

2016 Annual Report City of Louisville Mosquito Control Program



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CITY OF LOUISVILLE MOSQUITO CONTROL PROGRAM ANNUAL REPORT 2016

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THE CITY OF LOUISVILLE

MOSQUITO CONTROL PROGRAM

MISSION STATEMENT

The need to protect residents and visitors from the health risks, severe annoyance, and discomfort associated with biting mosquitoes is a chronic annual problem. The primary objective of the City of Louisville Mosquito Control Program is to suppress the development of larval mosquitoes in wetland and other sites, to monitor and reduce numbers of adult mosquitoes thereby reducing overall mosquito populations to an acceptable low-biting "annoyance level", while reducing the threat of mosquito-borne disease transmission, all at the least possible cost, and with the least possible impact on people and the natural environment.

The primary objective of the City of Louisville Mosquito Management Program is to employ trained field technicians to suppress populations of larval mosquitoes in aquatic habitats. CMC technicians utilize bacterial larvicides that reduce mosquitoes without harming non-target organisms. Additionally, monitoring of adult mosquito populations is an essential component of an Integrated Mosquito Management (IMM) program. Surveillance trapping performed provides data to assess West Nile Virus (WNV) infection rates, as well as the need for adult mosquito control measures. Data driven response can reduce the threat of disease transmission and annoyance associated with mosquitoes, while reducing the necessity for large amounts of products to be applied.

CMC OBJECTIVES

The City of Louisville Mosquito Management Program, operated by CMC, has developed into one of the foremost environmentally sensitive and technologically advanced IMM programs in the United States. Additionally, CMC has fostered cooperative efforts for mosquito control and epizootic response between surrounding municipalities, counties and homeowners associations, as well as the Center for Disease Control Vector-Borne disease unit in Fort Collins (CDC), the Colorado Department of Public Health (CDPHE), the Tri-County Health Department and Colorado State University (CSU) to respond to mosquito-borne disease and annoyance. Data obtained from CMC is utilized by these entities when evaluating disease risk, a public-private data sharing partnership in the interest of public health which is unrivaled elsewhere in the country.

CONTRACTOR COMMITMENT

Colorado Mosquito Control is a large-scale contractor specializing in complete integrated mosquito control services. CMC utilizes an aggressive preemptive Integrated Pest Management (IPM) approach to controlling mosquito populations within contracted areas. CMC, established in 1986, is the largest private company specializing in mosquito control in Colorado.



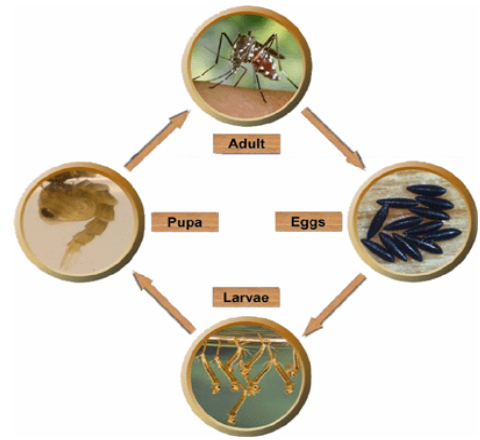
CMC currently has programs throughout the state of Colorado including municipalities, counties, HOA's, Indian Reservations, and others. Geographically, CMC reaches from the Ute Mountain Ute Reservation in the southwest corner of the state to the northeast. CMC has programs in several mountain areas including the Gunnison Valley, the I-70 corridor, and parts of the upper Colorado River valley.

With well over a decade of experience monitoring WNV in Colorado, it is clear that limiting mosquito exposure is the best way to reduce the risk of disease. A well-developed mosquito management program is only part of the picture, and CMC also emphasizes the need for personal action and educational outreach programs. *Culex tarsalis*, our primary WNV vector in the state, is more abundant today than in the past, due to current land use practices. CMC is committed to providing top quality service via data driven management and education outreach in an effort to minimize WNV and reduce mosquito annoyance in communities where we live and work.

CMC, as the contractor for the City of Louisville, uses demonstrated scientific IPM methods of survey, inspection, diagnosis, biological/biochemical controls, and limited low-toxicity pesticide applications to professionally accomplish desired control results. All of the methods and materials used by CMC have been sanctioned and registered by the Environmental Protection Agency (EPA), the CDC, the Colorado Department of Agriculture (CDA), and the American Mosquito Association (AMA).

2016 SEASON PERSPECTIVE

At CMC we have come to expect each Colorado summer to present a unique set of temperature, precipitation, irrigation, and human interactions that combine to create new and different challenges in both mosquito control and mosquito-borne disease proliferation and control.



According to the National Weather Service, May was cooler and wetter than average with a mean temperature of 54.4 degrees, 2.7 degrees below normal, and 2.38 inches of precipitation, 0.26 inches above average.

June can be described as warm and somewhat dry with an average temperature of 70.8 degrees, 3.4 degrees above normal. 1.62 inches of rain fell, 0.36 inches below the normal of 1.98 inches. Unlike June of 2015 when 2.53 inches of rain fell, the Front Range saw little in the way of the severe weather and heavy rainfall that was responsible for strong localized flooding and damage, particularly in the northern part of the metro region.

July was likewise warmer and drier than normal with an average temperature of 76.2 degrees, 2.0 degrees higher than average. Only 1.07 inches of rain fell, 1.09 inches less than the average of 2.16, and the last eleven days of the month saw a meager 0.01 inches of rain fall.

August was cooler than normal but maintained the same dry streak as the previous two months. The average temperature of 71.3 degrees was 1.3 degrees less than normal. Only 0.22 inches of rain fell making the month the eighth driest August on record with only four days of measurable precipitation. Evening temperatures dropped into the 40s by the end of the month.

The 2016 season ended with a September that saw an average temperature of 66.0 degrees, 2.6 degrees above normal; by contrast, September 2015 was the warmest on record. A low of 37 degrees was recorded on the 10th. 0.28 inches of rain fell, 0.68 inches less than the normal of 0.96 inches. Like August only four days saw measurable precipitation.

2016 Field Activities

Hiring of seasonal technicians began in March and continued into May. CMC's Annual Field Technician Classroom Training Day took place on Monday May 23rd with dozens of new and returning field technicians in attendance. Field training by CMC management and veteran employees began afterwards and within a week CMC was fully staffed and in the field. Larval operations began winding down as weekly traps counts diminished throughout August and ended altogether by early to mid-September.

Louisville saw a total of 325 site inspections in 2016 of which 256 or 79% were wet. Of those, 57 sites, or 22%, were subsequently treated for breeding. A total of 25.3 acres were treated in 2016. For prior year comparisons please see *Appendix: Larval Site Inspections by Service Area, Larval Site Treatments by Service Area, Larval Site Acreage Treated by Service Area*.

WEST NILE VIRUS 2016

Background

West Nile Virus (WNV) was first identified in Uganda in 1937. Since that time, activity has been documented throughout Africa, Europe, West and Central Asia, and areas of the Middle East. The virus made its first appearance to North America in 1999 when it was documented in New York City. WNV comes from a family of viruses known as Flaviviridae and is closely related to other viruses which can have severe effects on both humans and animals such as Japanese Encephalitis and St. Louis encephalitis.

WNV has a wide range of symptoms which can range from mild flu like symptoms to death. Of humans affected, nearly 80% will show no symptoms at all. The majority of people who do show symptoms will usually suffer from flu like symptoms. However, approximately 1% of people will develop much more severe symptoms including meningitis (inflammation of the linings surrounding the brain and spinal cord), encephalitis (inflammation of the brain), or very rarely poliomyelitis which can cause paralysis in parts of the body.

Since the introduction of WNV to the United States in New York City in 1999, the virus has made a complete westward expansion to the West Coast. Starting in the Northeastern parts of the United States, the virus steadily progressed through the South, the Midwest, the Rocky Mountain region and the rest of the nation

Colorado first saw activity of the virus late in the summer of 2002. In 2003 Colorado was the hardest hit state in the country compiling 2,947 human cases and 63 deaths most of which occurred along the Front Range. Totals since then have differed from year to year with no single year surpassing 2003's totals thus far.

WNV Activity 2016

According to the latest report by the CDPHE, dated October 26th, there are 130 human WNV cases in Colorado as of this October 20th writing. Larimer County leads the state with thirty-one cases while Weld County has twenty-seven cases and Boulder County has nineteen. Adams County currently has twelve. There have been six fatalities related to WNV thus far statewide. By contrast Colorado had 101 human WNV cases in 2015, 118 in 2014 and 322 in 2013. Since 2002 there have been over 5200 cases of reported human WNV here.

According to the CDC the U.S has over 1,350 human cases of this writing. Texas has the highest number of human cases with California the second highest and South Dakota the third. Colorado currently has the fourth highest number in the country. Fifty-two deaths have thus far been reported nationwide. Last year the country saw 2,175 human cases resulting in 146 deaths.

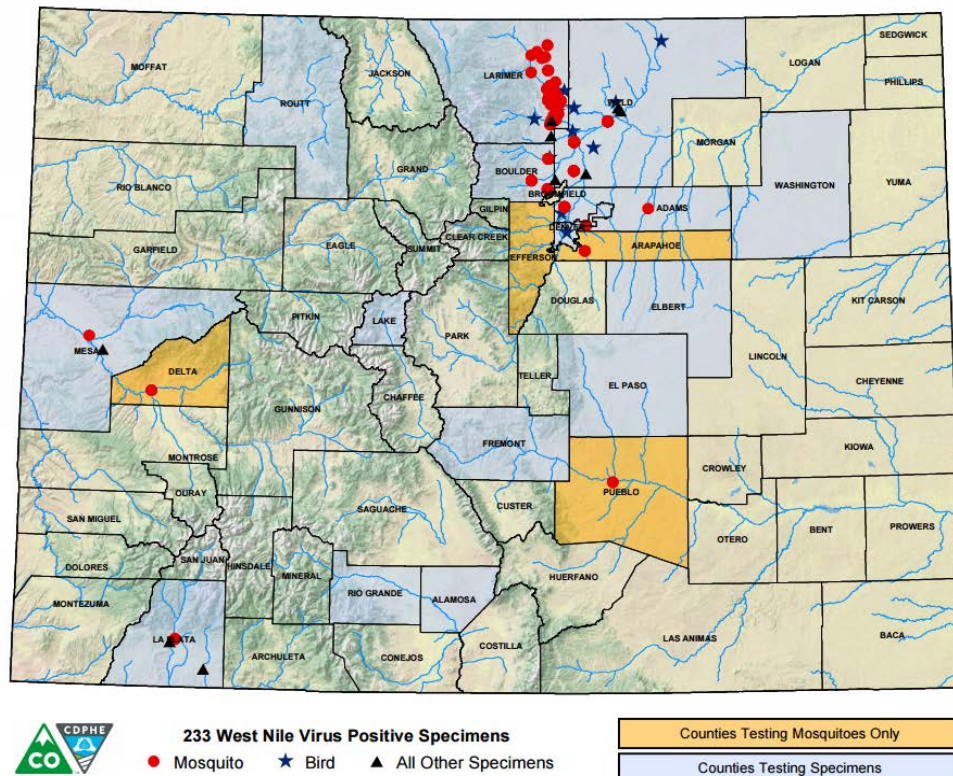
Number of West Nile Virus Cases by County
Colorado, 2016 (N 130) *

County	WNV Cases
Adams	12
Arapahoe	7
Bent	2
Boulder	19
Broomfield	5
Denver	8
Douglas	1
El Paso	1
Gunnison	1
Huerfano	1
Jefferson	2
La Plata	1
Larimer	31
Logan	3
Morgan	1
Otero	3
Pueblo	1
Rio Blanco	1
Sedgwick	3
Weld	27
Total	130

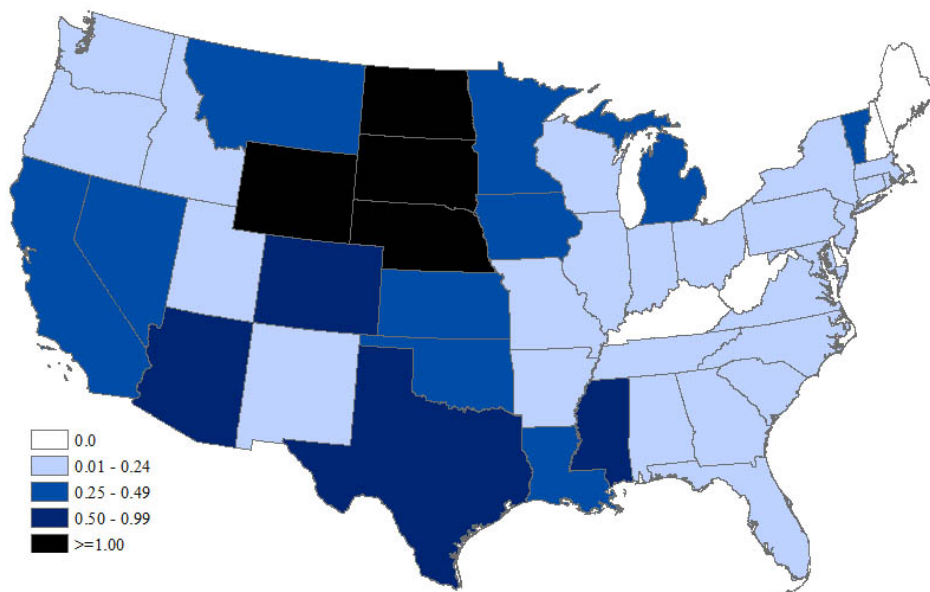
*This number reflects the most current surveillance data as of October 14, 2016

West Nile Virus Mosquito and Animal Surveillance in Colorado

January 1, 2016 through September 15, 2016



West Nile Neuroinvasive Incidence by State as of 10/18/2016



LARVAL MOSQUITO CONTROL

Years of research and practical experience have shown that the most effective way to control mosquito populations is through an aggressive Integrated Pest Management (IPM) approach. This approach aims at using a variety of concepts, tools, and products to reduce a pest population to a tolerable level. Translating these ideas to mosquito control, CMC has found the most environmentally and economically sound approach is through targeting the aquatic larval stage of the mosquito. Targeting this stage prevents the emergence of the adult mosquito and thus the inevitable result of disease and nuisance. Over 93% of Colorado Mosquito Control's operational efforts are focused on larval control.

Larval mosquito control can be achieved in several ways including biological, biochemical, chemical, and mechanical means. Although there are a variety of methods of reducing larval populations some may have greater consequence than benefit. Mechanical or habitat modification is a technique which may be used, but the area to be modified and the extent to which the work will affect the surrounding area must be carefully reviewed. Permanent ecological damage may occur if extensive habitat change has taken place. True biological controls may, too, have costs which outweigh the benefits or competency of their control capacity. Predatory fish serve as a good example of this.



The mosquito fish (*Gambusia affinis*), an introduced species, while an effective predator on mosquito larvae, may have much larger dangers to native fish of Colorado waters. A very aggressive eater and rapid reproducer, *Gambusia* often out-compete their native counterparts. Due to these factors the Colorado Division of Wildlife (CDOW) has placed restrictions on the stocking and use of the fish. However, this year CMC obtained, stocked and distributed a supply of fathead minnows (*Pimephales promelas*), a native Colorado species. Fish were made available to residents for placement in irrigation or ornamental ponds. In general however, predatory fish and other biological controls such as bird and bats do not provide sufficient control of mosquito populations to be used as the sole mechanism. Other methods must be used to gain adequate larval mosquito population reductions.

CMC's favored method of larval mosquito control is through bacterial bio-rational products. The main product used by CMC is a variety of bacteria (*Bacillus thuringiensis var. israeliensis*). *Bti* as it is known has become the cornerstone of mosquito control programs throughout the world. The benefits include its efficacy and lack of environmental impacts. When used properly successful control without impact to aquatic invertebrates, birds, mammals, fish, amphibians, reptiles, or humans can be achieved.

Another bacterial product closely related to *Bti* is *Bacillus sphaericus* (*Bs*). In addition to all of the benefits of *Bti*, *Bs* is by definition a true biological control agent in that it remains in the system through multiple broods, or generations, of mosquitoes. Unfortunately the residual benefit of the control comes at a cost in price of approximately three times that of *Bti*.

Other larval control products include a growth regulators (methoprene, in the form of the product Altosid), mineral oils (Bonide, BVA), and an organophosphate (Abate). Methoprene is a synthetic copy of a juvenile growth hormone in larval mosquitoes. The hormone prevents normal development of the adult mosquito in the pupal stage eventually causing death. While a good control product, the cost is prohibitive to be the predominant product in a large scale program. Abate, the one chemical larval control product CMC uses, serves as an effective product, but label restrictions limit its use in many areas. CMC limits the use of chemical larvicides to areas with little biodiversity, such as road side ditches, or areas which chronically produce large amounts of mosquitoes and use them only as a last resort when other solutions are not present. The benefits of these products are the availability of 30 and 150 day formulations. Mineral oil is the only product effective on the pupal stage and therefore is an essential tool when pupae are found.

CMC constantly strives to improve its operations. We utilize "CMMS" (Computerized Mosquito Management System) utilizes historical data to analyze and identify areas and sites of particular importance. Targeted inspections then allow for resources to be allocated efficiently.

CMC SURVEILLANCE LABORATORY

Information about mosquito abundance and species identity is critical to a successful mosquito control program. Colorado Mosquito Control employs two kinds of traps to monitor mosquito populations. The most commonly used is the CDC light trap which uses carbon-dioxide from dry ice as bait to attract female mosquitoes seeking a blood meal from a breathing animal. Once attracted by the CO₂, the mosquitoes are lured by a small light to a fan that pulls them into a net for collection. The Gravid Trap uses a tub of highly-organic water as bait to attract female mosquitoes that are looking for a place to lay their eggs. A fan placed close to the water surface forces mosquitoes that come to the water into a collection net. Once back in the laboratory, the contents of the trap nets are counted and identified by technicians trained to recognize the Colorado mosquito species.

In 2016, Colorado Mosquito Control monitored a statewide network of hundreds of weekly trap sites, collecting adult mosquitoes that were then counted and identified to species by the CMC Surveillance Laboratory. While individual traps provide only limited information, trap data is interpreted in the context of historical records for the same trap site, going back in time more than a decade. Individual traps are also compared to other traps from around the region that were set on the same night and therefore exposed to similar weather conditions. Technicians working in the Surveillance Laboratory at Colorado Mosquito Control are trained to provide accurate species-level identification of mosquito specimens, for both adults and larvae. More than 50 mosquito species are believed to occur in Colorado, with dozens identified from samples processed during the 2016 season from across the state.



Additionally, the CMC Surveillance Laboratory conducts an intensive larval identification program with larval mosquito samples collected by I&L technicians prior to larviciding being identified to species. This information is now invaluable in targeting mosquito control efforts as we gain a greater understanding of the habitat types preferred by Colorado mosquito species and the seasonality of these habitats as sites for mosquito development.

Specimens and data collected from these traps and larval identification are used in:

- Determining effectiveness of larval control efforts. Each mosquito species prefers specific kinds of habitats for larval development. If a trap includes large numbers, it could indicate the presence of an unknown larval habitat and, based on the species identification and known habitat preference for that species, direct field technicians as to possible sources of the mosquitoes collected.
- Determining larval and adult mosquito species which helps illustrate the threat of mosquito-borne disease amplification and transmission.
- Determining where adult control efforts were necessary. While mosquito eradication is impossible, significant population reduction is achievable. In places where larval control was insufficient, especially in neighborhoods where adult mosquitoes migrated in from larval sources outside of the control area, it may be necessary to use adulticide methods such as ULV truck fogging or barrier sprays of nearby harborage areas. Trap counts that were in excess of an acceptable threshold for the area would trigger adult control measures.
- Surveillance for Mosquito-borne Disease. Historically, CMC efforts were targeted primarily at controlling mosquito nuisance problems with limited disease surveillance. However, since the arrival of the West Nile Virus in Colorado in August of 2002, the paradigm has shifted toward disease prevention and control. Accurate species identification of the mosquitoes in the traps is important when monitoring species population trends. It also is necessary for evaluating whether a population spike represents an actual increase in disease transmission potential or only an increased nuisance level.

CDC Surveillance Light Trap Data Comparison

Traps in Louisville collected a total of 2,085 mosquitoes in 2016. The percent composition of mosquitoes collected included 27.7% (577) *Culex* spp., 71.8% (1,497) *Aedes/Ochlerotatus* spp., and 0.5% (10) *Culiseta* spp. mosquitoes. Please see *Appendix: 2016 CDC Trap Composite Data* as well as the respective charts for each trap for more information.

2016 ADULT CONTROL

The goal of CMC is to provide all residents with the best options for safe, effective, modern mosquito management. The primary emphasis of our mosquito management program is to control mosquitoes in the larval stage. This environmentally focused program maintains adulticiding as a final resort when adult mosquito populations surpass nuisance or risk thresholds. Mosquito surveillance results are used to make data driven decisions regarding areas that need to be sprayed for adult mosquito control. Such spraying is targeted to specific sectors determined by said data thereby reducing the size and frequency of spraying a given area.

CMC uses all available data from CDC light traps, Mosquito Hotline annoyance calls, and field technician reports to focus adult mosquito control efforts on specific, very limited “targeted” areas. In parts of the community where high numbers of mosquito annoyance calls are received, “floater” CDC light traps are set to evaluate adult population levels and species make-up. In most cases, a direct correlation is evident between areas with high complaint calls and high trap counts. While this correlation allows us to focus adult control in these areas, the emphasis is placed on finding the source of breeding and continued larval control measures.

Colorado Mosquito Control uses state of the art technology, calibrated application timing, and least-toxic products to minimize all non-target impact. All adult mosquito control is accomplished using calibrated Ultra Low Volume (ULV) equipment and performed after dusk. This type of equipment produces droplets averaging 12 microns in diameter and allows for a minimal amount of product to be put into the environment. These treatments take place in the evening when mosquitoes are flying in greater numbers and non-target activity is greatly reduced. Using this application technique, the overall goal of minimal environmental impact and effective adult control is achieved in the targeted area.

In 2016 CMC utilized the water-based product AquaKontrol 30-30 for ULV adult mosquito control. This uses the highly effective pyrethroid Permethrin as their active ingredient, while the water-base provides a much more environmentally sound solution to traditional oil-based adulticides. Daytime backpack barrier applications using the product Talstar Pro and utilizing the pyrethroid Bifenthrin are also effective in controlling adult mosquitoes. A total of 0.4 miles of adulticide applications took place in Louisville in 2016. Please see *Appendix: ULV Adulticide Comparison by Service Area* for more information.

TECHNOLOGY

CMC has strived to improve the programs offered to its customers with novel and progressive advancements, continually evaluating and implementing new products and new technologies, not only with regard to control efforts but also for data processing and information reporting. CMC shares the belief that timely information should be accessible to customers and residents, so that the people who fund the programs can access the work that is being performed. CMC also believes that the ability to access the data will improve both the resident's and municipality's ability to stay informed about West Nile Virus risk in their community.

CMC WEBSITE

Our website, www.comosquitocontrol.com, is the leading website in Colorado when it comes to providing up-to-date, factual, and comprehensive information on, and links to, mosquito biology and control, mosquito-borne diseases, pesticide toxicology information, and a wealth of topics relating to mosquitoes. Our website continues to be an integral tool for dissemination of operational data to the citizens we serve, minimizing the resources and time required by the city and its employees for answering for fielding public inquiries.



PUBLIC OUTREACH & DATA DISSEMINATION

For over two and half decades, CMC has demonstrated that strong Public Outreach programs, quality Data Dissemination and outstanding Customer Service standards are the keys to success in providing large-scale municipal mosquito control programs. Citizen feedback, inquiry, and satisfaction surveys aid in evaluating the effectiveness of our program. CMC constantly looks for ways to better serve the communities we work with and appreciates the citizen involvement in improving the programs that we offer. We have clearly demonstrated this commitment by proactively incorporating numerous innovative programs, activities and services into our programs. See *Appendix: MosquitoLine Calls by Service Area* for season summaries.

CALL NOTIFICATION & SHUTOFF SYSTEM

CMC maintains a comprehensive Call Notification & Shutoff database, and will notify residents on this list whenever ULV adulticide spray applications will be conducted within 2 blocks of their property or within the effective ULV spray drift distance (300-500 ft. depending on wind speed and direction). All Shutoff locations are updated annually. Call & Shutoff forms are available online and may be submitted via the CMC website or by mail and fax.

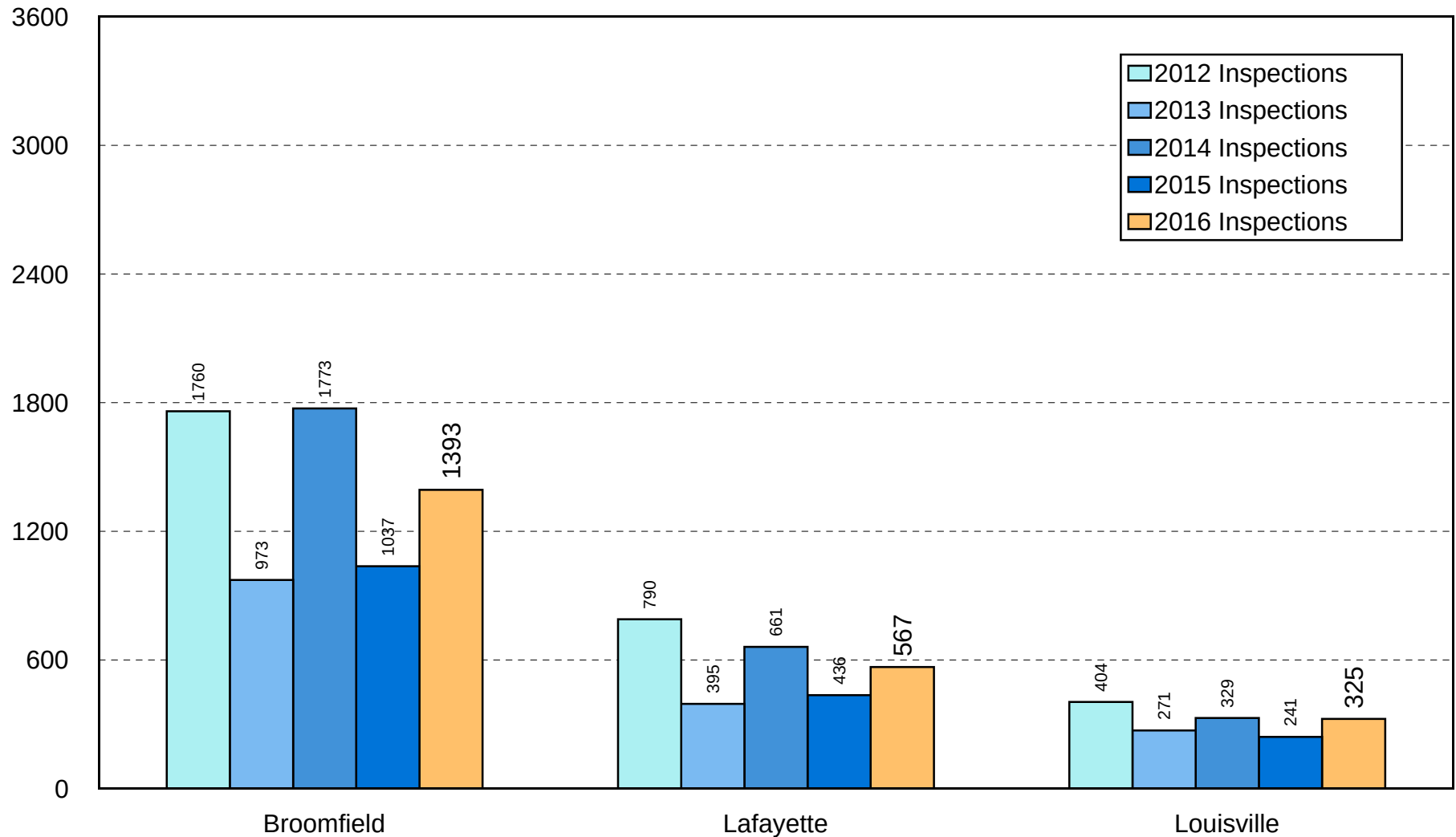
SUMMARY

The summer of 2016 proved to be a dry and mild one altogether with warmer than average overall temperatures and below average levels of precipitation. Little if any of the type of extreme weather the Front Range saw in the early part of the 2015 summer was fortunately experienced. The overall numbers of mosquitoes caught in local traps were approximately half of what they were last year although overall numbers of Culex mosquitoes were up. Not coincidentally 2016 will end with somewhat more cases of human West Nile Virus than in 2015 along with unfortunately slightly more related deaths. It is therefore important to note that even in summers with generally moderate adult mosquito activity we must remain vigilant in monitoring West Nile Virus along with all mosquito related activity in general.

Colorado Mosquito Control wishes to thank all City of Louisville staff, officials and residents for their continuing support and we look forward to providing Louisville with mosquito control services in 2017 and beyond.

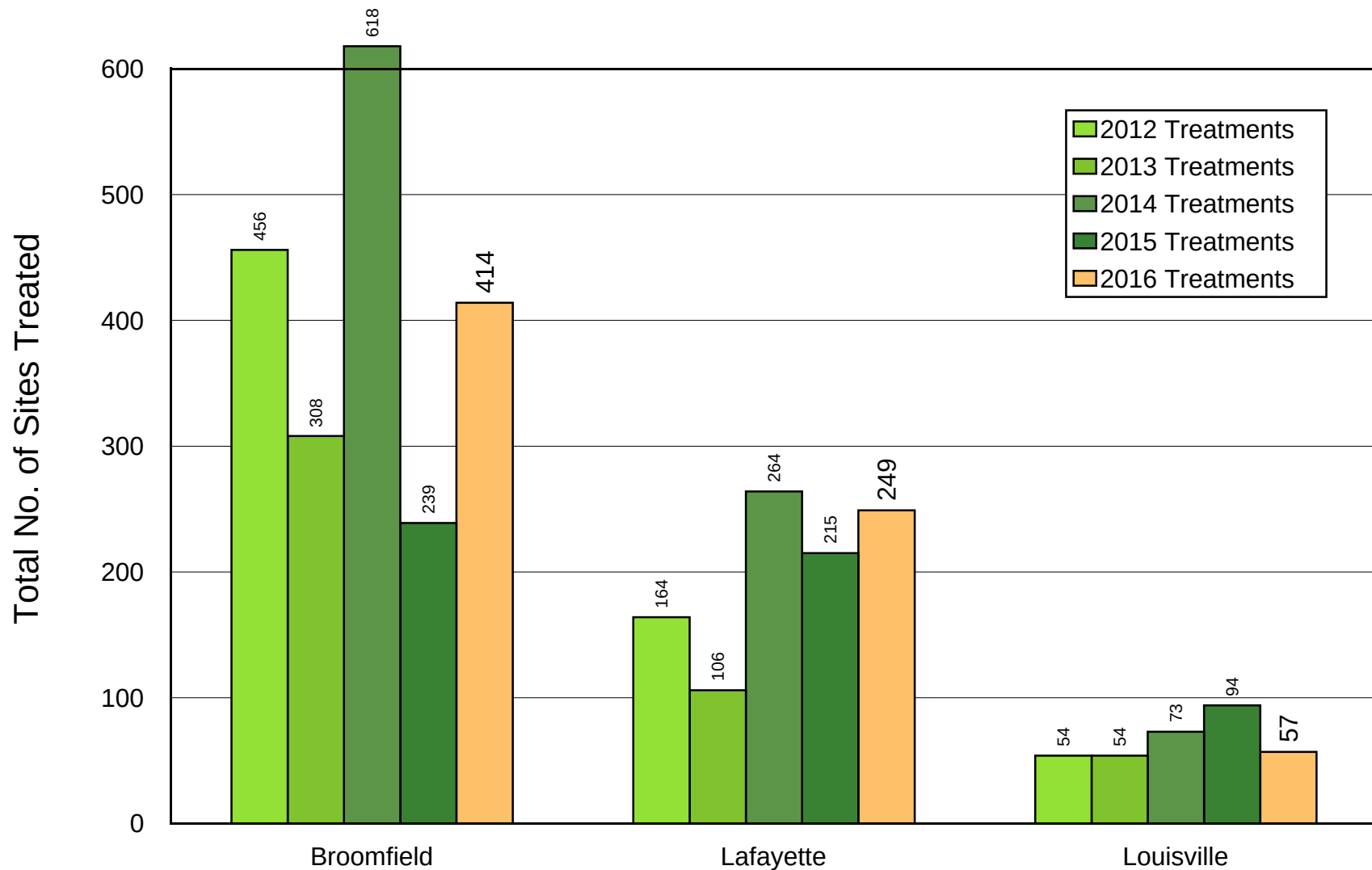
Larval Site Inspections by Service Area

'12 - '16 Broomfield/Boulder Mosquito Control Programs



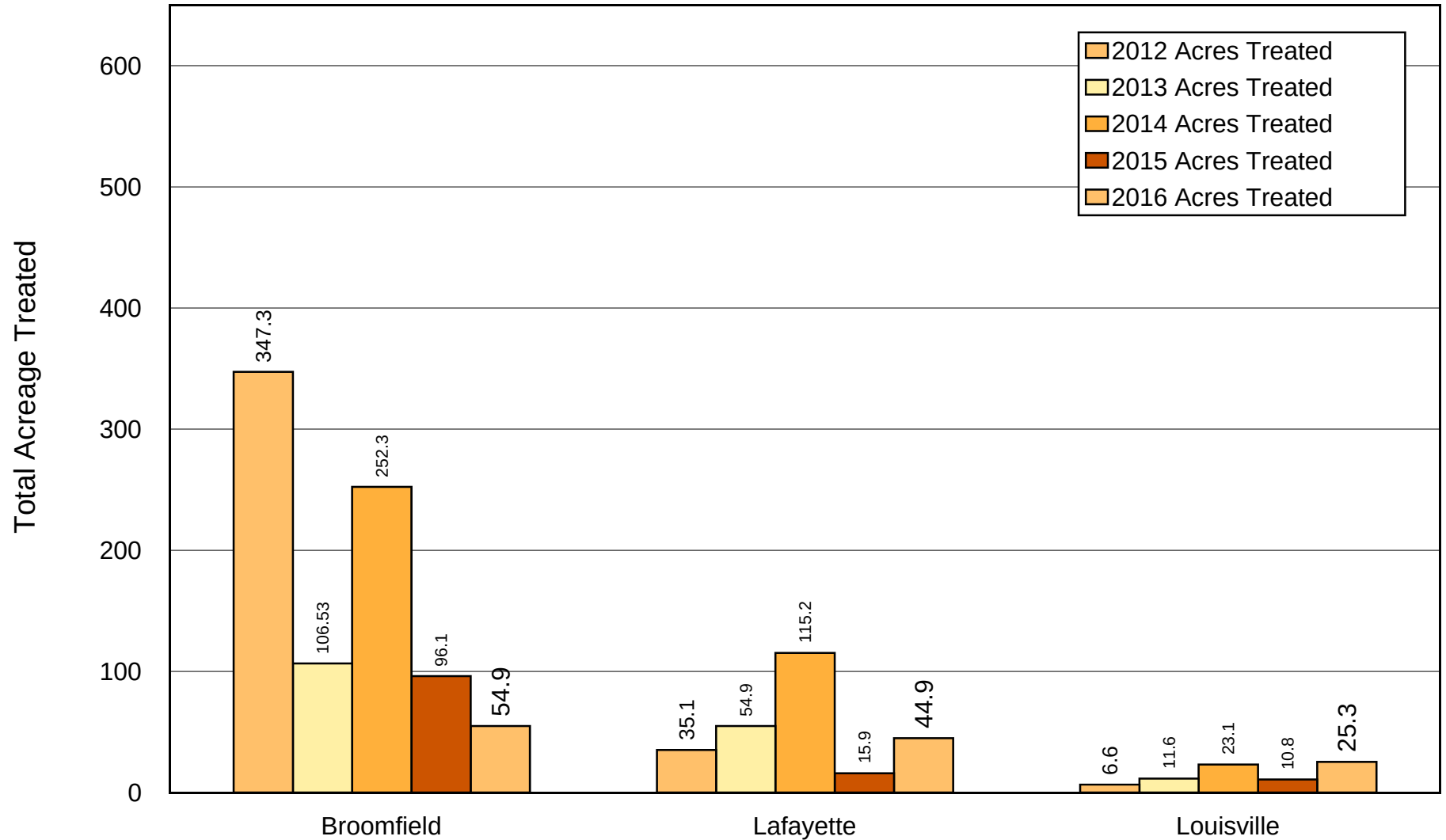
Larval Site Treatments by Service Area

'12 - '16 Broomfield/Boulder Mosquito Control Programs



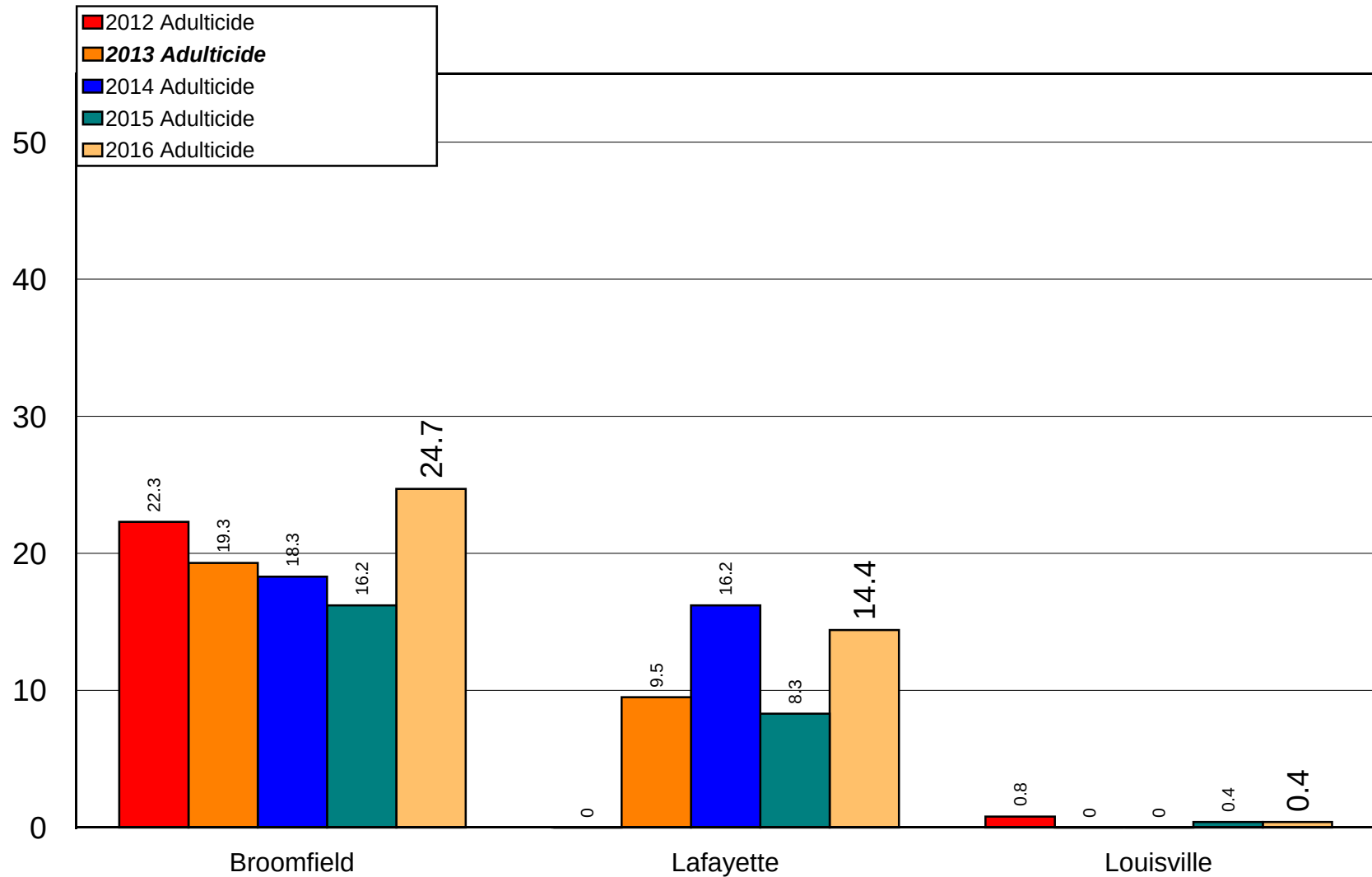
Larval Acreage Treated by Service Area

'12 - '16 Broomfield/Boulder Mosquito Control Programs



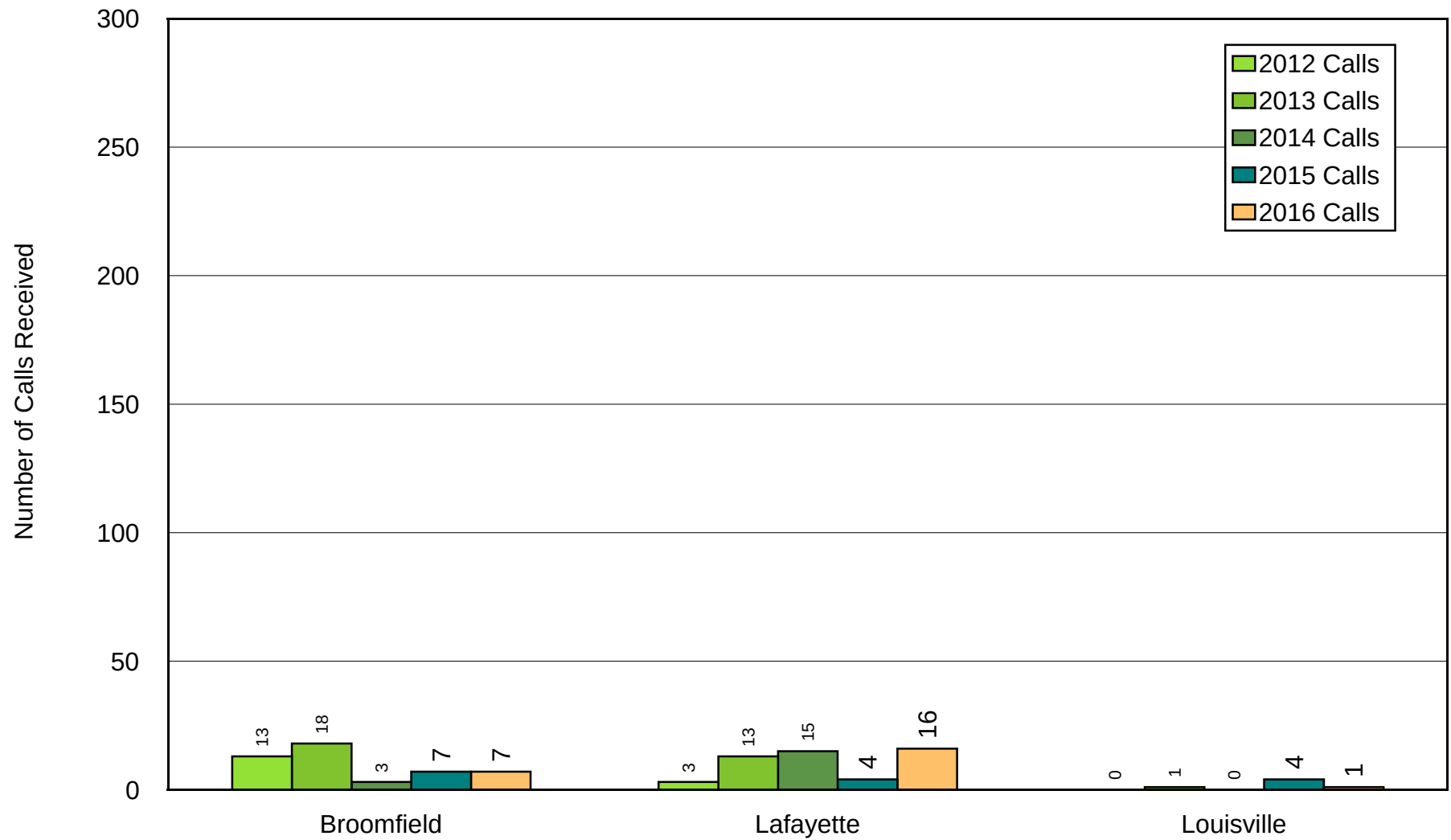
Adulticide Miles Comparison By Service Area

'12 -'16 Broomfield/Boulder Mosquito Control Programs



MosquitoLine Calls by Service Area

'12 - '16 Broomfield/Boulder Mosquito Control Programs



2016 Louisville Light Trap Composite Data

Total number of trap/nights set: 37

Total number of mosquitoes collected: 2,085

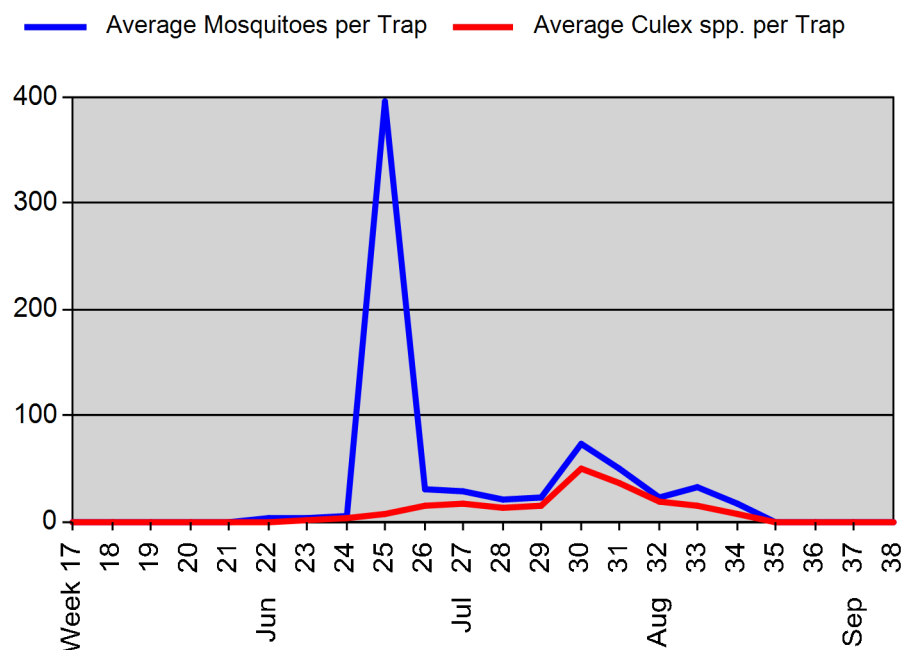
Average mosquitoes per trap/night: 56

Average Culex per trap/night: 16

Species collected and abundance:

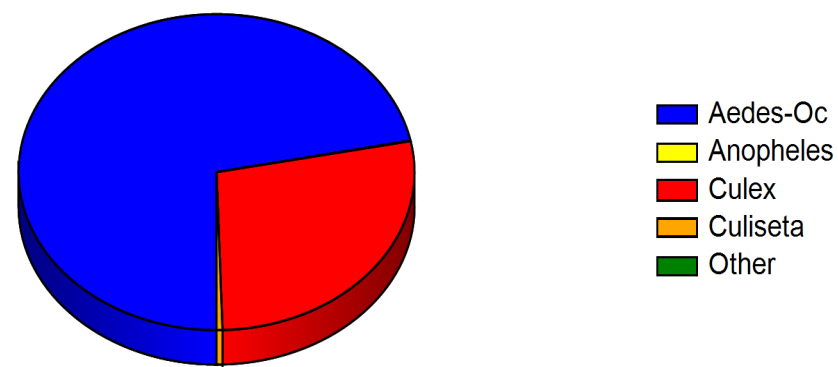
<i>Aedes (Oc.) hendersoni</i>	2	0.1 %
<i>Aedes (Oc.) increpitus</i>	34	1.6 %
<i>Aedes (Oc.) melanimon</i>	22	1.1 %
<i>Aedes (Oc.) nigromaculis</i>	1	0.0 %
<i>Aedes (Oc.) trivittatus</i>	23	1.1 %
<i>Aedes vexans</i>	1415	67.9 %
<i>Anopheles hermsi</i>	1	0.0 %
<i>Culex pipiens</i>	88	4.2 %
<i>Culex salinarius</i>	1	0.0 %
<i>Culex tarsalis</i>	488	23.4 %
<i>Culiseta inornata</i>	10	0.5 %

Seasonality



Genus proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	1,497	71.8 %
<i>Anopheles</i>	1	0.0 %
<i>Culex</i>	577	27.7 %
<i>Culiseta</i>	10	0.5 %
Other	0	0.0 %



LO-01: Coal Creek Golf Course

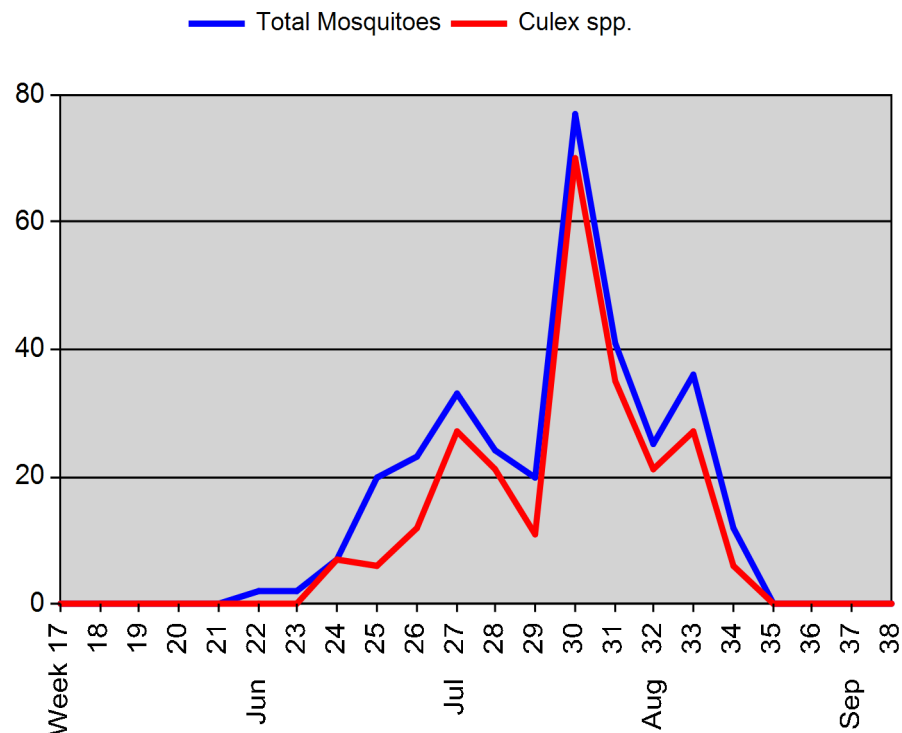
Season: 2016
Trap Type: Light/CO2 - BCZ3 Sentinel Zone
Location: Dillon Road at bridge over Coal Creek
GPS: N39° 57.465', W105° 9.120'

Total number of trap/nights set: 13
Total number of mosquitoes collected: 320
Average mosquitoes per trap/night: 25
Average Culex per trap/night: 19

Species collected and abundance:

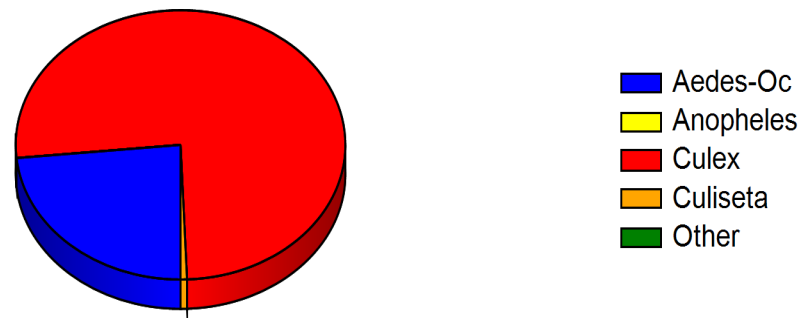
<i>Aedes (Oc.) increpitus</i>	2	0.6 %
<i>Aedes (Oc.) melanimon</i>	4	1.3 %
<i>Aedes (Oc.) trivittatus</i>	11	3.4 %
<i>Aedes vexans</i>	58	18.1 %
<i>Culex pipiens</i>	17	5.3 %
<i>Culex tarsalis</i>	226	70.6 %
<i>Culiseta inornata</i>	2	0.6 %

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	75	23.4 %
<i>Anopheles</i>	0	0.0 %
<i>Culex</i>	243	75.9 %
<i>Culiseta</i>	2	0.6 %
Other	0	0.0 %



LO-04: Annette A. Brand Park

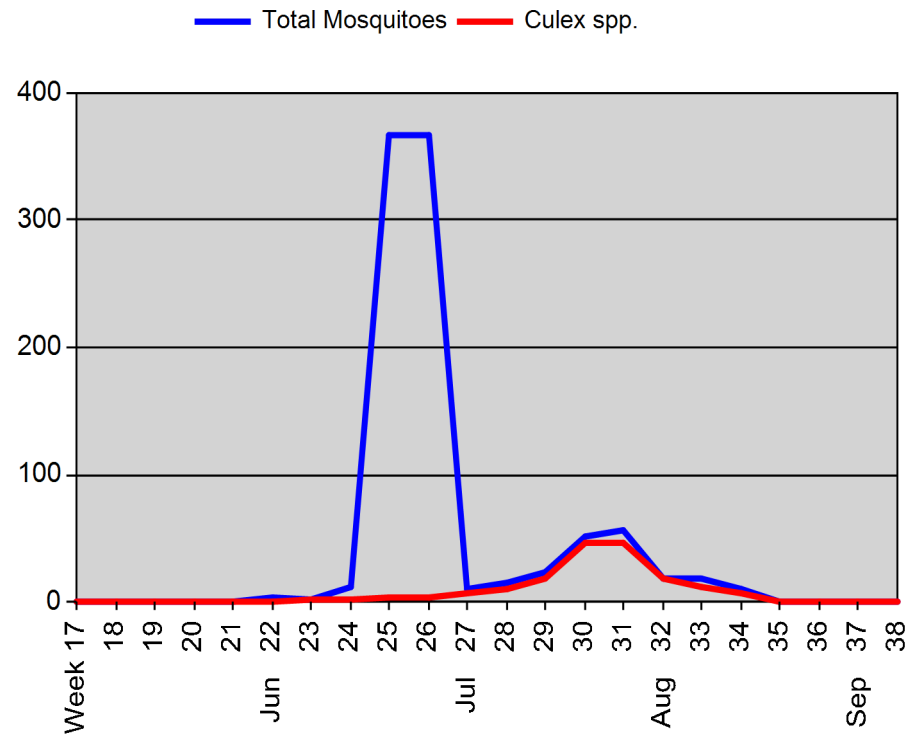
Season: 2016
Trap Type: Light/CO2
Location: Annette A. Brand Park at entrance to Louisville Res.
GPS: N39° 59.415', W105° 9.495'

Total number of trap/nights set: 12
Total number of mosquitoes collected: 586
Average mosquitoes per trap/night: 49
Average Culex per trap/night: 14

Species collected and abundance:

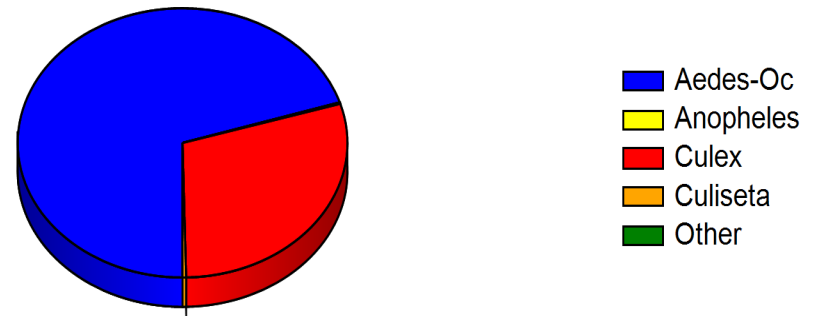
<i>Aedes (Oc.) increpitus</i>	15	2.6 %
<i>Aedes (Oc.) melanimon</i>	2	0.3 %
<i>Aedes (Oc.) trivittatus</i>	4	0.7 %
<i>Aedes vexans</i>	390	66.6 %
<i>Anopheles freeborni</i>	1	0.2 %
<i>Culex pipiens</i>	23	3.9 %
<i>Culex tarsalis</i>	149	25.4 %
<i>Culiseta inornata</i>	2	0.3 %

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	411	70.1 %
<i>Anopheles</i>	1	0.2 %
<i>Culex</i>	172	29.4 %
<i>Culiseta</i>	2	0.3 %
Other	0	0.0 %



LO-08: Coal Creek Trail

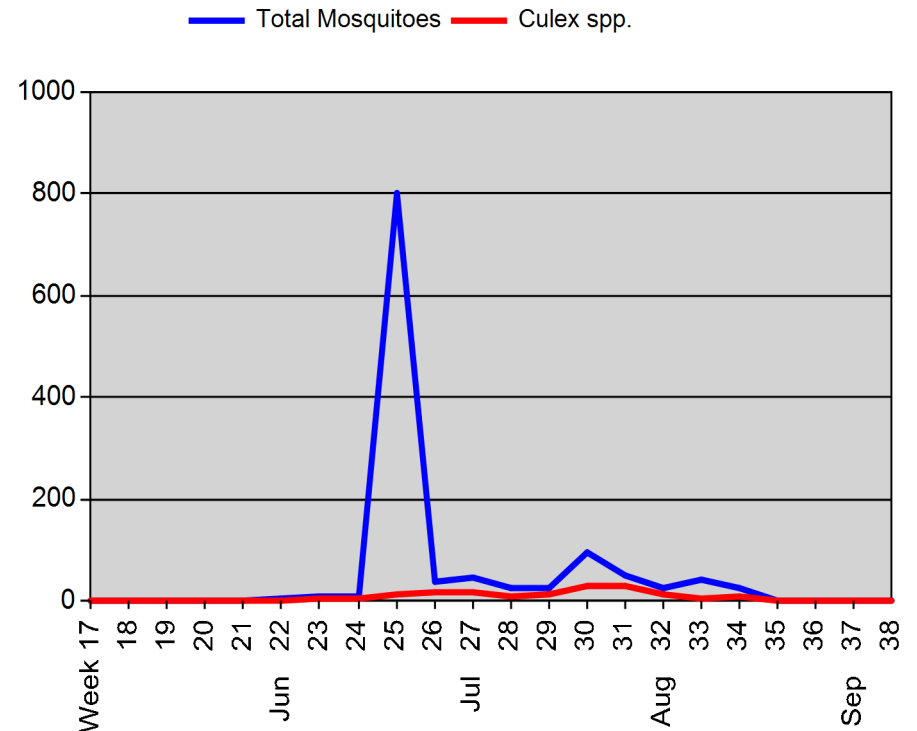
Season: 2016
Trap Type: Light/CO2 - BCZ3 Sentinel Zone
Location: Coal Creek Trailhead off Aspen Way
GPS: N39° 58.090', W105° 7.965'

Total number of trap/nights set: 12
Total number of mosquitoes collected: 1,179
Average mosquitoes per trap/night: 98
Average Culex per trap/night: 14

Species collected and abundance:

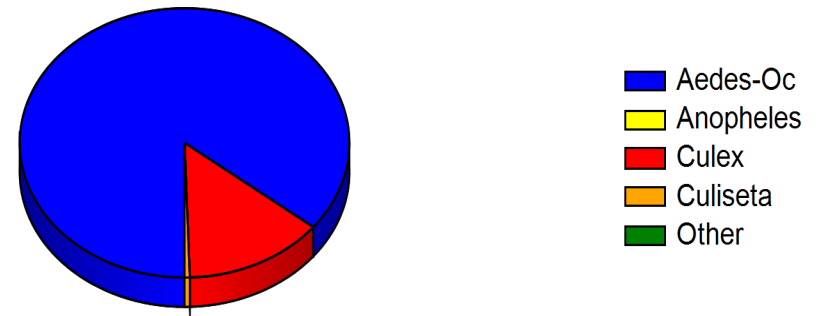
<i>Aedes (Oc.) hendersoni</i>	2	0.2 %
<i>Aedes (Oc.) increpitus</i>	17	1.4 %
<i>Aedes (Oc.) melanimon</i>	16	1.4 %
<i>Aedes (Oc.) nigromaculis</i>	1	0.1 %
<i>Aedes (Oc.) trivittatus</i>	8	0.7 %
<i>Aedes vexans</i>	967	82.0 %
<i>Culex pipiens</i>	48	4.1 %
<i>Culex salinarius</i>	1	0.1 %
<i>Culex tarsalis</i>	113	9.6 %
<i>Culiseta inornata</i>	6	0.5 %

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	1,011	85.8 %
<i>Anopheles</i>	0	0.0 %
<i>Culex</i>	162	13.7 %
<i>Culiseta</i>	6	0.5 %
Other	0	0.0 %



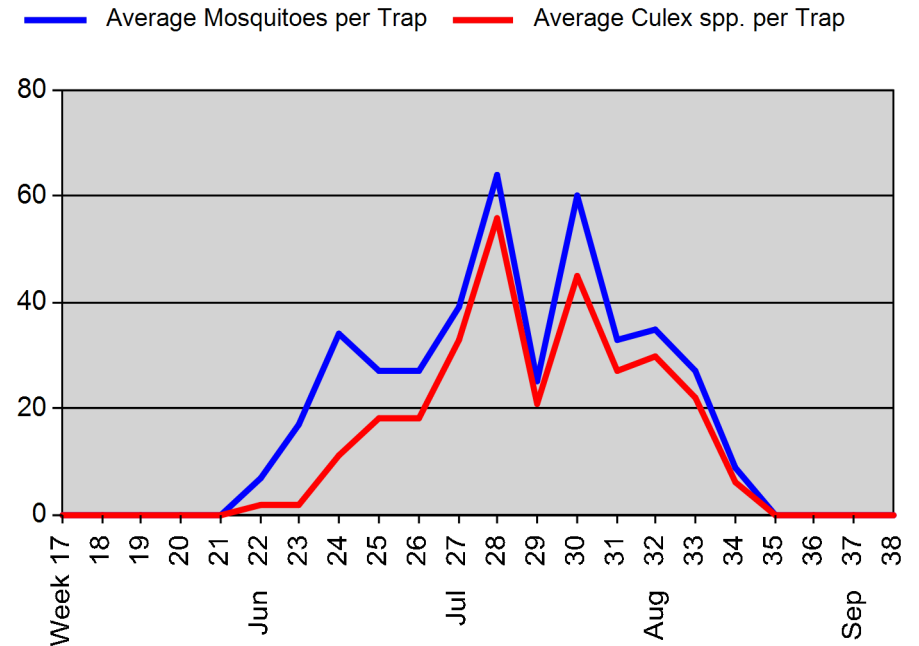
2016 Broomfield Light Trap Composite Data

Total number of trap/nights set: 70
 Total number of mosquitoes collected: 2,264
 Average mosquitoes per trap/night: 32
 Average Culex per trap/night: 23

Species collected and abundance:

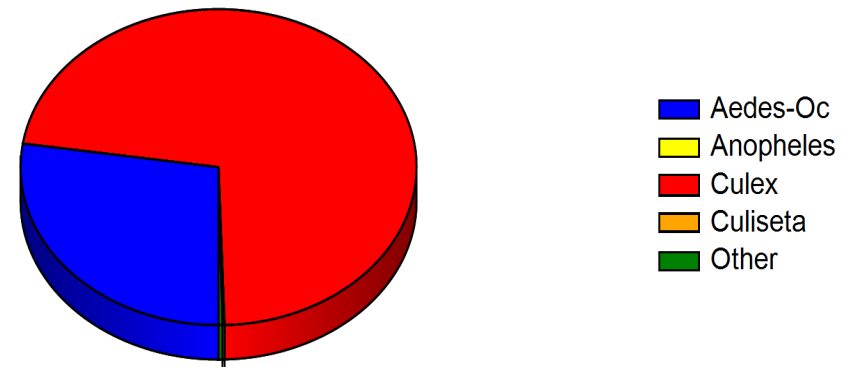
<i>Aedes (Oc.) dorsalis</i>	13	0.6 %
<i>Aedes (Oc.) hendersoni</i>	1	0.0 %
<i>Aedes (Oc.) increpitus</i>	239	10.6 %
<i>Aedes (Oc.) melanimon</i>	2	0.1 %
<i>Aedes (Oc.) trivittatus</i>	23	1.0 %
<i>Aedes vexans</i>	342	15.1 %
<i>Coquillettidia perturbans</i>	7	0.3 %
<i>Culex pipiens</i>	195	8.6 %
<i>Culex salinarius</i>	7	0.3 %
<i>Culex tarsalis</i>	1431	63.2 %
<i>Culiseta inornata</i>	4	0.2 %

Seasonality



Genus proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	620	27.4 %
<i>Anopheles</i>	0	0.0 %
<i>Culex</i>	1,633	72.1 %
<i>Culiseta</i>	4	0.2 %
Other	7	0.3 %



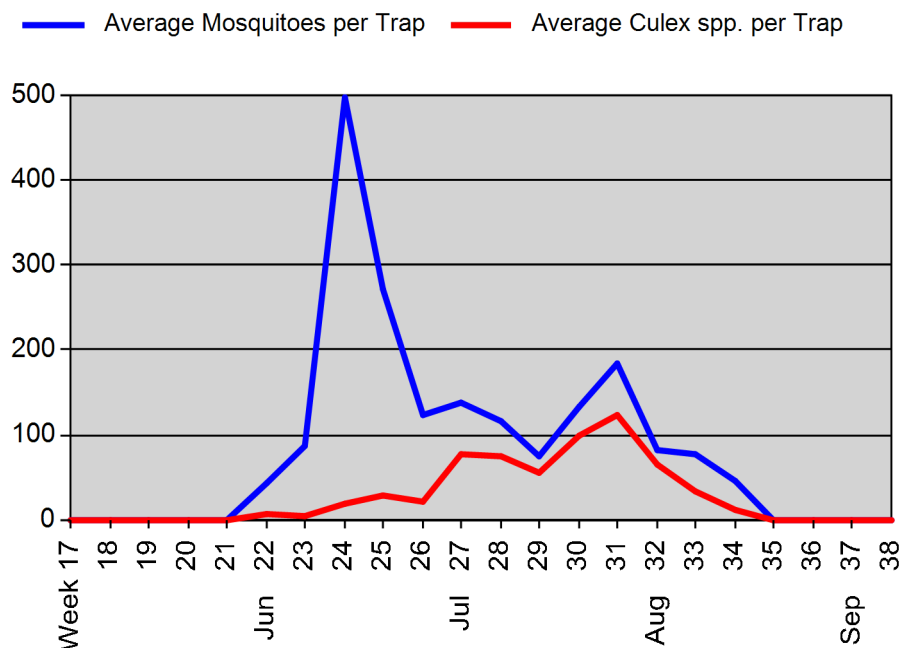
2016 Boulder CDC Trap Composite Data

Total number of trap/nights set: 245
 Total number of mosquitoes collected: 35,982
 Average mosquitoes per trap/night: 147
 Average Culex per trap/night: 49

Species collected and abundance:

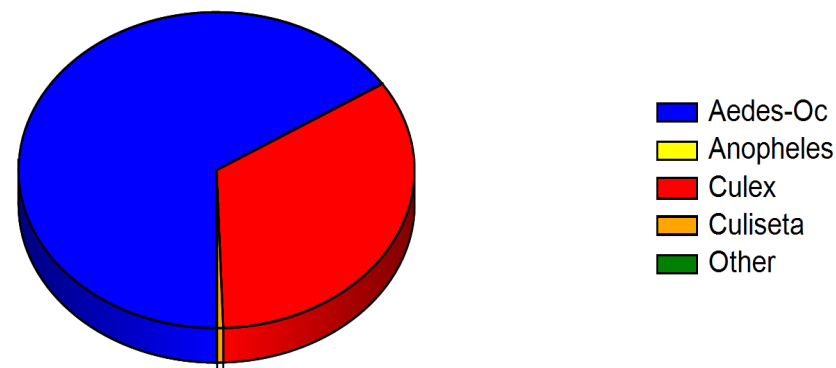
<i>Aedes (Oc.) dorsalis</i>	252	0.7 %
<i>Aedes (Oc.) fitchii</i>	7	0.0 %
<i>Aedes (Oc.) hendersoni</i>	42	0.1 %
<i>Aedes (Oc.) increpitus</i>	6277	17.4 %
<i>Aedes (Oc.) intrudens</i>	35	0.1 %
<i>Aedes (Oc.) melanimon</i>	652	1.8 %
<i>Aedes (Oc.) nigromaculis</i>	15	0.0 %
<i>Aedes (Oc.) trivittatus</i>	338	0.9 %
<i>Aedes cinereus</i>	1	0.0 %
<i>Aedes vexans</i>	16049	44.6 %
<i>Anopheles hermsi</i>	10	0.0 %
<i>Coquillettidia perturbans</i>	18	0.1 %
<i>Culex pipiens</i>	986	2.7 %
<i>Culex salinarius</i>	93	0.3 %
<i>Culex tarsalis</i>	11033	30.7 %
<i>Culiseta incidens Cs. inornata</i>	174	0.5 %

Seasonality



Genus proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	23,668	65.8 %
<i>Anopheles</i>	10	0.0 %
<i>Culex</i>	12,112	33.7 %
<i>Culiseta</i>	174	0.5 %
Other	18	0.1 %



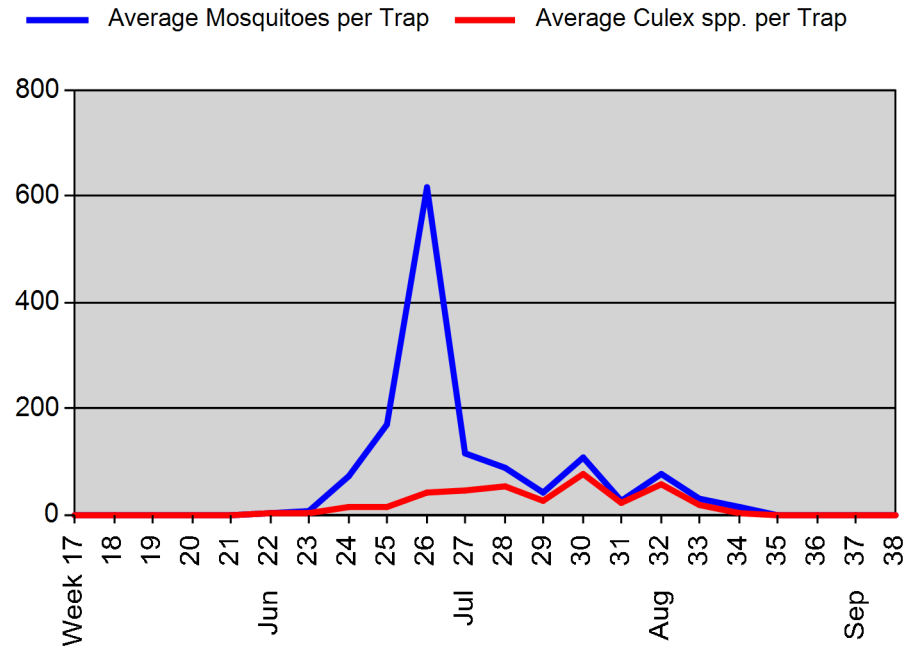
2016 Lafayette Light Trap Composite Data

Total number of trap/nights set: 37
 Total number of mosquitoes collected: 2,868
 Average mosquitoes per trap/night: 78
 Average Culex per trap/night: 28

Species collected and abundance:

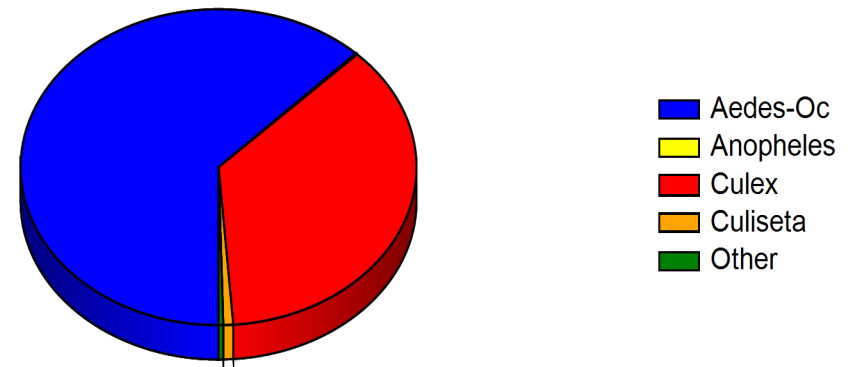
<i>Aedes (Oc.) dorsalis</i>	2	0.1 %
<i>Aedes (Oc.) hendersoni</i>	4	0.1 %
<i>Aedes (Oc.) increpitus</i>	4	0.1 %
<i>Aedes (Oc.) melanimon</i>	456	15.9 %
<i>Aedes (Oc.) trivittatus</i>	18	0.6 %
<i>Aedes vexans</i>	1300	45.3 %
<i>Anopheles hermsi</i>	4	0.1 %
<i>Coquillettidia perturbans</i>	11	0.4 %
<i>Culex pipiens</i>	65	2.3 %
<i>Culex salinarius</i>	14	0.5 %
<i>Culex tarsalis</i>	967	33.7 %
<i>Culiseta inornata</i>	23	0.8 %

Seasonality



Genus proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	1,784	62.2 %
<i>Anopheles</i>	4	0.1 %
<i>Culex</i>	1,046	36.5 %
<i>Culiseta</i>	23	0.8 %
Other	11	0.4 %



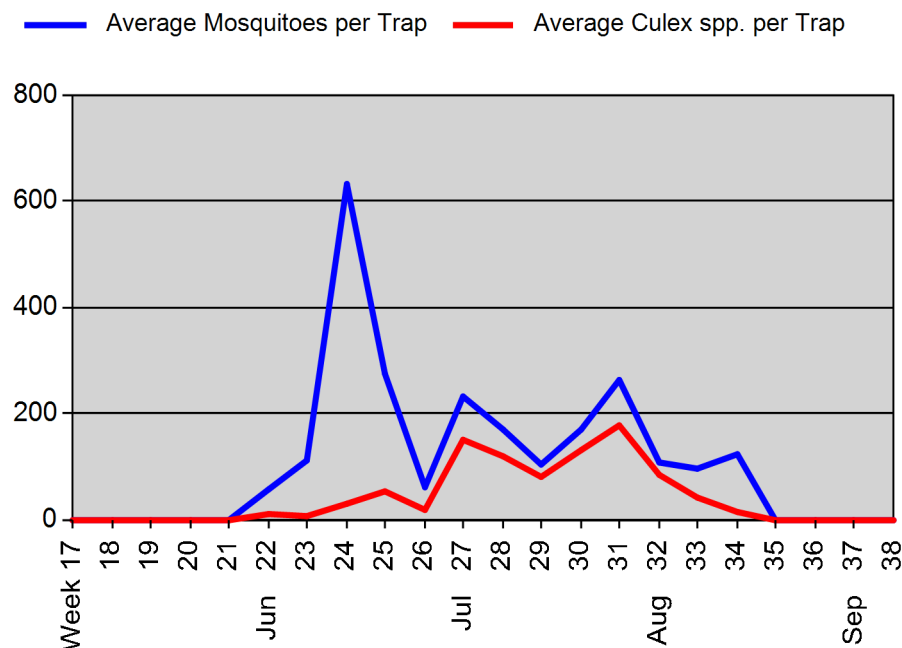
2016 Longmont Light Trap Composite Data

Total number of trap/nights set: 195
 Total number of mosquitoes collected: 37,846
 Average mosquitoes per trap/night: 194
 Average Culex per trap/night: 74

Species collected and abundance:

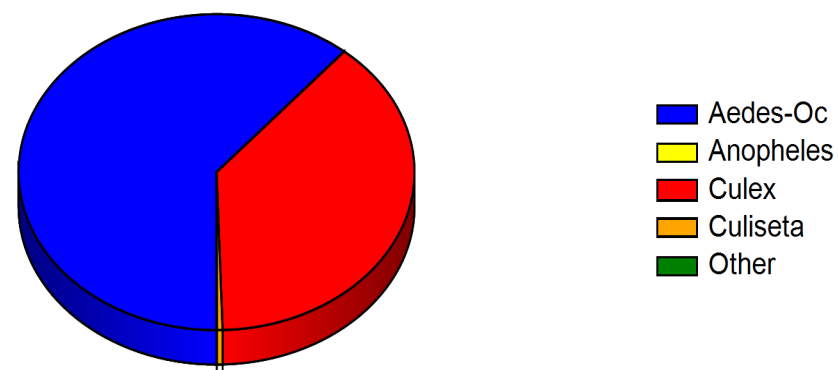
<i>Aedes (Oc.) dorsalis</i>	278	0.7 %
<i>Aedes (Oc.) fitchii</i>	7	0.0 %
<i>Aedes (Oc.) hendersoni</i>	36	0.1 %
<i>Aedes (Oc.) increpitus</i>	6402	16.9 %
<i>Aedes (Oc.) intrudens</i>	35	0.1 %
<i>Aedes (Oc.) melanimon</i>	182	0.5 %
<i>Aedes (Oc.) nigromaculis</i>	16	0.0 %
<i>Aedes (Oc.) trivittatus</i>	336	0.9 %
<i>Aedes cinereus</i>	1	0.0 %
<i>Aedes vexans</i>	15849	41.9 %
<i>Anopheles hermsi</i>	5	0.0 %
<i>Coquillettidia perturbans</i>	7	0.0 %
<i>Culex pipiens</i>	945	2.5 %
<i>Culex salinarius</i>	93	0.2 %
<i>Culex tarsalis</i>	13477	35.6 %
<i>Culiseta incidens and Cs. inornata</i>	177	0.5 %

Seasonality



Genus proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	23,142	61.1 %
<i>Anopheles</i>	5	0.0 %
<i>Culex</i>	14,515	38.4 %
<i>Culiseta</i>	177	0.5 %
Other	7	0.0 %



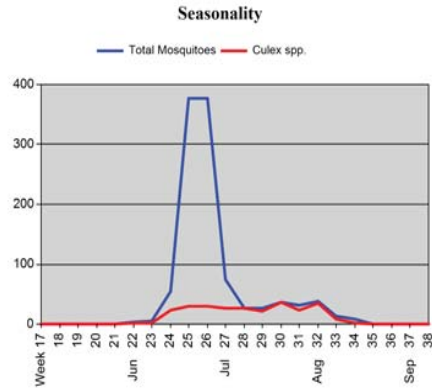
LA-05: Blue Heron

Season: 2016
 Trap Type: Light/CO2
 Location: south of Lake Meadow Drive near Heron Lake
 GPS: N40° 1.320', W105° 7.490'

Total number of trap/nights set: 12
 Total number of mosquitoes collected: 696
 Average mosquitoes per trap/night: 58
 Average Culex per trap/night: 20

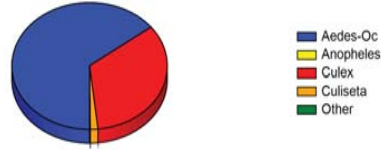
Species collected and abundance:

<i>Aedes (Oc.) melanimon</i>	142	20.4 %
<i>Aedes (Oc.) trivittatus</i>	16	2.3 %
<i>Aedes vexans</i>	291	41.8 %
<i>Coquillettidia perturbans</i>	1	0.1 %
<i>Culex pipiens</i>	12	1.7 %
<i>Culex salinarius</i>	1	0.1 %
<i>Culex tarsalis</i>	222	31.9 %
<i>Culiseta inornata</i>	11	1.6 %



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	449	64.5 %
<i>Anopheles</i>	0	0.0 %
<i>Culex</i>	235	33.8 %
<i>Culiseta</i>	11	1.6 %
Other	1	0.1 %



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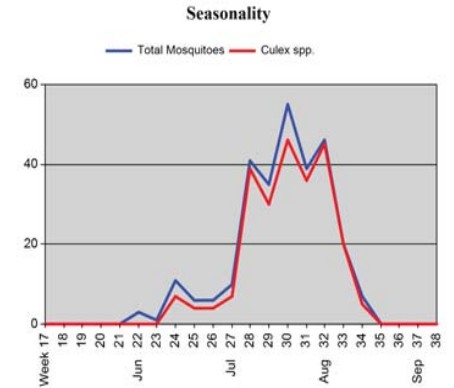
LA-10: Lafayette Finch at Elm

Season: 2016
 Trap Type: Light/CO2
 Location: North of Elm Street off Finch Avenue
 GPS: N40° 0.160', W105° 5.040'

Total number of trap/nights set: 12
 Total number of mosquitoes collected: 274
 Average mosquitoes per trap/night: 23
 Average Culex per trap/night: 20

Species collected and abundance:

<i>Aedes (Oc.) dorsalis</i>	1	0.4 %
<i>Aedes (Oc.) increpitus</i>	2	0.7 %
<i>Aedes (Oc.) melanimon</i>	4	1.5 %
<i>Aedes vexans</i>	25	9.1 %
<i>Culex pipiens</i>	35	12.8 %
<i>Culex salinarius</i>	12	4.4 %
<i>Culex tarsalis</i>	192	70.1 %
<i>Culiseta inornata</i>	3	1.1 %



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	32	11.7 %
<i>Anopheles</i>	0	0.0 %
<i>Culex</i>	239	87.2 %
<i>Culiseta</i>	3	1.1 %
Other	0	0.0 %



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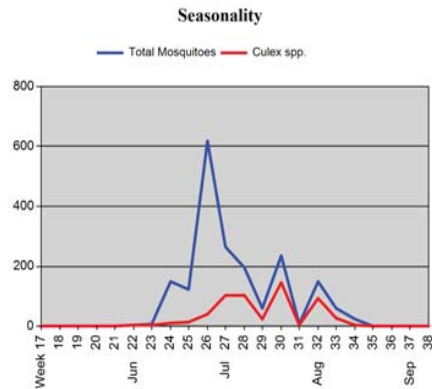
LA-11: Waneka Reservoir North

Season: 2016
 Trap Type: Light/CO2 - BCZ3 Sentinel Zone
 Location: east of Salina St. at S. Fork Dr.
 GPS: N39° 59.815', W105° 6.880'

Total number of trap/nights set: 13
 Total number of mosquitoes collected: 1,898
 Average mosquitoes per trap/night: 146
 Average Culex per trap/night: 44

Species collected and abundance:

<i>Aedes (Oc.) dorsalis</i>	1	0.1 %
<i>Aedes (Oc.) hendersoni</i>	4	0.2 %
<i>Aedes (Oc.) increpitus</i>	2	0.1 %
<i>Aedes (Oc.) melanimon</i>	310	16.3 %
<i>Aedes (Oc.) trivittatus</i>	2	0.1 %
<i>Aedes vexans</i>	984	51.8 %
<i>Anopheles freeborni</i>	4	0.2 %
<i>Coquillettidia perturbans</i>	10	0.5 %
<i>Culex pipiens</i>	18	0.9 %
<i>Culex salinarius</i>	1	0.1 %
<i>Culex tarsalis</i>	553	29.1 %
<i>Culiseta inornata</i>	9	0.5 %



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	1,303	68.7 %
<i>Anopheles</i>	4	0.2 %
<i>Culex</i>	572	30.1 %
<i>Culiseta</i>	9	0.5 %
Other	10	0.5 %



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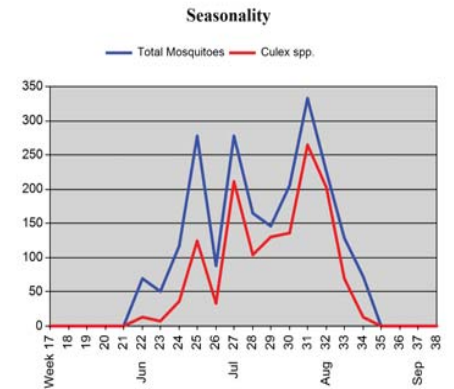
LM-03: Jim Hamm Nature Area

Season: 2016
 Trap Type: Light/CO2 - BCZ2 Sentinel Zone
 Location: Longmont 17th Ave. at Sundance Rd.
 GPS: N40° 11.350', W105° 3.585'

Total number of trap/nights set: 13
 Total number of mosquitoes collected: 2,156
 Average mosquitoes per trap/night: 166
 Average Culex per trap/night: 104

Species collected and abundance:

<i>Aedes (Oc.) dorsalis</i>	32	1.5 %
<i>Aedes (Oc.) fitchii</i>	3	0.1 %
<i>Aedes (Oc.) hendersoni</i>	2	0.1 %
<i>Aedes (Oc.) increpitus</i>	3	0.1 %
<i>Aedes (Oc.) melanimon</i>	21	1.0 %
<i>Aedes (Oc.) trivittatus</i>	2	0.1 %
<i>Aedes vexans</i>	715	33.2 %
<i>Anopheles freeborni</i>	1	0.0 %
<i>Culex pipiens</i>	61	2.8 %
<i>Culex salinarius</i>	14	0.6 %
<i>Culex tarsalis</i>	1271	59.0 %
<i>Culiseta inornata</i>	31	1.4 %



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	778	36.1 %
<i>Anopheles</i>	1	0.0 %
<i>Culex</i>	1,346	62.4 %
<i>Culiseta</i>	31	1.4 %
Other	0	0.0 %



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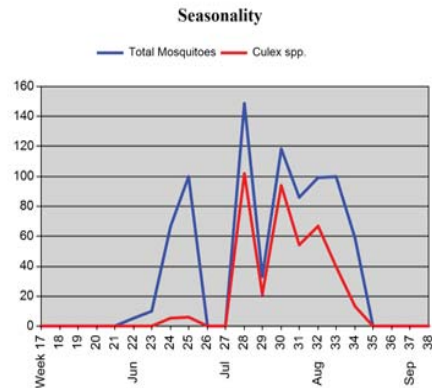
LM-09: Mountain View Cemetery

Season: 2016
 Trap Type: Light/CO2
 Location: Main St. at 11th Ave. - Mountain View Cemetery
 GPS: N40° 10.750', W105° 6.355'

Total number of trap/nights set: 11
 Total number of mosquitoes collected: 826
 Average mosquitoes per trap/night: 75
 Average Culex per trap/night: 37

Species collected and abundance:

<i>Aedes (Oc.) dorsalis</i>	4	0.5 %
<i>Aedes (Oc.) hendersoni</i>	29	3.5 %
<i>Aedes (Oc.) inaeptus</i>	2	0.2 %
<i>Aedes (Oc.) trivittatus</i>	5	0.6 %
<i>Aedes vexans</i>	379	45.9 %
<i>Culex pipiens</i>	43	5.2 %
<i>Culex salinarius</i>	1	0.1 %
<i>Culex tarsalis</i>	358	43.3 %
<i>Culiseta inornata</i>	5	0.6 %



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	419	50.7 %
<i>Anopheles</i>	0	0.0 %
<i>Culex</i>	402	48.7 %
<i>Culiseta</i>	5	0.6 %
Other	0	0.0 %



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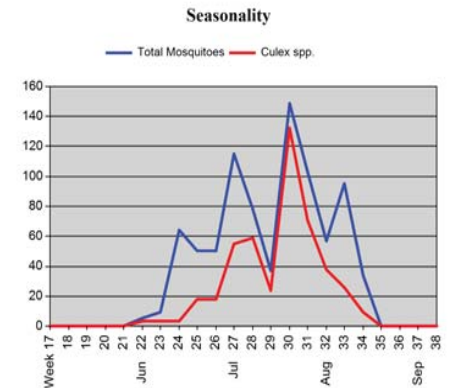
LM-10: Garden Acres Park

Season: 2016
 Trap Type: Light/CO2
 Location: Spencer St. at 18th Ave - east side of park
 GPS: N40° 11.640', W105° 7.240'

Total number of trap/nights set: 12
 Total number of mosquitoes collected: 796
 Average mosquitoes per trap/night: 66
 Average Culex per trap/night: 36

Species collected and abundance:

<i>Aedes (Oc.) dorsalis</i>	21	2.6 %
<i>Aedes (Oc.) inaeptus</i>	2	0.3 %
<i>Aedes (Oc.) melanion</i>	1	0.1 %
<i>Aedes (Oc.) nigromaculis</i>	1	0.1 %
<i>Aedes (Oc.) trivittatus</i>	1	0.1 %
<i>Aedes vexans</i>	323	40.6 %
<i>Culex pipiens</i>	72	9.0 %
<i>Culex salinarius</i>	1	0.1 %
<i>Culex tarsalis</i>	365	45.9 %
<i>Culiseta inornata</i>	9	1.1 %



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	349	43.8 %
<i>Anopheles</i>	0	0.0 %
<i>Culex</i>	438	55.0 %
<i>Culiseta</i>	9	1.1 %
Other	0	0.0 %



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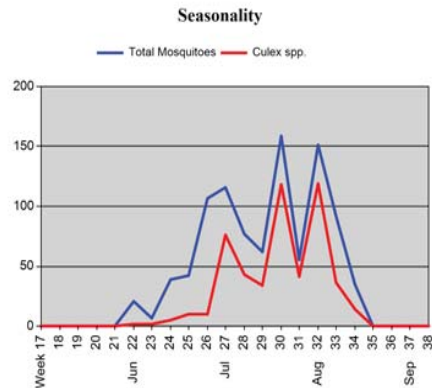
LM-17: The Shores-Concord Way

Season: 2016
 Trap Type: Light/CO2 - BCZ2 Sentinel Zone
 Location: between 3113 & 3117 Concord Way
 GPS: N40° 11.970' W105° 8.780'

Total number of trap/nights set: 13
 Total number of mosquitoes collected: 963
 Average mosquitoes per trap/night: 74
 Average Culex per trap/night: 39

Species collected and abundance:

<i>Aedes (Oc.) dorsalis</i>	27	2.8 %
<i>Aedes (Oc.) inaeptus</i>	1	0.1 %
<i>Aedes (Oc.) melanion</i>	3	0.3 %
<i>Aedes (Oc.) nigromaculis</i>	3	0.3 %
<i>Aedes (Oc.) trivittatus</i>	45	4.7 %
<i>Aedes vexans</i>	371	38.5 %
<i>Culex pipiens</i>	20	2.1 %
<i>Culex salinarius</i>	5	0.5 %
<i>Culex tarsalis</i>	483	50.2 %
<i>Culiseta inornata</i>	5	0.5 %



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	450	46.7 %
<i>Anopheles</i>	0	0.0 %
<i>Culex</i>	508	52.8 %
<i>Culiseta</i>	5	0.5 %
Other	0	0.0 %



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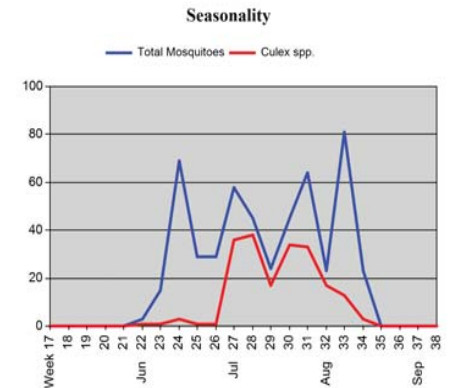
LM-18: Twin Peaks Circle

Season: 2016
 Trap Type: Light/CO2
 Location: 1113 Twin Peaks Circle, Longmont
 GPS: N40° 10.865', W105° 9.040'

Total number of trap/nights set: 12
 Total number of mosquitoes collected: 479
 Average mosquitoes per trap/night: 40
 Average Culex per trap/night: 16

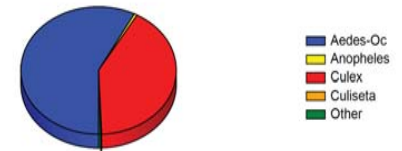
Species collected and abundance:

<i>Aedes (Oc.) dorsalis</i>	51	10.6 %
<i>Aedes (Oc.) inaeptus</i>	6	1.3 %
<i>Aedes (Oc.) nigromaculis</i>	6	1.3 %
<i>Aedes (Oc.) trivittatus</i>	55	11.5 %
<i>Aedes vexans</i>	158	33.0 %
<i>Anopheles freeborni</i>	3	0.6 %
<i>Coquillettidia perturbans</i>	2	0.4 %
<i>Culex pipiens</i>	8	1.7 %
<i>Culex tarsalis</i>	189	39.5 %
<i>Culiseta inornata</i>	1	0.2 %



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	276	57.6 %
<i>Anopheles</i>	3	0.6 %
<i>Culex</i>	197	41.1 %
<i>Culiseta</i>	1	0.2 %
Other	2	0.4 %



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LM-22: Sandstone Ranch

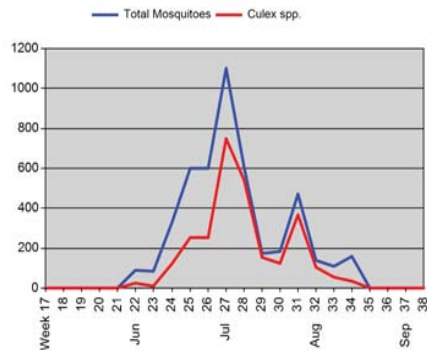
Season: 2016
 Trap Type: Light/CO2
 Location: Longmont at Sandstone Ranch District Park
 GPS: N40° 9.200', W105° 2.430'

Total number of trap/nights set: 12
 Total number of mosquitoes collected: 4,040
 Average mosquitoes per trap/night: 337
 Average Culex per trap/night: 212

Species collected and abundance:

<i>Aedes (Oc.) dorsalis</i>	19	0.5 %
<i>Aedes (Oc.) increpitus</i>	160	4.0 %
<i>Aedes (Oc.) melaninon</i>	5	0.1 %
<i>Aedes (Oc.) nigromaculis</i>	1	0.0 %
<i>Aedes (Oc.) trivittatus</i>	1	0.0 %
<i>Aedes vexans</i>	1292	32.0 %
<i>Culex pipiens</i>	62	1.5 %
<i>Culex salinarius</i>	15	0.4 %
<i>Culex tarsalis</i>	2461	60.9 %
<i>Culiseta inornata</i>	24	0.6 %

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	1,478	36.6 %
<i>Anopheles</i>	0	0.0 %
<i>Culex</i>	2,538	62.8 %
<i>Culiseta</i>	24	0.6 %
Other	0	0.0 %



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LM-23: Longmont Union Reservoir

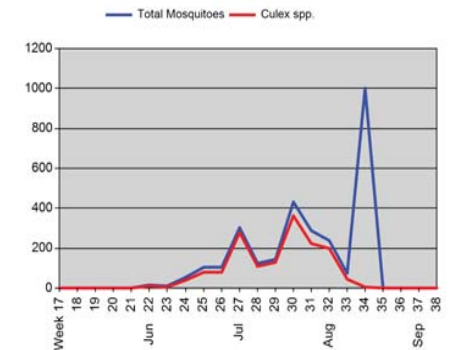
Season: 2016
 Trap Type: Light/CO2
 Location: near entrance station at Union Reservoir
 GPS: N40° 10.340, W105° 2.705'

Total number of trap/nights set: 12
 Total number of mosquitoes collected: 2,777
 Average mosquitoes per trap/night: 231
 Average Culex per trap/night: 124

Species collected and abundance:

<i>Aedes (Oc.) dorsalis</i>	9	0.3 %
<i>Aedes (Oc.) increpitus</i>	3	0.1 %
<i>Aedes (Oc.) melaninon</i>	3	0.1 %
<i>Aedes (Oc.) nigromaculis</i>	1	0.0 %
<i>Aedes (Oc.) trivittatus</i>	38	1.4 %
<i>Aedes vexans</i>	1223	44.0 %
<i>Culex pipiens</i>	50	1.8 %
<i>Culex tarsalis</i>	1438	51.8 %
<i>Culiseta inornata</i>	12	0.4 %

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	1,277	46.0 %
<i>Anopheles</i>	0	0.0 %
<i>Culex</i>	1,488	53.6 %
<i>Culiseta</i>	12	0.4 %
Other	0	0.0 %



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LM-27: Great Western/Mill Village

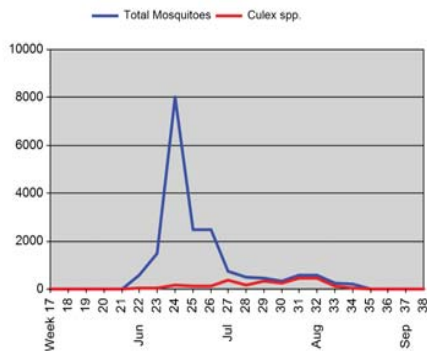
Season: 2016
 Trap Type: Light/CO2
 Location: south of Great Western Dr. at 3rd Ave.
 GPS: 40° 9.290', W105° 3.895'

Total number of trap/nights set: 11
 Total number of mosquitoes collected: 15,697
 Average mosquitoes per trap/night: 1,427
 Average Culex per trap/night: 197

Species collected and abundance:

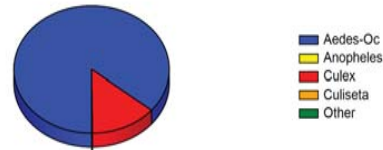
<i>Aedes (Oc.) dorsalis</i>	18	0.1 %
<i>Aedes (Oc.) fitchii</i>	3	0.0 %
<i>Aedes (Oc.) increpitus</i>	6142	39.1 %
<i>Aedes (Oc.) melaninon</i>	122	0.8 %
<i>Aedes (Oc.) trivittatus</i>	28	0.2 %
<i>Aedes vexans</i>	7185	45.8 %
<i>Coquillettidia perturbans</i>	1	0.0 %
<i>Culex pipiens</i>	143	0.9 %
<i>Culex salinarius</i>	32	0.2 %
<i>Culex tarsalis</i>	1993	12.7 %
<i>Culiseta inornata</i>	30	0.2 %

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	13,498	86.0 %
<i>Anopheles</i>	0	0.0 %
<i>Culex</i>	2,168	13.8 %
<i>Culiseta</i>	30	0.2 %
Other	1	0.0 %



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LM-28: St. Vrain Greenway at Emery St.

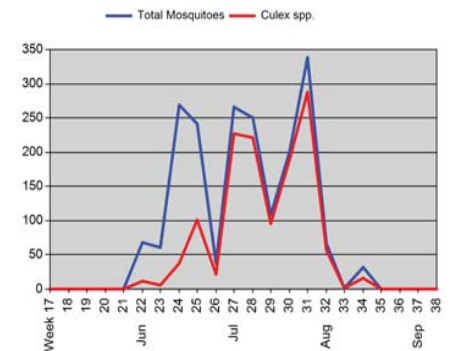
Season: 2016
 Trap Type: Light/CO2 - BCZ2 Sentinel Zone
 Location: along St. Vrain Greenway west of Martin St.
 GPS: N40° 9.285', W105° 5.810'

Total number of trap/nights set: 13
 Total number of mosquitoes collected: 1,941
 Average mosquitoes per trap/night: 149
 Average Culex per trap/night: 98

Species collected and abundance:

<i>Aedes (Oc.) dorsalis</i>	28	1.4 %
<i>Aedes (Oc.) hendersoni</i>	1	0.1 %
<i>Aedes (Oc.) increpitus</i>	67	3.5 %
<i>Aedes (Oc.) intrudens</i>	35	1.8 %
<i>Aedes (Oc.) melaninon</i>	2	0.1 %
<i>Aedes (Oc.) nigromaculis</i>	1	0.1 %
<i>Aedes vexans</i>	525	27.0 %
<i>Anopheles freeborni</i>	1	0.1 %
<i>Culex pipiens</i>	71	3.7 %
<i>Culex salinarius</i>	8	0.4 %
<i>Culex tarsalis</i>	1193	61.5 %
<i>Culiseta inornata</i>	9	0.5 %

Seasonality



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	659	34.0 %
<i>Anopheles</i>	1	0.1 %
<i>Culex</i>	1,272	65.5 %
<i>Culiseta</i>	9	0.5 %
Other	0	0.0 %



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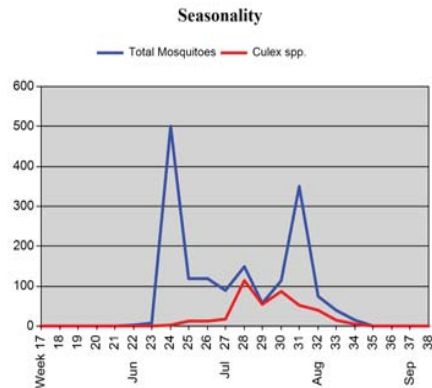
LM-31: Left Hand Creek at Creekside

Season: 2016
 Trap Type: Light/CO2
 Location: Left Hand Creek south of Sunset St. & Pike Rd.
 GPS: N40° 8.115', W105° 7.375'

Total number of trap/nights set: 12
 Total number of mosquitoes collected: 1,515
 Average mosquitoes per trap/night: 126
 Average Culex per trap/night: 34

Species collected and abundance:

<i>Aedes (Oc.) dorsalis</i>	17	1.1 %
<i>Aedes (Oc.) increpitus</i>	5	0.3 %
<i>Aedes (Oc.) melanimon</i>	14	0.9 %
<i>Aedes (Oc.) nigromaculis</i>	1	0.1 %
<i>Aedes (Oc.) trivittatus</i>	65	4.3 %
<i>Aedes vexans</i>	1006	66.4 %
<i>Culex pipiens</i>	21	1.4 %
<i>Culex salinarius</i>	1	0.1 %
<i>Culex tarsalis</i>	380	25.1 %
<i>Culiseta inornata</i>	5	0.3 %



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	1,108	73.1 %
<i>Anopheles</i>	0	0.0 %
<i>Culex</i>	402	26.5 %
<i>Culiseta</i>	5	0.3 %
Other	0	0.0 %



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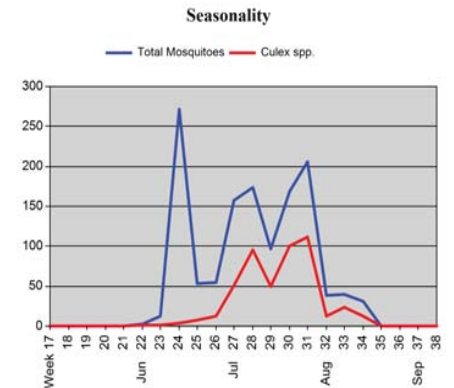
LM-34: Longmont Meadow View

Season: 2016
 Trap Type: Light/CO2 - BCZ2 Sentinel Zone
 Location: Dry Creek Greenway west of Airport Road
 GPS: N40° 8.830', W105° 9.210'

Total number of trap/nights set: 13
 Total number of mosquitoes collected: 1,304
 Average mosquitoes per trap/night: 100
 Average Culex per trap/night: 37

Species collected and abundance:

<i>Aedes (Oc.) dorsalis</i>	6	0.5 %
<i>Aedes (Oc.) hendersoni</i>	1	0.1 %
<i>Aedes (Oc.) increpitus</i>	1	0.1 %
<i>Aedes (Oc.) melanimon</i>	3	0.2 %
<i>Aedes (Oc.) trivittatus</i>	25	1.9 %
<i>Aedes vexans</i>	782	60.0 %
<i>Culex pipiens</i>	37	2.8 %
<i>Culex salinarius</i>	1	0.1 %
<i>Culex tarsalis</i>	446	34.2 %
<i>Culiseta inornata</i>	2	0.2 %



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	818	62.7 %
<i>Anopheles</i>	0	0.0 %
<i>Culex</i>	484	37.1 %
<i>Culiseta</i>	2	0.2 %
Other	0	0.0 %



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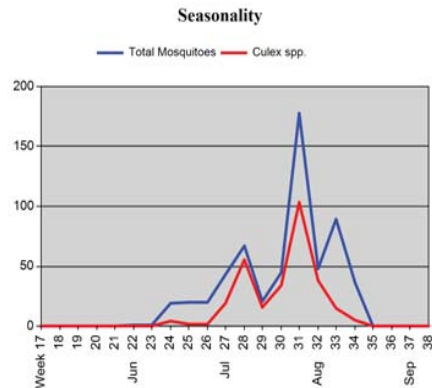
LM-40: Liberty Court

Season: 2016
 Trap Type: Light/CO2
 Location: Liberty Court north of 15th Ave.
 GPS: N40° 11.180', W105° 5.555'

Total number of trap/nights set: 12
 Total number of mosquitoes collected: 567
 Average mosquitoes per trap/night: 47
 Average Culex per trap/night: 24

Species collected and abundance:

<i>Aedes (Oc.) dorsalis</i>	6	1.1 %
<i>Aedes (Oc.) increpitus</i>	1	0.2 %
<i>Aedes vexans</i>	268	47.3 %
<i>Culex pipiens</i>	38	6.7 %
<i>Culex tarsalis</i>	253	44.6 %
<i>Culiseta inornata</i>	1	0.2 %



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	275	48.5 %
<i>Anopheles</i>	0	0.0 %
<i>Culex</i>	291	51.3 %
<i>Culiseta</i>	1	0.2 %
Other	0	0.0 %



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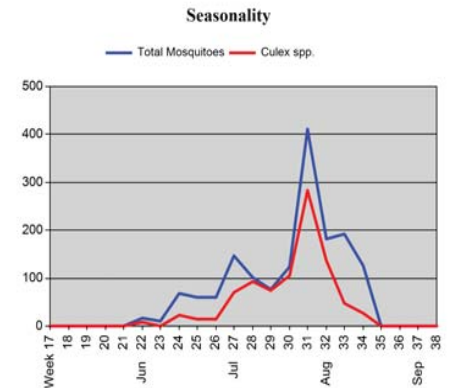
LM-41: Stoney Ridge/Alpine Elementary

Season: 2016
 Trap Type: Light/CO2
 Location: Lashley St. NE of Sunlight Dr.
 GPS: N40° 11.655', W105° 5.365'

Total number of trap/nights set: 12
 Total number of mosquitoes collected: 1,514
 Average mosquitoes per trap/night: 126
 Average Culex per trap/night: 73

Species collected and abundance:

<i>Aedes (Oc.) dorsalis</i>	19	1.3 %
<i>Aedes (Oc.) increpitus</i>	3	0.2 %
<i>Aedes (Oc.) melanimon</i>	1	0.1 %
<i>Aedes (Oc.) nigromaculis</i>	1	0.1 %
<i>Aedes (Oc.) trivittatus</i>	2	0.1 %
<i>Aedes vexans</i>	596	39.4 %
<i>Culex pipiens</i>	80	5.3 %
<i>Culex salinarius</i>	1	0.1 %
<i>Culex tarsalis</i>	800	52.8 %
<i>Culiseta incidens</i>	2	0.1 %
<i>Culiseta inornata</i>	9	0.6 %



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	622	41.1 %
<i>Anopheles</i>	0	0.0 %
<i>Culex</i>	881	58.2 %
<i>Culiseta</i>	11	0.7 %
Other	0	0.0 %



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LM-42: Izaak Walton Park

Season: 2016
 Trap Type: Light/CO2 - BCZ2 Sentinel Zone
 Location: Sunset St. at St. Vrain River
 GPS: N40° 9.765', W105° 7.215'

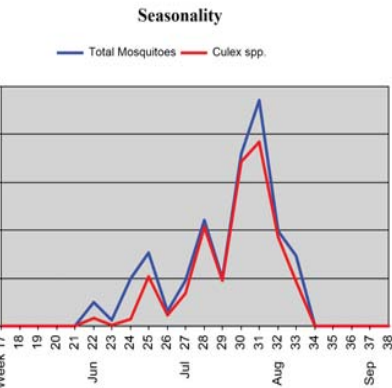
Total number of trap/nights set: 13
 Total number of mosquitoes collected: 969
 Average mosquitoes per trap/night: 75
 Average Culex per trap/night: 59

Species collected and abundance:

<i>Aedes (Oc.) dorsalis</i>	8	0.8 %
<i>Aedes (Oc.) fitchii</i>	1	0.1 %
<i>Aedes (Oc.) hendersoni</i>	3	0.3 %
<i>Aedes (Oc.) inepsitus</i>	2	0.2 %
<i>Aedes (Oc.) melanimon</i>	2	0.2 %
<i>Aedes (Oc.) trivittatus</i>	4	0.4 %
<i>Aedes cinereus</i>	1	0.1 %
<i>Aedes vexans</i>	157	16.2 %
<i>Coquillettidia perturbans</i>	4	0.4 %
<i>Culex pipiens</i>	82	8.5 %
<i>Culex salinarius</i>	10	1.0 %
<i>Culex tarsalis</i>	675	69.7 %
<i>Culiseta inornata</i>	20	2.1 %

Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	178	18.4 %
<i>Anopheles</i>	0	0.0 %
<i>Culex</i>	767	79.2 %
<i>Culiseta</i>	20	2.1 %
Other	4	0.4 %



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LM-43: Rough & Ready South

Season: 2016
 Trap Type: Light/CO2
 Location: Rough and Ready Trail at Pace St.
 GPS: N40° 10.630', W105° 4.505'

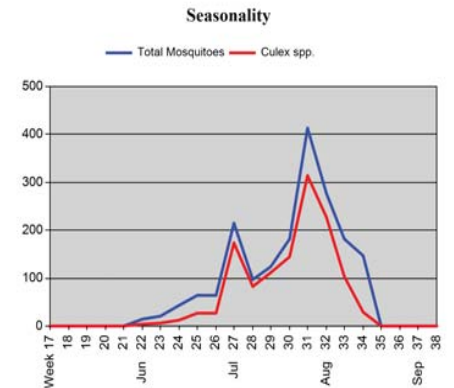
Total number of trap/nights set: 12
 Total number of mosquitoes collected: 1,775
 Average mosquitoes per trap/night: 148
 Average Culex per trap/night: 103

Species collected and abundance:

<i>Aedes (Oc.) dorsalis</i>	11	0.6 %
<i>Aedes (Oc.) inepsitus</i>	4	0.2 %
<i>Aedes (Oc.) melanimon</i>	4	0.2 %
<i>Aedes (Oc.) nigromaculis</i>	1	0.1 %
<i>Aedes (Oc.) trivittatus</i>	3	0.2 %
<i>Aedes vexans</i>	503	28.3 %
<i>Culex pipiens</i>	155	8.7 %
<i>Culex salinarius</i>	4	0.2 %
<i>Culex tarsalis</i>	1078	60.7 %
<i>Culiseta inornata</i>	12	0.7 %

Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	526	29.6 %
<i>Anopheles</i>	0	0.0 %
<i>Culex</i>	1,237	69.7 %
<i>Culiseta</i>	12	0.7 %
Other	0	0.0 %



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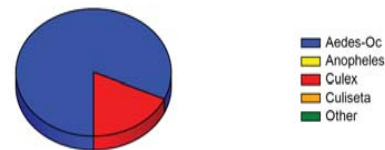
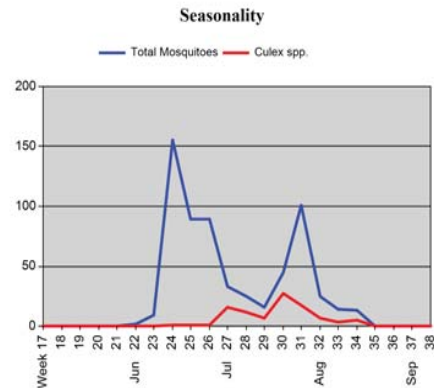
LM-44: Reserve at Somerset Meadows

Season: 2016
 Trap Type: Light/CO2
 Location: retention pond at Frederick Circle
 GPS: N40° 8.230', W105° 9.375'

Total number of trap/nights set: 12
 Total number of mosquitoes collected: 527
 Average mosquitoes per trap/night: 44
 Average Culex per trap/night: 8

Species collected and abundance:

<i>Aedes (Oc.) dorsalis</i>	2	0.4 %
<i>Aedes (Oc.) melanimon</i>	1	0.2 %
<i>Aedes (Oc.) trivittatus</i>	62	11.8 %
<i>Aedes vexans</i>	366	69.4 %
<i>Culex pipiens</i>	2	0.4 %
<i>Culex tarsalis</i>	94	17.8 %



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LO-01: Coal Creek Golf Course

Season: 2016
 Trap Type: Light/CO2 - BCZ3 Sentinel Zone
 Location: Dillon Road at bridge over Coal Creek
 GPS: N39° 57.465', W105° 9.120'

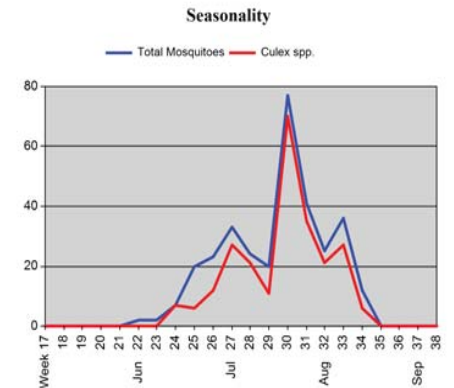
Total number of trap/nights set: 13
 Total number of mosquitoes collected: 320
 Average mosquitoes per trap/night: 25
 Average Culex per trap/night: 19

Species collected and abundance:

<i>Aedes (Oc.) inepsitus</i>	2	0.6 %
<i>Aedes (Oc.) melanimon</i>	4	1.3 %
<i>Aedes (Oc.) trivittatus</i>	11	3.4 %
<i>Aedes vexans</i>	58	18.1 %
<i>Culex pipiens</i>	17	5.3 %
<i>Culex tarsalis</i>	226	70.6 %
<i>Culiseta inornata</i>	2	0.6 %

Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	75	23.4 %
<i>Anopheles</i>	0	0.0 %
<i>Culex</i>	243	75.9 %
<i>Culiseta</i>	2	0.6 %
Other	0	0.0 %



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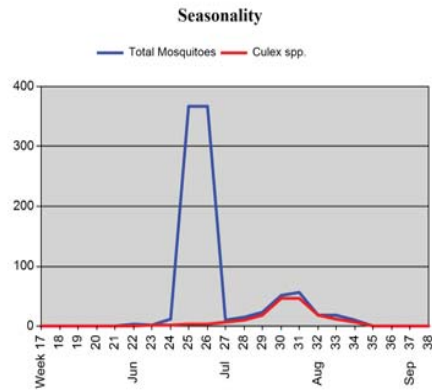
LO-04: Annette A. Brand Park

Season: 2016
 Trap Type: Light/CO2
 Location: Annette A. Brand Park at entrance to Louisville Res.
 GPS: N39° 59.415', W105° 9.495'

Total number of trap/nights set: 12
 Total number of mosquitoes collected: 586
 Average mosquitoes per trap/night: 49
 Average Culex per trap/night: 14

Species collected and abundance:

<i>Aedes (Oc.) increpitus</i>	15	2.6 %
<i>Aedes (Oc.) melanimon</i>	2	0.3 %
<i>Aedes (Oc.) trivittatus</i>	4	0.7 %
<i>Aedes vexans</i>	390	66.6 %
<i>Anopheles freeborni</i>	1	0.2 %
<i>Culex pipiens</i>	23	3.9 %
<i>Culex tarsalis</i>	149	25.4 %
<i>Culiseta inornata</i>	2	0.3 %



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	411	70.1 %
<i>Anopheles</i>	1	0.2 %
<i>Culex</i>	172	29.4 %
<i>Culiseta</i>	2	0.3 %
Other	0	0.0 %



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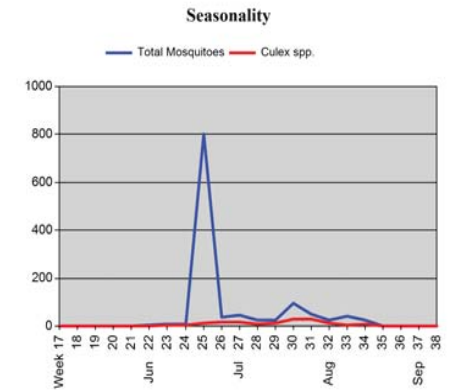
LO-08: Coal Creek Trail

Season: 2016
 Trap Type: Light/CO2 - BCZ3 Sentinel Zone
 Location: Coal Creek Trailhead off Aspen Way
 GPS: N39° 58.090', W105° 7.965'

Total number of trap/nights set: 12
 Total number of mosquitoes collected: 1,179
 Average mosquitoes per trap/night: 98
 Average Culex per trap/night: 14

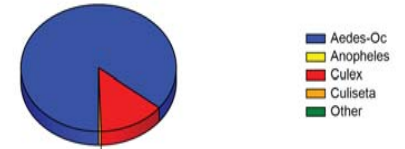
Species collected and abundance:

<i>Aedes (Oc.) hendersoni</i>	2	0.2 %
<i>Aedes (Oc.) increpitus</i>	17	1.4 %
<i>Aedes (Oc.) melanimon</i>	16	1.4 %
<i>Aedes (Oc.) nigromaculis</i>	1	0.1 %
<i>Aedes (Oc.) trivittatus</i>	8	0.7 %
<i>Aedes vexans</i>	967	82.0 %
<i>Culex pipiens</i>	48	4.1 %
<i>Culex salinarius</i>	1	0.1 %
<i>Culex tarsalis</i>	113	9.6 %
<i>Culiseta inornata</i>	6	0.5 %



Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	1,011	85.8 %
<i>Anopheles</i>	0	0.0 %
<i>Culex</i>	162	13.7 %
<i>Culiseta</i>	6	0.5 %
Other	0	0.0 %



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Larvicide Data Summary

by REPORT DATE: 5/1/2016 to 10/27/2016

by ACCOUNT: LO

	Total Site Inspections	No. Wet Sites	Percentage Wet Sites	No Sites Treated	Percentage Breeding*	Total Acres Treated
Louisville, City of	325	256	79 %	57	22 %	25.3

* (Sites Treated/Wet Sites)



Visit Analysis - Summary

by REPORT DATE: 5/1/2016 to 10/27/2016

by ACCOUNT: LO

Site ID	Visits	Wet Sites	Dips w/ Larvae	Acres	Vectobac	Vectolex	Altosid	Oil
LO 0001	1	1 100.0 %	0 0.0 %	0.0	0.0	0.0	0.0	0.0
LO 0001	15	13 86.7 %	1 6.7 %	1.5	5.0	0.0	0.0	0.0
LO 0002	4	4 100.0 %	3 75.0 %	0.5	2.1	0.0	0.0	0.0
LO 0002	14	7 50.0 %	0 0.0 %	0.0	0.0	0.0	0.0	0.0
LO 0004	1	0 0.0 %	0 0.0 %	0.0	0.0	0.0	0.0	0.0
LO 0006	1	0 0.0 %	0 0.0 %	0.0	0.0	0.0	0.0	0.0
LO 0007	12	3 25.0 %	2 16.7 %	2.5	10.0	0.0	0.0	1.5
LO 0010	2	2 100.0 %	1 50.0 %	2.0	8.0	0.0	0.0	0.0
LO 0010	8	8 100.0 %	1 12.5 %	1.0	4.0	0.0	0.0	0.0
LO 0012	2	2 100.0 %	1 50.0 %	0.0	0.0	0.0	0.0	0.0
LO 0012	11	10 90.9 %	3 27.3 %	0.1	0.6	0.0	0.0	0.1
LO 0014	1	1 100.0 %	1 100.0 %	1.0	5.5	0.0	0.0	0.0
LO 0014	12	11 91.7 %	2 16.7 %	1.5	16.0	0.0	0.0	0.0
LO 0017	2	2 100.0 %	0 0.0 %	0.0	0.0	0.0	0.0	0.0
LO 0017	12	12 100.0 %	0 0.0 %	0.0	0.0	0.0	0.0	0.0
LO 0024	1	1 100.0 %	1 100.0 %	0.1	0.4	0.0	0.0	0.0
LO 0024	12	10 83.3 %	1 8.3 %	0.2	0.5	0.0	0.0	0.0
LO 0025	1	1 100.0 %	0 0.0 %	0.0	0.0	0.0	0.0	0.0
LO 0025	13	13 100.0 %	6 46.2 %	0.8	1.0	0.0	0.0	0.9
LO 0029	1	1 100.0 %	0 0.0 %	0.0	0.0	0.0	0.0	0.0
LO 0029	6	6 100.0 %	0 0.0 %	0.0	0.0	0.0	0.0	0.0
LO 0034	8	5 62.5 %	0 0.0 %	0.0	0.0	0.0	0.0	0.0
LO 0035	1	1 100.0 %	0 0.0 %	0.0	0.0	0.0	0.0	0.0
LO 0035	16	16 100.0 %	2 12.5 %	1.4	6.0	0.0	0.0	0.5
LO 0037	2	2 100.0 %	2 100.0 %	0.0	0.1	0.0	0.0	0.0
LO 0037	10	10 100.0 %	2 20.0 %	0.2	0.0	0.0	0.0	0.2
LO 0047	1	1 100.0 %	0 0.0 %	0.0	0.0	0.0	0.0	0.0
LO 0052	1	1 100.0 %	0 0.0 %	0.0	0.0	0.0	0.0	0.0
LO 0052	9	6 66.7 %	0 0.0 %	0.0	0.0	0.0	0.0	0.0
LO 0062	1	1 100.0 %	0 0.0 %	0.0	0.0	0.0	0.0	0.0
LO 0064	1	0 0.0 %	0 0.0 %	0.0	0.0	0.0	0.0	0.0
LO 0064	16	11 68.8 %	0 0.0 %	0.0	0.0	0.0	0.0	0.0
LO 0066	14	2 14.3 %	0 0.0 %	0.0	0.0	0.0	0.0	0.0
LO 0071	2	2 100.0 %	1 50.0 %	0.0	0.1	0.0	0.0	0.0
LO 0071	14	13 92.9 %	1 7.1 %	0.0	0.0	0.0	0.0	0.0
LO 0072	16	16 100.0 %	3 18.8 %	0.8	6.5	0.0	0.0	0.0
LO 0073	8	4 50.0 %	0 0.0 %	0.0	0.0	0.0	0.0	0.0
LO 0075	1	1 100.0 %	1 100.0 %	0.2	0.0	1.0	0.0	0.0
LO 0075	15	15 100.0 %	7 46.7 %	0.8	4.2	0.0	0.0	0.0
LO 0078	2	1 50.0 %	1 50.0 %	0.0	0.0	0.0	0.0	0.0
LO 0078	15	8 53.3 %	1 6.7 %	0.0	0.0	0.0	0.0	0.0
LO 0079	1	1 100.0 %	0 0.0 %	0.0	0.0	0.0	0.0	0.0



Colorado Mosquito Control

Visit Analysis - Summary

by REPORT DATE: 5/1/2016 to 10/27/2016

by ACCOUNT: LO

Site ID	Visits	Wet Sites	Dips w/ Larvae	Acres	Vectobac	Vectolex	Altosid	Oil
LO 0080	1	1	100.0 %	0	0.0 %	0.0	0.0	0.0
LO 0085	3	3	100.0 %	2	66.7 %	0.2	0.0	0.2
LO 0085	14	14	100.0 %	3	21.4 %	0.5	0.0	0.5
LO 0087	1	0	0.0 %	0	0.0 %	0.0	0.0	0.0
LO 0087	8	1	12.5 %	0	0.0 %	0.0	0.0	0.0
LO 0088	3	3	100.0 %	2	66.7 %	0.0	0.3	0.0
LO 0088	9	9	100.0 %	5	55.6 %	10.0	35.2	0.0
	325	256	78.8 %	56	17.2 %	25.3	105.5	1.0
							0.0	4.0



Adulticide Data

Customer	Subdiv/Area	Material	Start Time	End Time	Miles
Louisville, City of					
	Backpack				
06/29/2016	LOUISVILLE RESERVOIR	Talstar	15:17:00	15:30:00	0.2
06/29/2016	COAL CREEK TRAILHEAD	Talstar	14:58:00	15:13:00	0.2
Backpack				Sum	0.4
				Avg	0.2
				Min	0.2
				Max	0.2
Grand Total					0.4



Mosquito Line Call Listing

Date	Customer	County	OSA	Contact Info
06/09/2016	Louisville, City of	Boulder	NO	Veronica Romero 516 S. Boulder Rd Louisville 720-800-3314
PRIMARY CALL TYPE: 18 New Larval Site Report				
SECONDARY CALL TYPE:				
RESOLUTION: 06/10/2016 Not breeding, unlikely to ever breed				



COLORADO MOSQUITO CONTROL
Protecting Colorado From Annoyance & Disease Since
1986