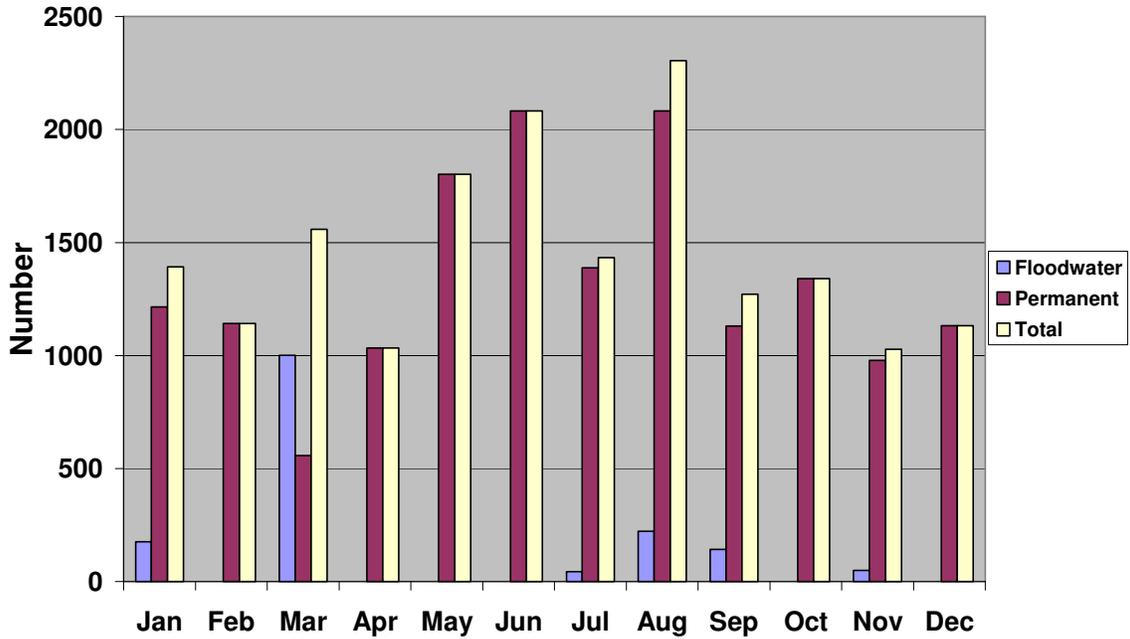
Mosquito Control Larviciding Operations

Hand Larviciding

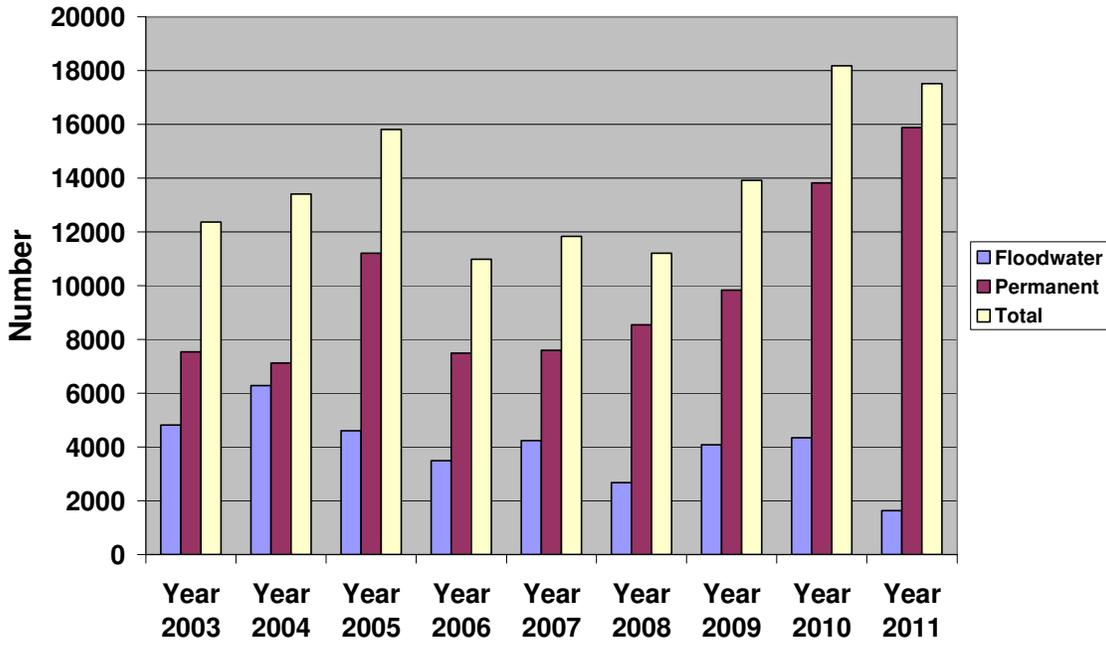
	Floodwater	Permanent	Total
Inspections	1636	15883	17519
Positives	382	4430	4812
Percent Positive	23.3%	27.9%	27.5%
Area Treated	111,998 sq ft	638,050 sq ft	748,048 sq ft

Some specifics are illustrated in the following charts.

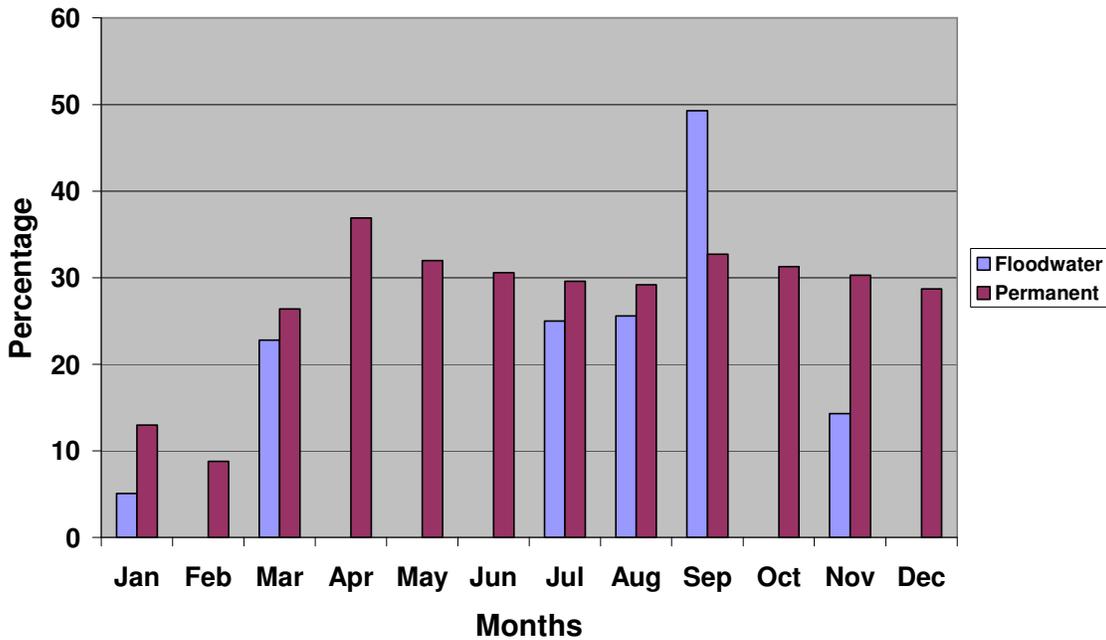
Larviciding Inspections 2011



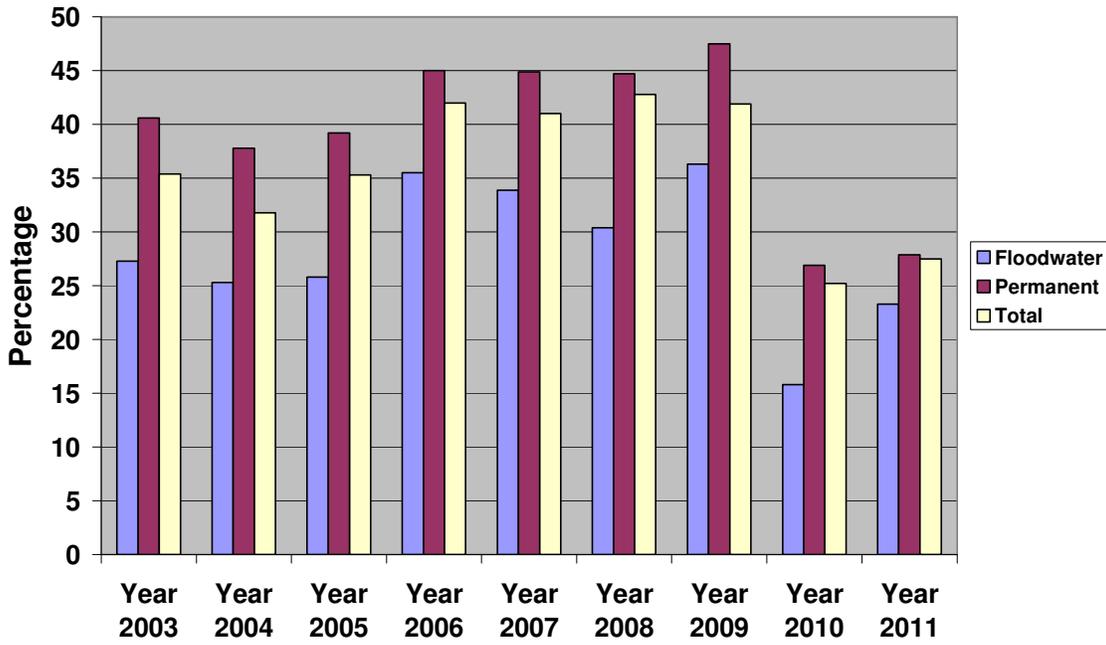
Yearly Comparison of Larviciding Inspections



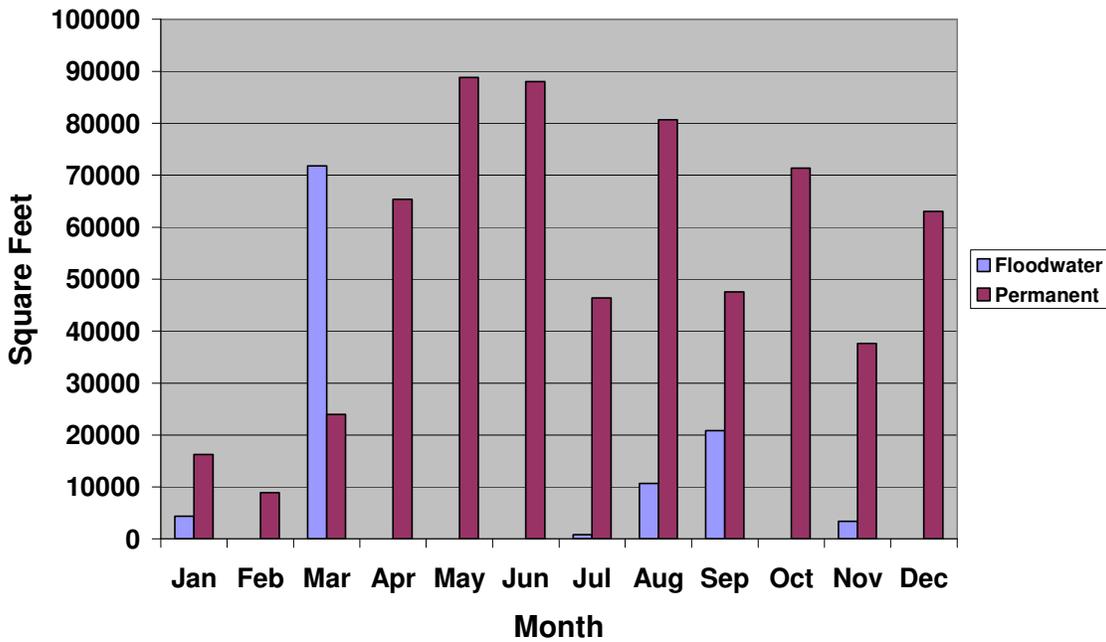
Percent Positive Sites



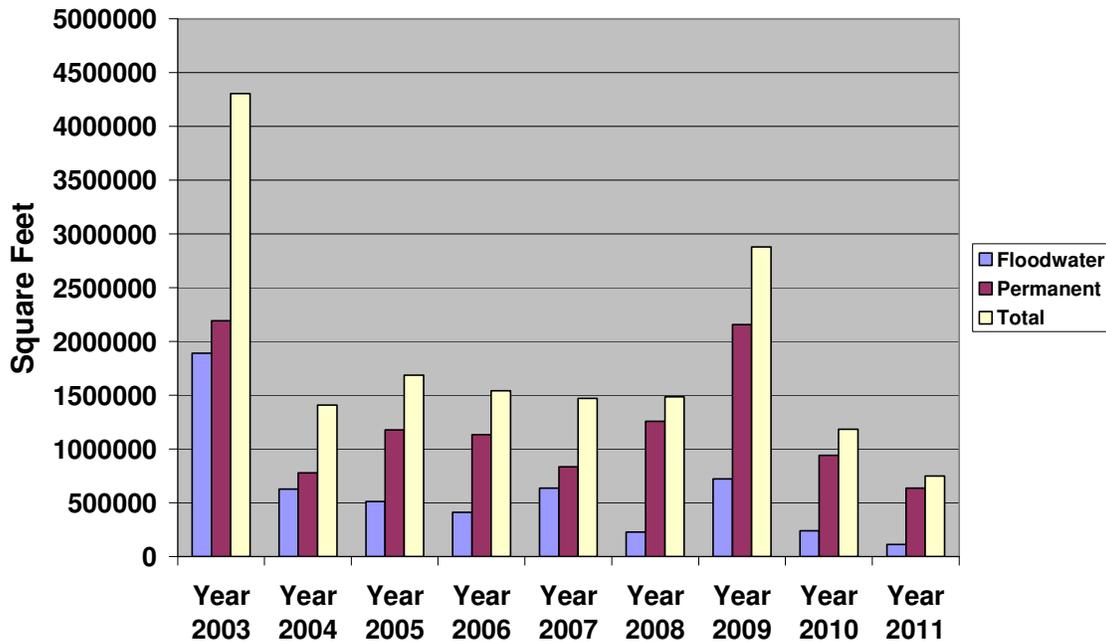
Yearly Comparison of Percent Positive Inspections



Area Treated



Yearly Comparison of Area Treated By Hand Larviciding

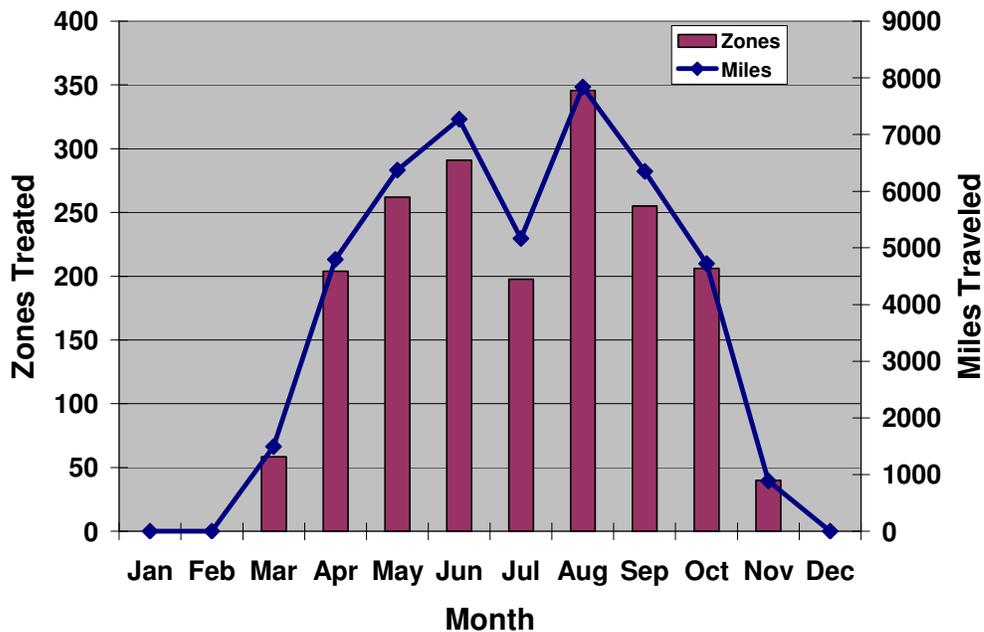


This year we had no floodwater inspections in February, April, May, June, October and December. Although there was little rainfall in September, the percentage of floodwater site breeding that month was quite high. Although this was a drought year and we did few floodwater inspections, this was a record year for the number of permanent water inspections. The number of breeding sites with larvae was very low similar to what we had in 2010 for both floodwater and permanent water. The area treated this year by hand larviciding was the lowest recorded.

Truck Mounted Larviciding

The automated “boominator” larviciding truck rigs were used starting in March this year. The four trucks averaged around 4900 miles per month, treating approximately 206 zones. We applied liquid *B.t.i.* formulations (AquaBac xt and VectoBac 12AS), *Bacillus sphaericus* formulations (VectoLex WDG), “Duplex” formulations of liquid *B.t.i.* and methoprene (Altosid SR-20), as well as, as liquid applications of spinosad (Natular EC). The primary focus of these applications was *Culex quinquefasciatus* larvae in roadside septic effluent ditches.

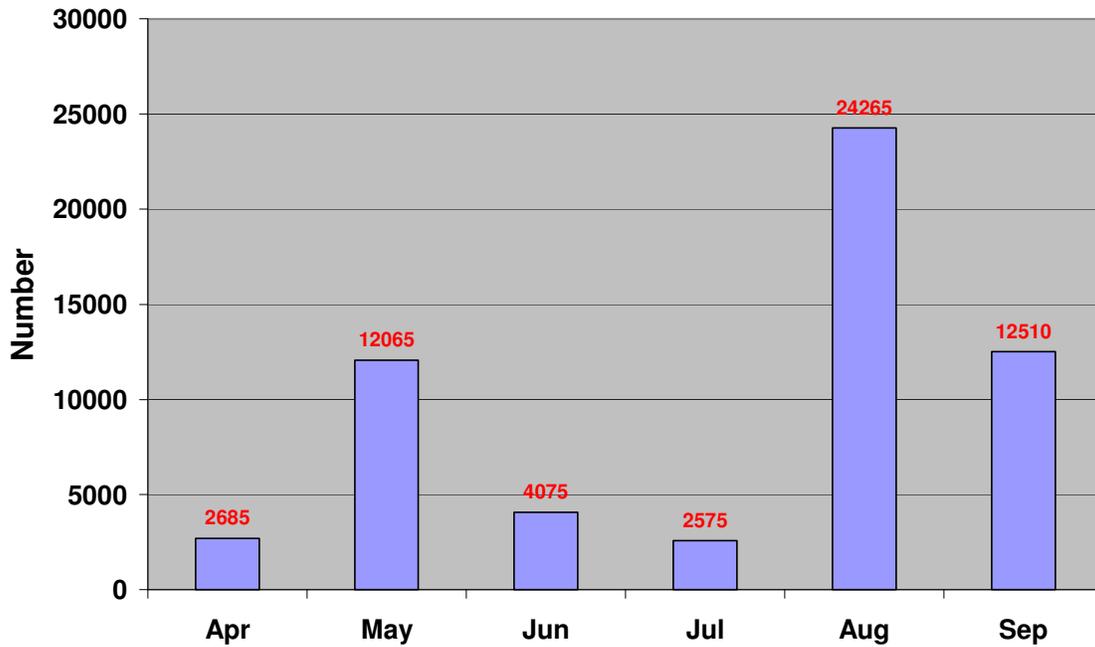
Truck Mounted Larviciding Data



Tire Pile Treatments

The following chart shows the approximate number of tires treated monthly during 2011. Treatment applications were made with backpack blowers and *B.t.i.* granular formulations (AquaBac 200G). Tires are routinely inspected and treated to control *Ae. albopictus* populations in the summer months. Approximately 58,175 tires were treated this year. This is a decrease from the estimated 91,452 done in 2010. Drought conditions reduced the need to retreat many of the tire piles.

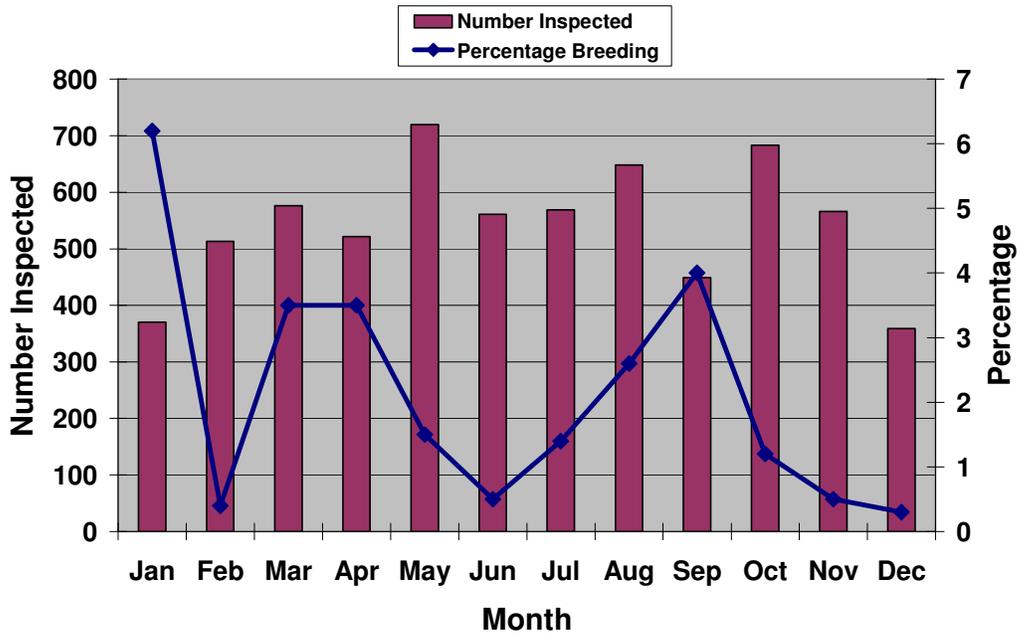
Approximate Number of Tires Treated in 2011



Modular Wastewater Treatment Plants

The following chart shows the number of Modular Wastewater Treatment Plants (MWTP) inspected and the percentage of those that were breeding by month. On average approximately 545 are inspected each month and the mean percentage that are breeding is approximately 2.1%. In general, the majority of the plants were not breeding mosquitoes, but when the plants experience mechanical problems, particularly those that result in overflows, the number of *Cx. quinquefasciatus* produced can be very large. The highest breeding percentage was observed in January this year. This was still quite low (6.2%). The plants that were breeding were treated with Aqnique or VectoLex WDG.

Wastewater Treatment Plant Inspections and Breeding Percentages



Chemicals Used in Larviciding Operations

	BVA 2 (gal)	Agnique (gal)	Bti liquid (gal)	Bti granule (lbs)	VectoLex WD(lbs)	Altosid Pellets (lbs)	Altosid liquid (gal)	Natular EC (gal)	Natular XRG (lbs)
Hand	94.5			4.5					12.6
Truck			305		468.7		0.5	2.4	
Tires				307.5					
Pools						2.7			
Drip Stations									
MWTP		3.0			22.8				
Total	94.5	3.0	305	312	468.7	2.7	0.5	2.4	12.6

Name	Description	Active Ingredient
BVA 2	Surface oil	Petroleum distillate
Agnique	Monomolecular film	Octadecyl alcohol
VectoBac 12AS/AquaBac xt	Biological larvicide aqueous suspension	<i>Bacillus thuringiensis israelensis</i>
VectoBac G/AquaBac G	Biological larvicide granules	<i>Bacillus thuringiensis israelensis</i>
VectoLex WDG	Biological larvicide	<i>Bacillus sphaericus</i>
Altosid Pellets/Liquid	Growth regulator	Methoprene
Natular EC and XRG	Biological larvicide liquid and granule	Spinosad

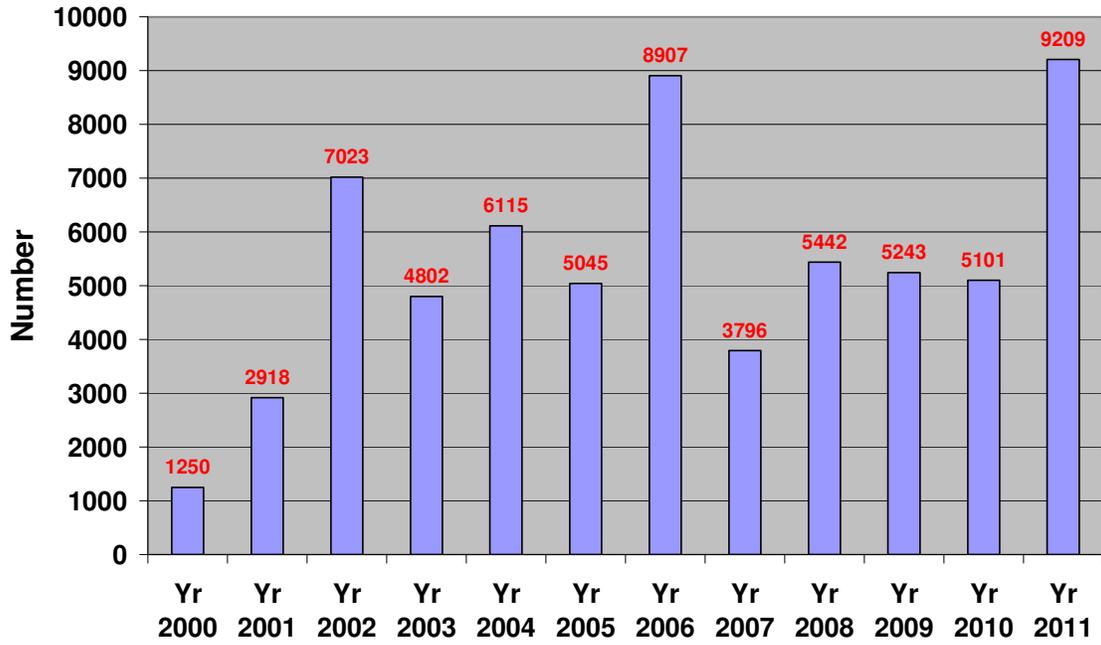
Approximate total acreage treated with larviciding chemicals was 1593.

Mosquito Control

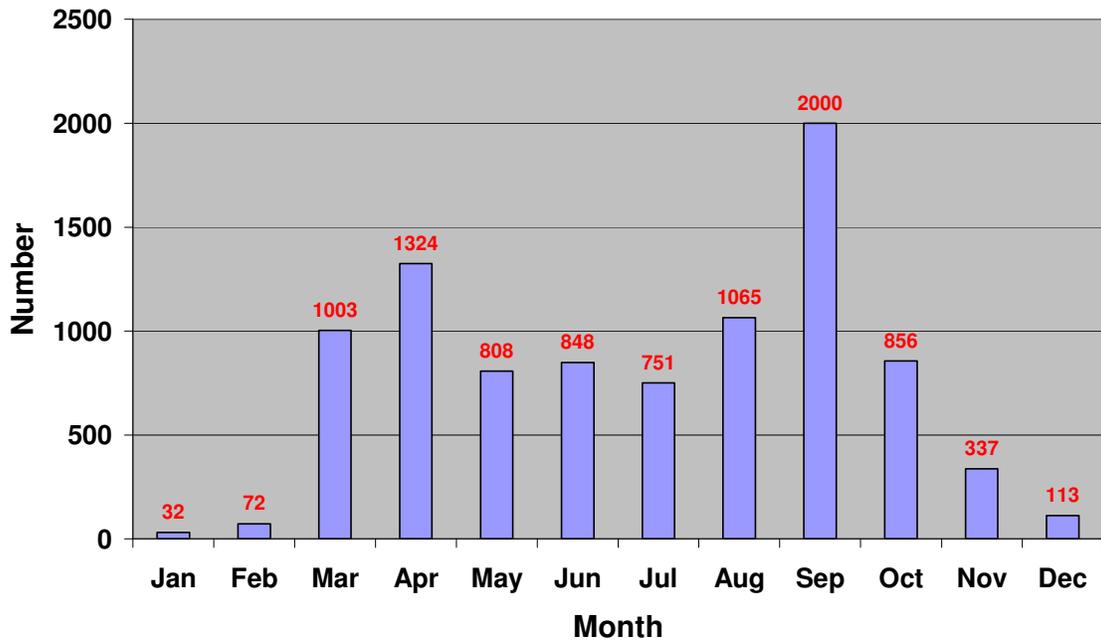
Residential Treatments

A record total of 9209 mosquito inspection and treatment requests were done at residences in 2011. This is significantly more than the 5101 done in 2010. The following charts illustrate historical comparisons and monthly patterns of mosquito service requests.

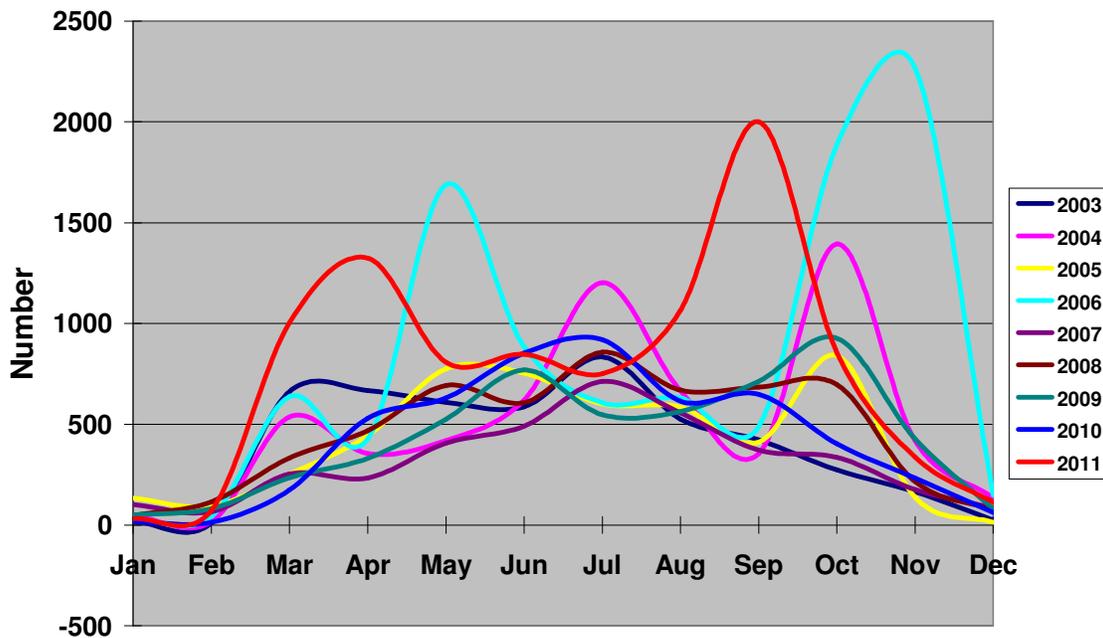
Residential Mosquito Inspections History



Residential Mosquito Inspections 2011



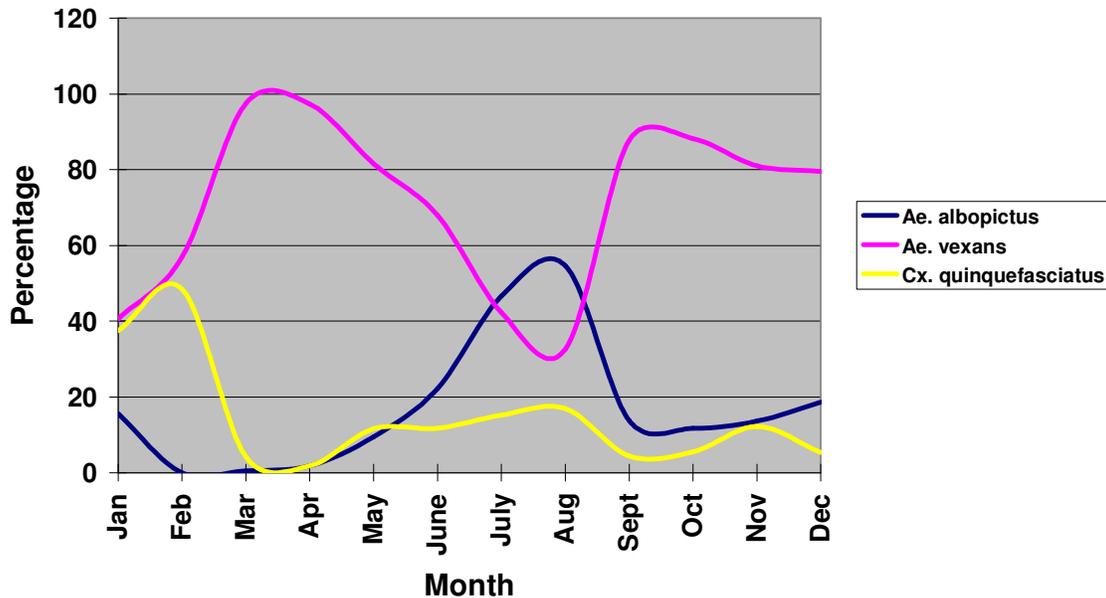
Monthly History of Mosquito Requests



The number of mosquito service requests in 2011 was similar to that seen in 2006. In both years there were large numbers of the floodwater species *Aedes vexans*. This year this species had population peaks both in the spring during March and April, and again in the fall during September and October.

As illustrated in the following chart, the Northern Floodwater mosquito, *Ae. vexans* was the dominate species found during residential inspections in the winter and spring months. The Asian tiger mosquito, *Ae. albopictus* was the most encountered species during the summer months. While not as commonly encountered as the previous species, populations of the Southern House mosquito, *Culex quinquefasciatus* can be found around residences any time of year, but it is generally considered a warm weather species. This year it was most prevalent percentage-wise in February when we had only 72 total requests.

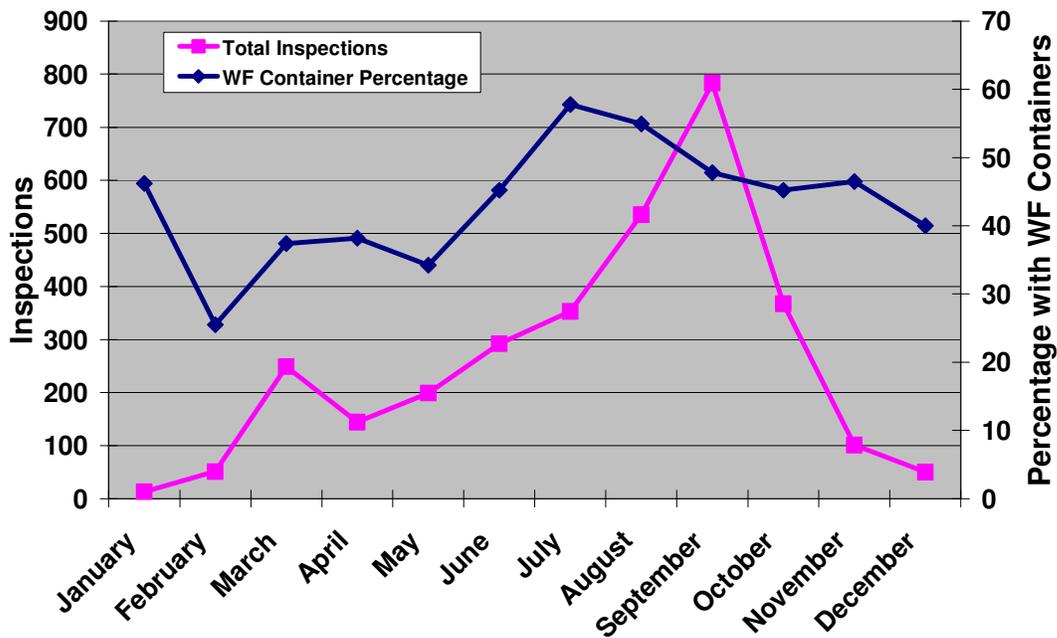
Prevalence of the Major Mosquito Species at Residential Inspections



Homegrown Mosquito Report

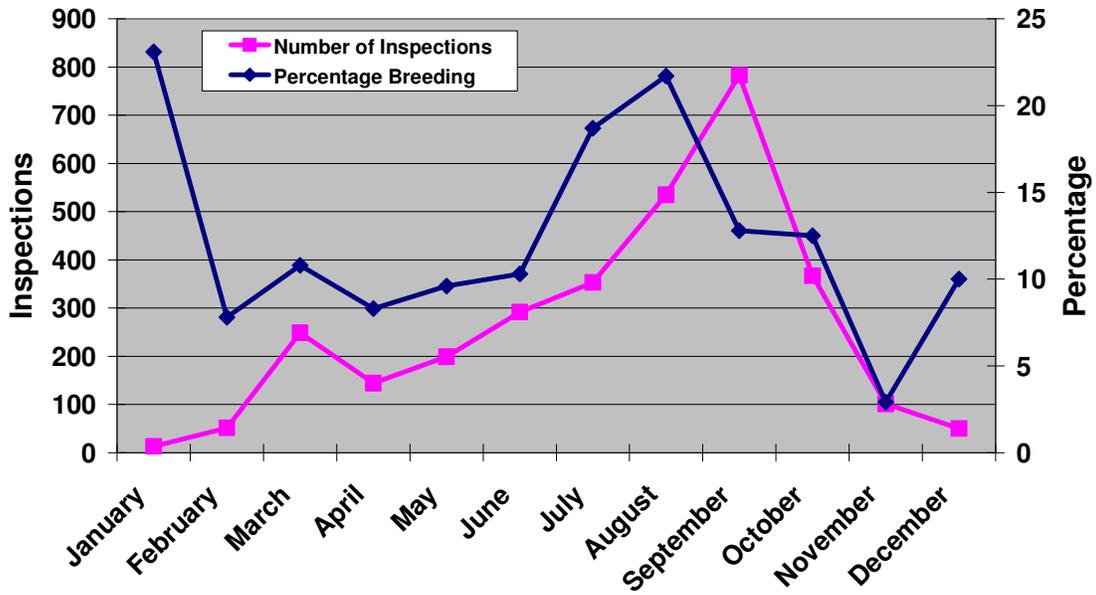
The Pest Control Inspectors recorded the presence of water filled containers and mosquito breeding at some of the residences where they conducted operations. The following chart shows the number of residences inspected in 2011. It also shows the percentages of these residences that had containers with some water. The number of inspections was much greater in August and September because we were doing more mosquito service requests. Even though we had a very dry summer the average number of homes with water filled containers was 45-54%. The average for the full 12 months was 43%. The drier months of October, November and December had fewer water filled containers.

Residences with Water Filled (WF) Containers



The next chart shows the percentage of residential inspections that had mosquito larvae in containers. In the spring and summer (April through September) the number of residences with mosquito larvae in containers averaged 13.6% which was less than 2010 with 20.5%. The yearly average for breeding containers at inspected homes was 12.4%.

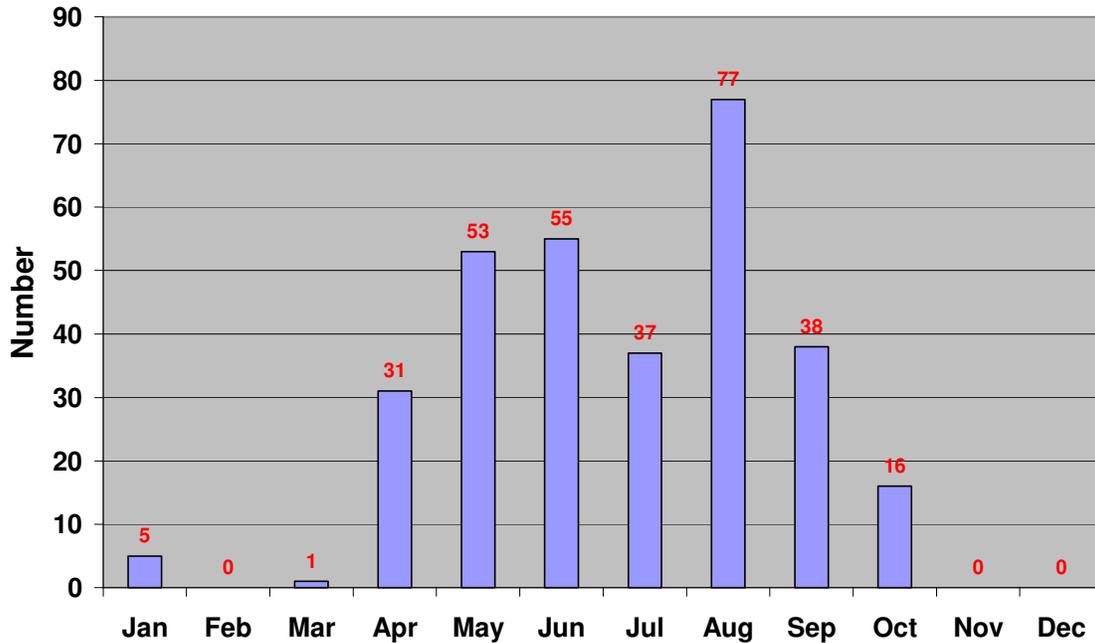
Residential Inspections and Containers Breeding Mosquitoes



BREC Park Operations

ATV mounted spray equipment is used to treat the extensive BREC Park system in East Baton Rouge Parish. The following chart shows the number of park inspections and treatments done by month in 2011.

Number of BREC Park Adulticiding Operations



Storm Drain Adulticiding

We didn't do any storm drain adulticiding this year. We had a prolonged summer drought and the Grizzly ULV unit broke. This was the motor we used with the remote nozzle. The sewer leak was repaired in Smiley Heights Subdivision this year. This was the area in the past that had large number of *Cx. quinquefasciatus* breeding and resting in the storm drains.

Chemicals used in the Residential and BREC Park Treatments

	Scourge Mix (gal)	Duet Mix (gal)	GB 1111 (gal)	Bti Granule (lbs)	Altosid Pellet (oz)
Total	843	190	3.1	42	17.6

Aerial Adulticiding

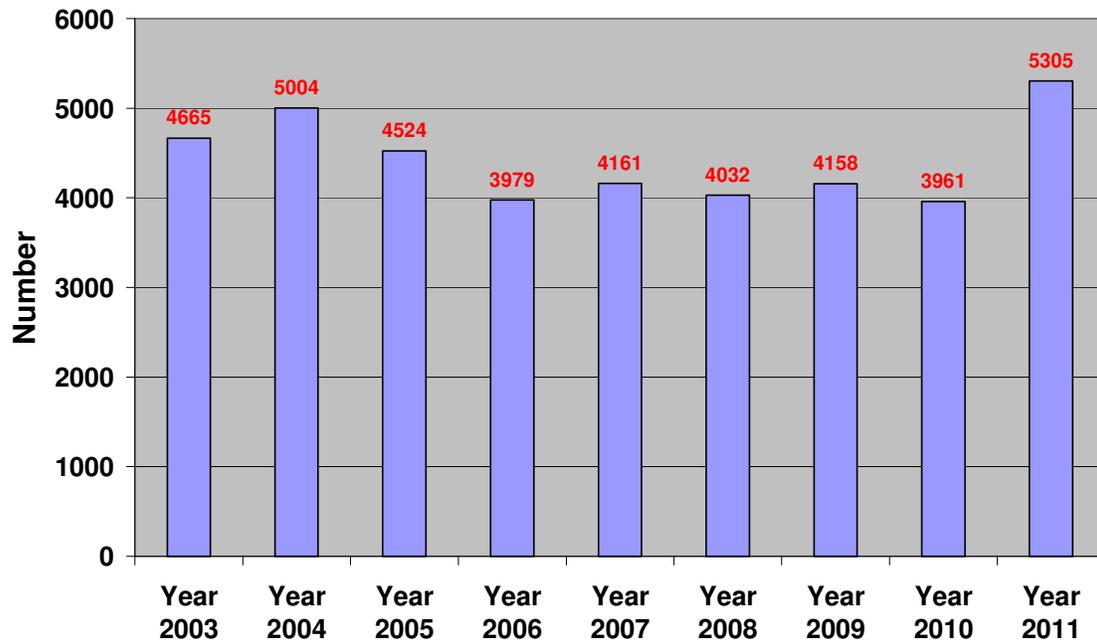
In 2011 we conducted 36 aerial adulticiding flights. Most were in August (17) and September (11). We used 2100 gallons of Dibrom insecticide to treat 340,000 acres or 600 sq. mi.

Rodent Control

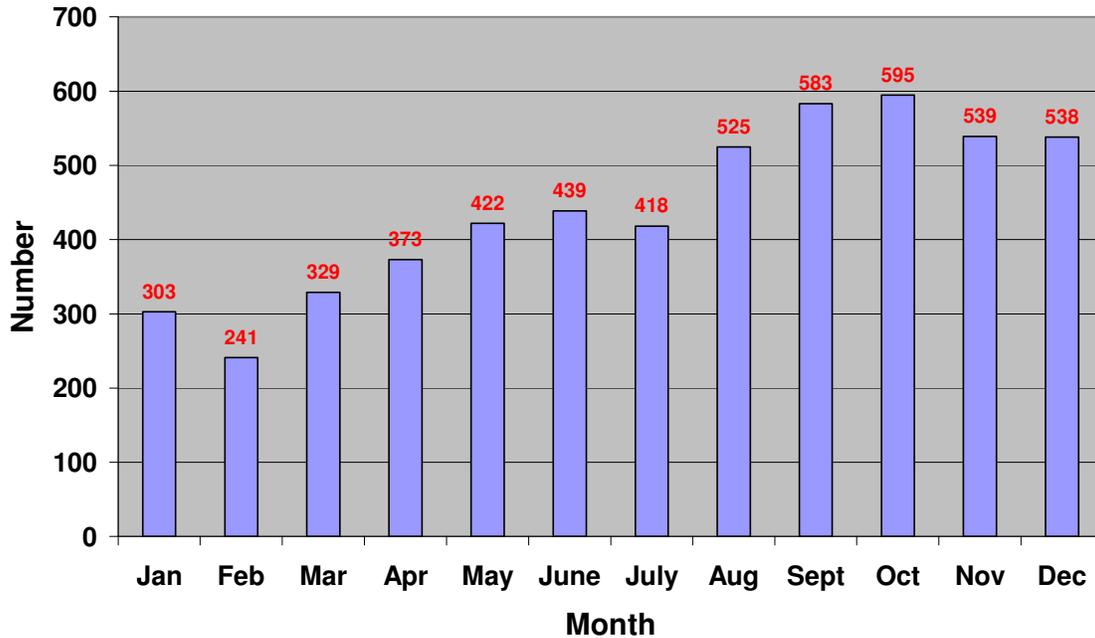
Residential Treatments

We did a record 5305 rodent inspections and bait distribution requests in 2011. This was significantly higher than the 3961 done in 2009. The following charts show the annual historical data, as well as, the monthly data on rodent service inspection requests.

Rodent Request History

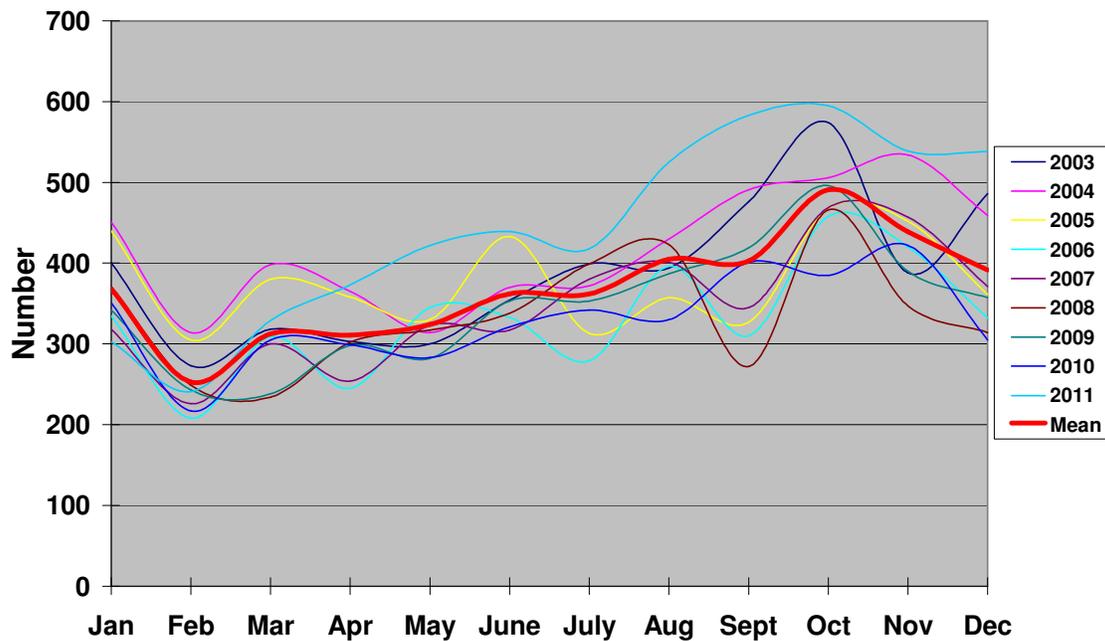


Monthly Residential Rodent Inspections 2011



In general, rodent service requests are lowest in late winter, gradually increase over the summer and peak in October and November. This year was typical with the greatest number of requests in October. The following chart shows the monthly number of inspections over the last eight years along with the mean.

Monthly History of Rodent Service Requests



Rodenticide baits Used in Residential Treatments

Rodenticide	Bromadiolone Pellets	Bromadiolone Block	Difethialone Pellets	Warfarin Bait
Quantity	2.3 lbs	8.2 lbs	167.6 lbs	5188.9 lbs

We continue to primarily use warfarin baits because of its reduced toxicity to pets, wildlife and people.

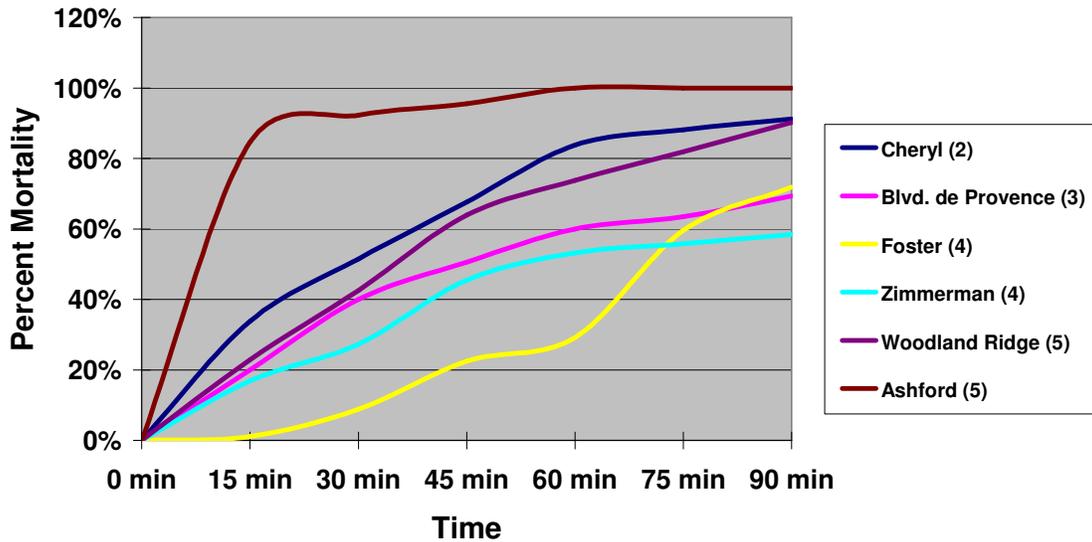
Mosquito Resistance Studies

This was the eleventh year we conducted pesticide resistance testing on *Cx. quinquefasciatus* using the CDC bottle bioassay technique. We continued our practice of using product dilutions with 1.8 micrograms of resmethrin and 5.4 micrograms of the synergist PBO per bottle in most of the tests to detect low levels of resistance to our primary adulticide Scourge. This is lowest dilution that we used in the past and responses to this very low level of pesticide show the greatest variability in terms of mortality. We also tested some populations with the diagnostic or threshold level of 9 micrograms of resmethrin and 27 micrograms of PBO per bottle, as well as, 11 micrograms of sumithrin and 2.5 micrograms of prallethrin for testing resistance to the adulticide Duet. We tested 5441 *Cx. quinquefasciatus* from 28 sites over 17 zones in 2011. This compares to 6154 individuals tested from 26 sites over 17 zones in 2010. The cold weather in 2010

prevented early season larvae collections and the first tests were done in April rather than January.

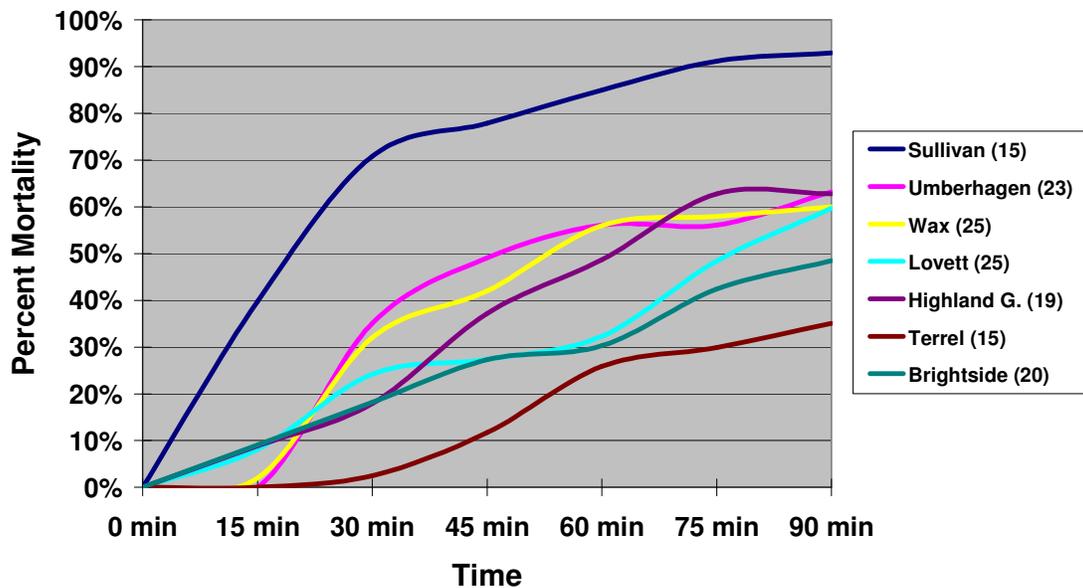
We didn't observe any significant resistance in our *Cx. quinquefasciatus* populations to the threshold amounts of either Scourge or Duet. We did see variations in response to the very low levels (1.8) of resmethrin. As we have observed in previous years, one generalization that we found was a decrease in mortality in the tests from populations that had increasing exposure to spray applications as the season progressed. The following charts illustrate this trend. The first chart shows time mortality curves for six populations that had from two to five ground ULV applications prior to the population sampling. These sites were primarily suburban or rural. Four of these populations were susceptible (ninety minute mortality greater than 70%) to even the very low amounts of active ingredient. In all of the following charts the number in parentheses next to the site or zone name in the legend box indicate the number of ground ULV operations that had been done prior to the collection of *Cx. quinquefasciatus* larvae from that area.

Time Mortality Curves for *Cx. quinquefasciatus* and 1.8 micrograms of Resmethrin (Two to Five Applications)



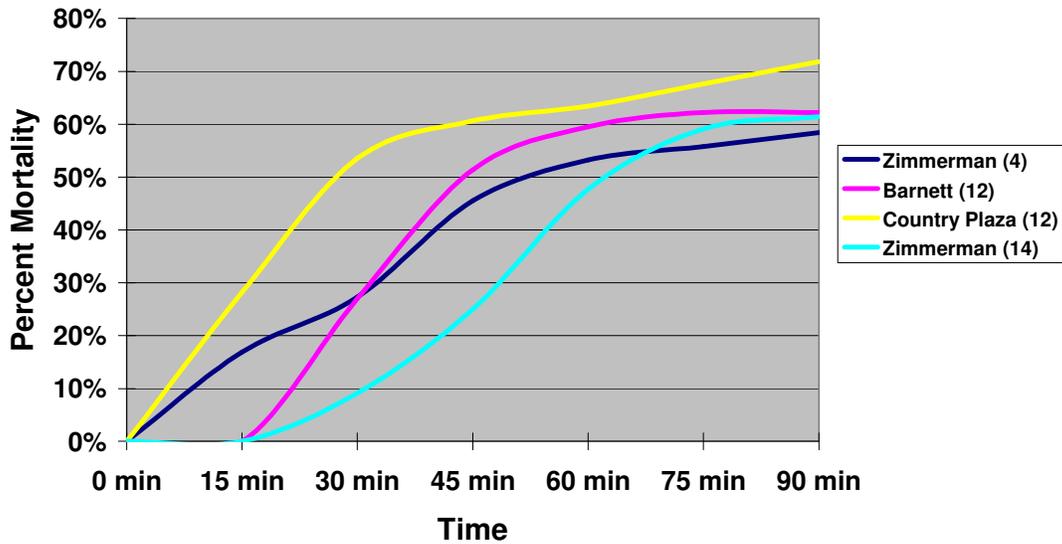
The next chart shows the responses of seven primarily rural populations to the low levels of resmethrin after ULV exposures of fifteen to twenty-five applications. As can be seen mortality was reduced to less than 70% in six of the populations.

**Time Mortality Curves for *Cx. quinquefasciatus* and
1.8 micrograms of Resmethrin
(> 15 Applications)**



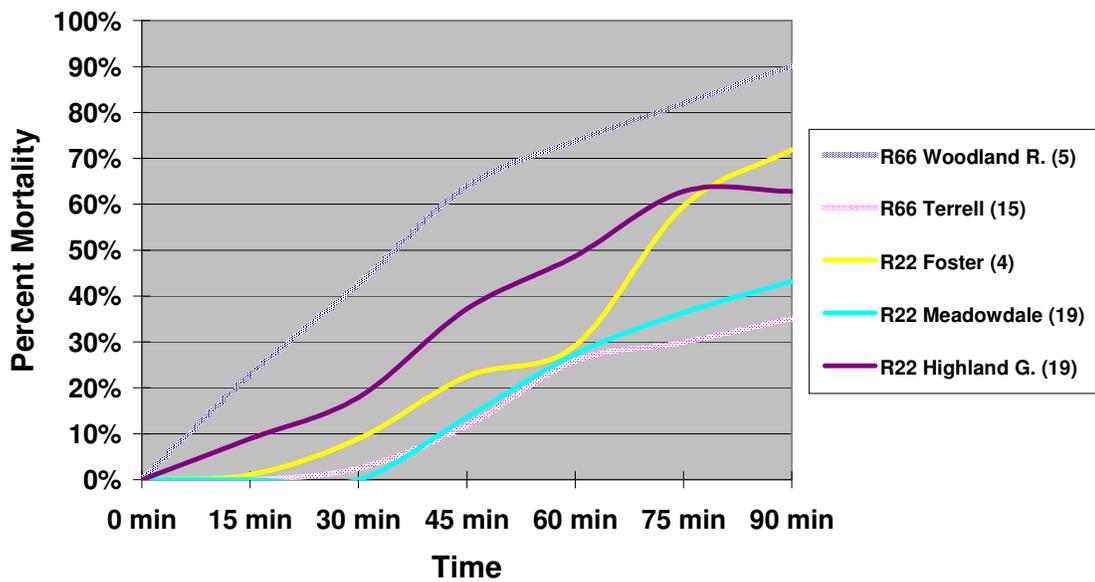
Another generalization that we have observed over years is no association between decreasing mortality and the number of ground ULV applications in rural populations of *Cx. quinquefasciatus*. The next chart shows the time mortality responses of four populations from a rural zone. All showed about the same responses throughout the spray season. An explanation of this may be related to the fact that rural areas simply lack the number of roadways to effectively cover the areas with truck based ULV applications.

**Time Mortality Curves for *Cx. quinquefasciatus* and
1.8 micrograms of Resmethrin
Zone R3**



In some other zones there was noticeable reduced mortality through the spray season. The following chart shows the time mortality curves for two zones where populations were sampled after repeated ULV applications.

**Time Mortality Curves for *Cx. quinquefasciatus* and
1.8 micrograms of Resmethrin
Zones R66 and R22**



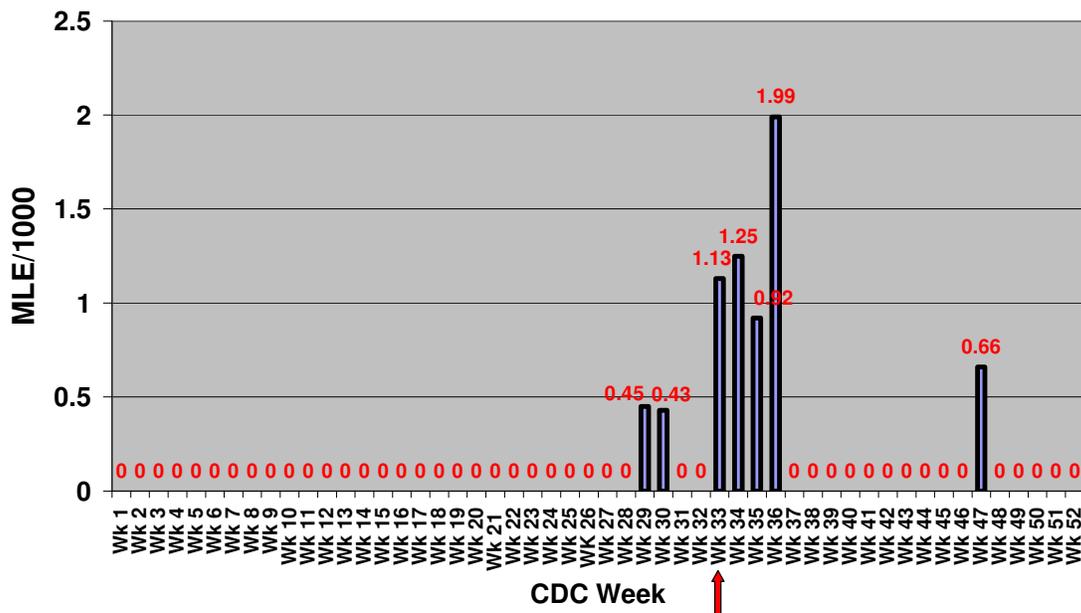
In 2012 we will try to monitor those sites where resistance to low levels of insecticide seems to be developing if populations in areas like Terrell and Meadowdale can be sampled.

Arbovirus Surveillance

We submitted 2,152 mosquito pools for testing at the Louisiana Animal Disease Diagnostic Laboratory. This is less than the 2,620 we submitted in 2010. More than half (1,719) of these were pools of *Cx. quinquefasciatus*. We used the collections of this species from modified gravid traps to calculate the maximum likelihood estimates of the West Nile virus (WNV) infection rates. A total of 136,073 specimens of *Cx. quinquefasciatus* were tested for the calculation of these estimates.

The following chart shows the WNV infection rates for this species in 2011. The infection rates are based on estimates per thousand mosquitoes.

**WNV Infection Rates in *Cx. quinquefasciatus*
EBR Parish 2011**

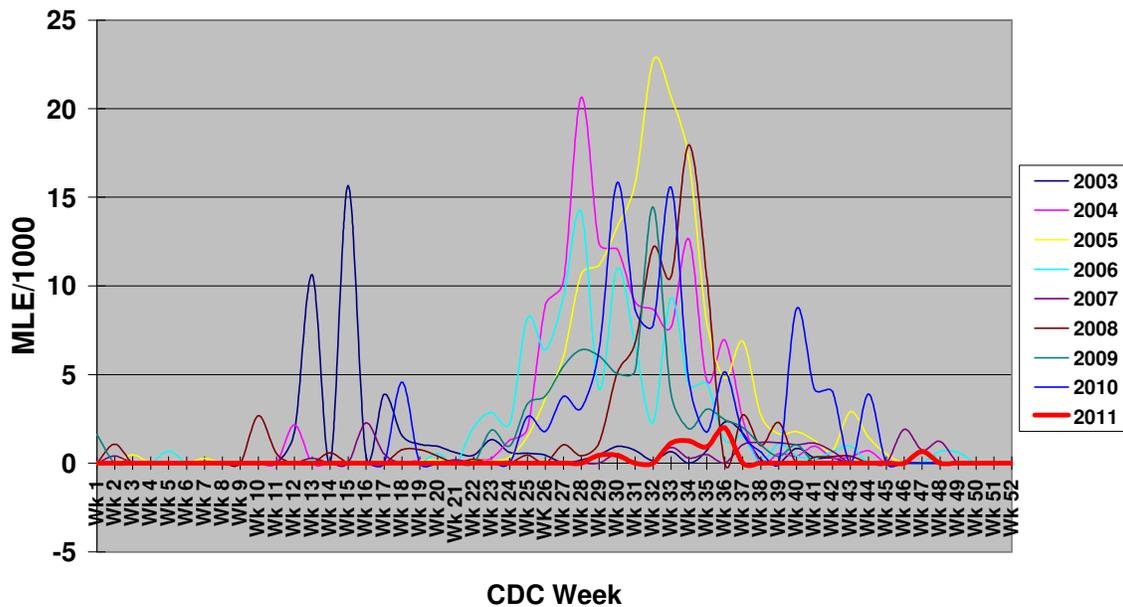


Like 2010 there was no overwinter WNV activity in *Cx. quinquefasciatus* this year. The unusually cold winter did limit mosquito activity in general. The first positive pool was detected in the third week of July. The infection rate peaked in the second week of September (CDC Wk 36) and was undetected until the third week of November (CDC Wk 47).

There was one WNV human case reported this year in East Baton Rouge Parish. This compares to fourteen in 2010. The estimated date of onset for this human case is shown with the red arrow in the preceding chart. In general, WNV human cases have appeared in East Baton Rouge Parish when infection rates in *Cx. quinquefasciatus* have exceeded 5 per thousand. This year the human case occurred in CDC Week 33 when our infection rate was 1.13 per thousand.

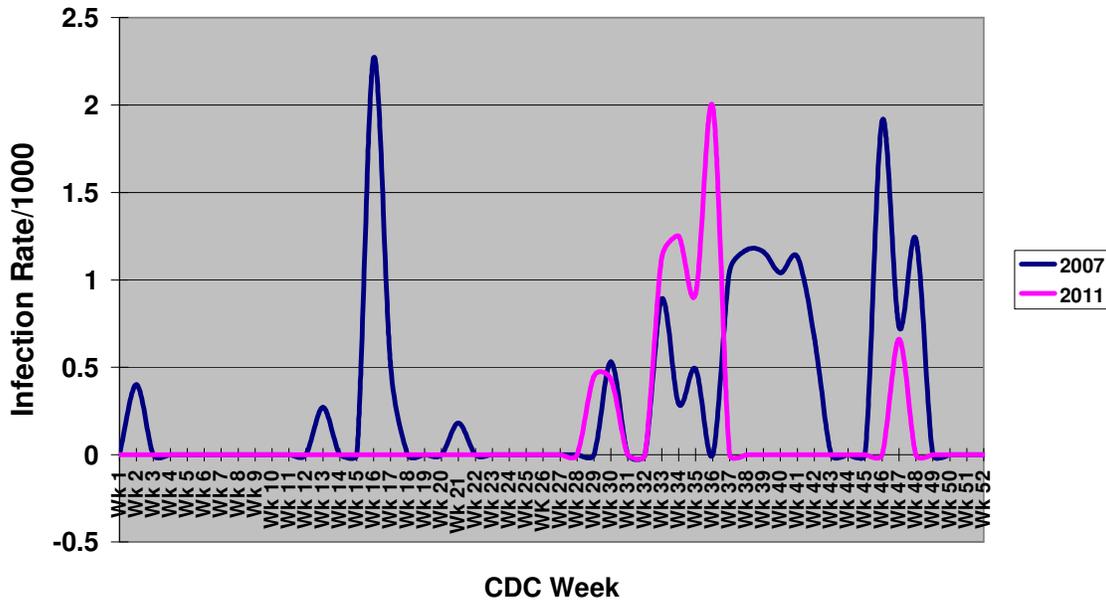
The following chart shows the historical infection rate data for East Baton Rouge Parish.

**WNV Infection Rates *Cx. quinquefasciatus* EBR Parish
2003 to 2011**



As can be seen in the chart the WNV activity in *Cx. quinquefasciatus* in East Baton Rouge Parish is relatively consistent year to year with the exception of 2003, 2007 and 2011. In 2003 the infection rates peaked early in CDC week 13. In 2007 and 2011 the WNV activity was sporadic and very low throughout the summer. The next chart shows these two years. There was early WNV activity in January and again in April and early May in 2003, but otherwise these two years are similar.

WNV Infections Rates in *Cx. quinquefasciatus* EBR Parish 2007 and 2011



In 2008, the increase in infection rates was about one month later than that seen in years 2004 through 2006. In 2009 there was a positive pool in the first week of January but, as noted above, no further activity until June. There was also no virus activity in the fall months in 2009. The WNV activity in 2010 was unique in that the onset was relatively late and there was a moderately high infection rate in early October compared to previous years.

In addition to the *Cx. quinquefasciatus* pools, we had one other mosquito species that tested positive for WNV in 2011. A pool of *Aedes vexans* was positive in CDC Week 34.

Randy Vaeth
Entomologist