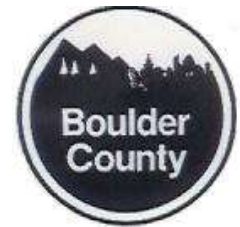


# **Boulder County Mosquito Control District Integrated Mosquito Management Program 2020 Annual Report**

*Prepared for and in Cooperation with:*

## **Boulder County Mosquito Control District**

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September 2020

# **Boulder County Mosquito Control District Integrated Mosquito Management Program**

## **2020 Annual Report**

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## ***Program Objectives***

Boulder County Mosquito Control District (BCMCD) and Boulder County Public Health Department (BCPH) contracted Vector Disease Control International, LLC (VDCI) to operate an Integrated Mosquito Management (IMM) program in 2020. The primary objective of BCMCD's IMM Program is to monitor and reduce mosquito populations through the use of environmentally sound control techniques in order to protect its residents from the threat of mosquito-borne diseases and suppress local populations of nuisance mosquitoes. VDCI prioritizes the detection and elimination of larval mosquitoes in aquatic habitats, in conjunction with the monitoring of adult mosquito populations through routine surveillance, in order to assess West Nile virus vector species abundance in the area.

Open communication is maintained by VDCI between the BCMCD, residents, HOAs, Property Management Companies, County and State Departments of Health & Environment, and surrounding municipalities in order to ensure that the highest level of mosquito control and epizootic response is achieved. This diligent and cooperative communication is important to the Boulder County Mosquito Control District mosquito management program and provides significant benefit to public health throughout the entire area.

## ***VDCI's Commitment***

Vector Disease Control International is a company built on the foundations of public health, ethics, professionalism, and technical expertise. VDCI is committed to providing our customers with scientifically based, environmentally sensitive and technologically advanced Integrated Mosquito Management (IMM) programs of the highest quality. All our employees are committed to excellence in vector control and public health and strive to improve the quality of human life in communities through public education and the control of mosquitoes and the diseases they can transmit. VDCI currently has programs across the state of Colorado, providing services for towns, cities, counties, homeowners associations, and encephalitis surveillance monitoring programs for county health departments.

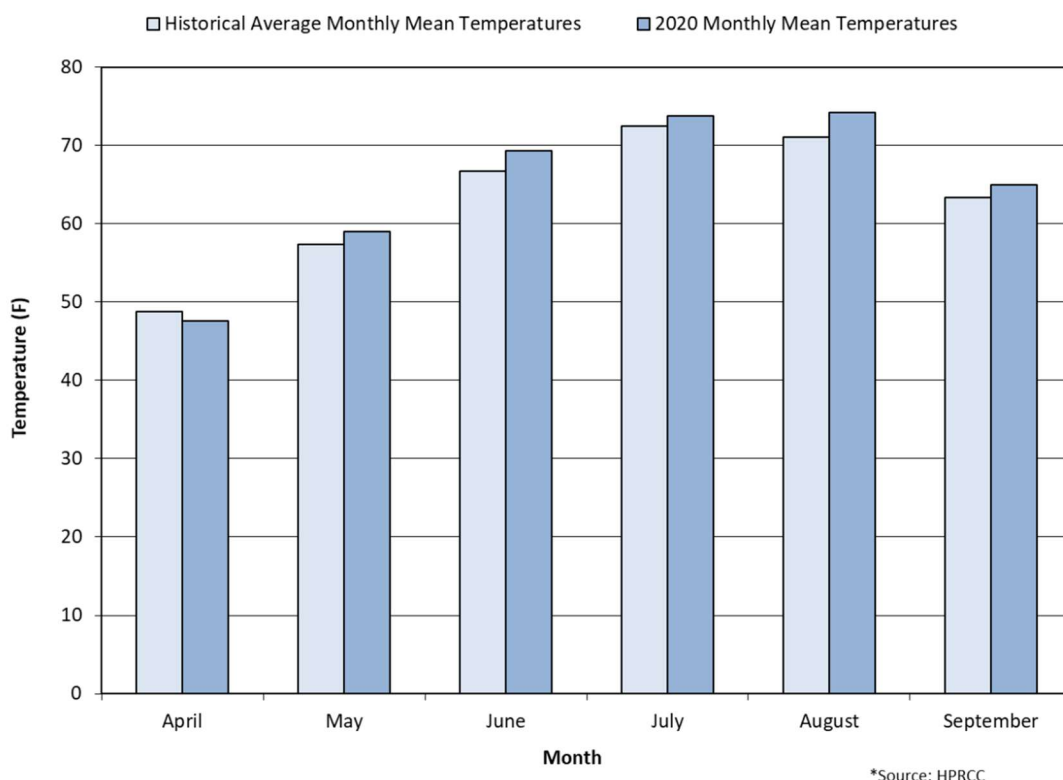
Vector Disease Control International, as the contractor for the Boulder County Mosquito Control District, will continue to use proven scientific Integrated Mosquito Management techniques to survey and control local mosquito populations using biorational larval controls and limited low-toxicity insecticide applications. All of the methods and materials used have been reviewed and registered by the US Environmental Protection Agency, the Centers for Disease Control, the Colorado Department of Agriculture and the American Mosquito Control Association.

## ***2020 Season Perspective and Climate Data***

At VDCI 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. Boulder County is in a semi-arid environment with elevations in the BCMCD ranging from approximately 4,900 feet to 5,500 feet above sea level. The typical mosquito season for the BCMDC is from late April to September. Current and historical climate data from the National Oceanic Atmospheric Administration's (NOAA) High Plains Regional Climate Center's (HPRCC) Boulder, Colorado weather station was used to monitor regional temperature and precipitation patterns throughout the season.

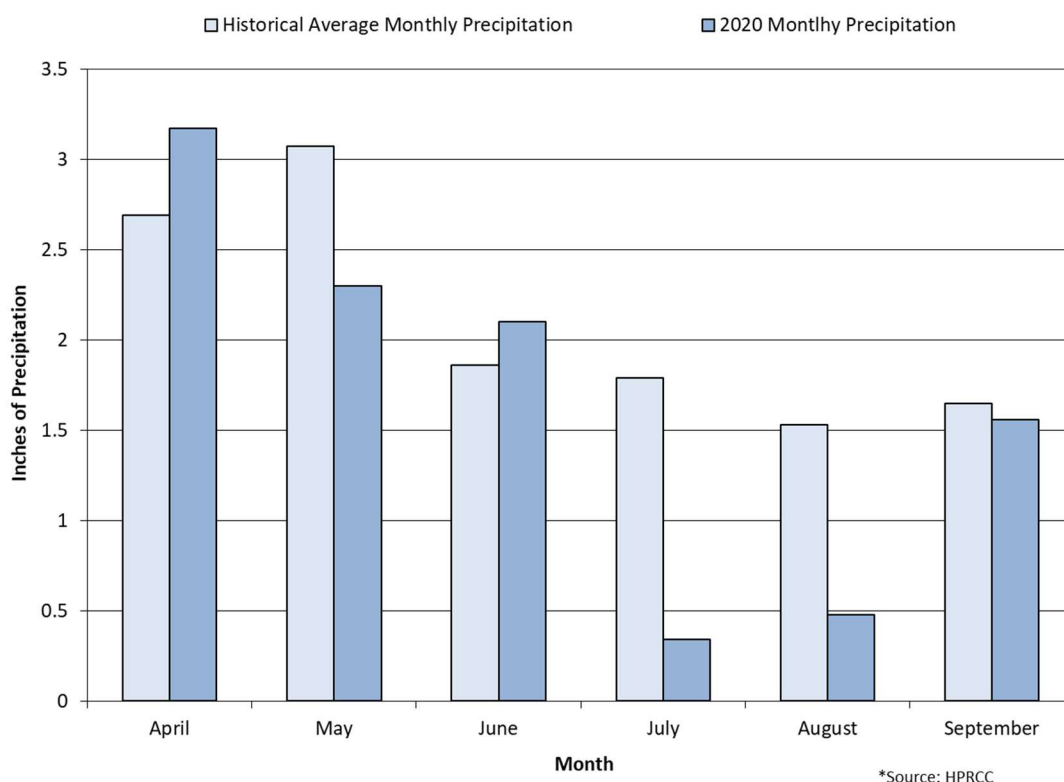
In 2020, every month of the mosquito season, except April, had temperatures above normal (**Figure 1**). The months of May, June and August experienced the highest deviation from average, +1.6, +2.6 and +3.1 degrees respectively. July had a mean monthly temperature that was near normal at only +0.3 degrees higher than average, while April was far below average at -1.2°. Overall, the 2020 season was approximately 23% warmer than an average year. The end of the season saw record high temperatures (99°) recorded on September 5<sup>th</sup> and 6<sup>th</sup> followed by record lows (32 and 30°) on September 8<sup>th</sup> and 9<sup>th</sup>, abruptly ending the mosquito season weeks earlier than normal and possibly contributing to a lower incidence of WNV at the end of the summer.

**Figure 1 2020 Monthly Mean Air Temperature and Historical Averages**



The historical averages for monthly mean precipitation indicate that April, May and June are usually the wettest months of the year. The most significant variation during the 2020 mosquito season was the month of April, which received 17.8 percent more precipitation (3.17") than the average amount (2.69"), making it the wettest month of 2020. The accumulated precipitation from April through September was lower than the historical average for the same period with a total of 9.95 inches (**Figure 2**). This is approximately 21.0 percent less precipitation than the historical average of 12.59 inches. By contrast, July and August received approximately 19.0 and 31.4 percent, respectively, of normal precipitation, making both the driest months of the mosquito season in 2020. Even the early snowstorm on September 8<sup>th</sup> – 9<sup>th</sup>, with 1.4" of rain and 5.7" of snow did not make up for the unseasonably dry summer.

**Figure 2 2020 Monthly Total Precipitation Data and Historical Averages\***



Unusually low precipitation and overall, above normal temperatures most of the season likely influenced the lower than average nuisance and vector mosquito populations during 2020 mosquito season. A wet April presumably caused the elevated abundance of nuisance mosquitoes normally seen early in the season, however, the later not and dry months of summer contributed to lower than average levels of *Culex* species of mosquitoes and West Nile virus incidence than normally seen throughout Boulder County.

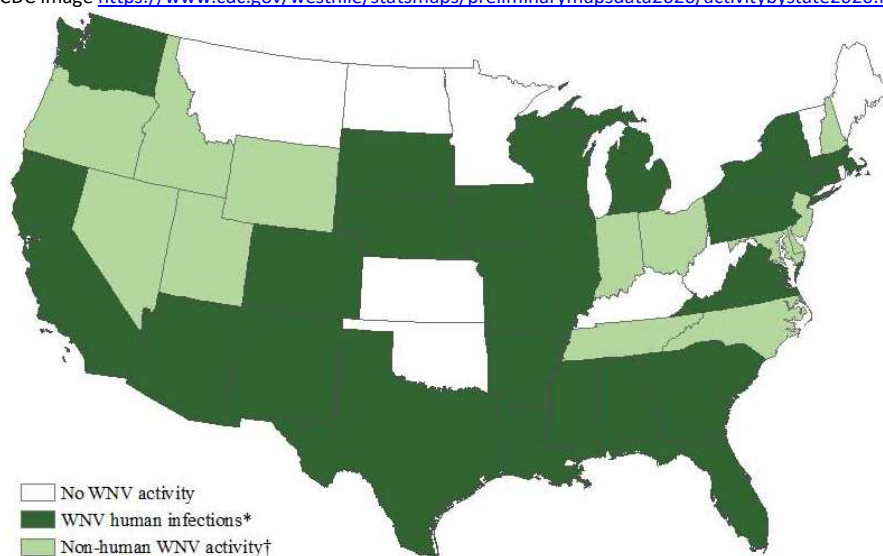
## West Nile Virus Season

Since the introduction of West Nile virus to the United States 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 spread through the South, the Midwest, the Rocky Mountain region and to the Western States. This extensive distribution is due to the ability of WNV to establish and persist in the wide variety of ecosystems present across the country. WNV has been detected in 65 different mosquito species in the U.S., though it appears that only a few *Culex* species drive epizootic and epidemic transmission (WNV Guidelines CDC 2013). Although West Nile virus has been endemic to the United States since 1999, researchers continue to seek an understanding for some of the factors which contribute to region specific spikes in vector abundance and human risk. We still do not understand why some humans develop West Nile fever while other infections develop into more serious West Nile encephalitis or West Nile meningitis cases. Additionally, physicians and researchers continue to seek answers to the variable recovery times and occurrence of deaths that result with some infections. WNV has expanded to the point that it can now be found in all 48 contiguous states and has produced two additional, large nationwide epidemics in 2003 and 2012 (WNV Guidelines CDC 2013).

As of September 22<sup>nd</sup>, 2020, a total of 38 states have reported West Nile virus infections in people, birds, or mosquitoes in 2020 (**Figure 3**). Overall, 174 cases of West Nile virus disease in humans have been reported to CDC. This is about two thirds decrease from the number of cases reported in 2019 (627) at this time last year. Of these, 124 (71.3%) were classified as neuroinvasive disease (such as meningitis or encephalitis) and 50 (28.7%) were classified as non-neuroinvasive disease (**Figure 4**) and a total of 6 deaths have resulted from these infections.

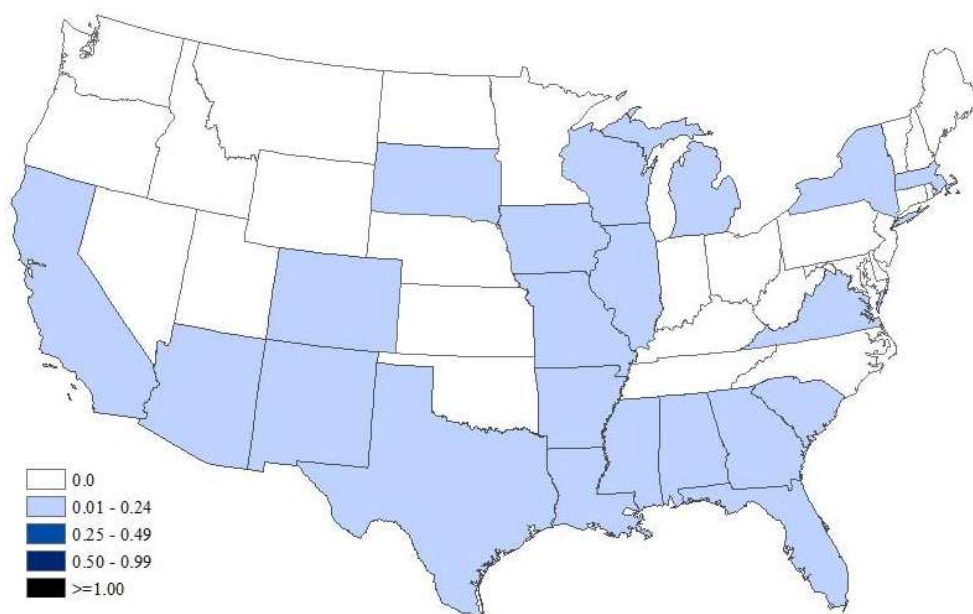
**Figure 3 West Nile Virus Activity by State – United States, 2020** (as of September 22<sup>nd</sup>, 2020)\*

\*CDC image <https://www.cdc.gov/westnile/statsmaps/preliminarymapsdata2020/activitybystate2020.html>



**Figure 4 West Nile Virus Neuroinvasive Disease Incidence by State – United States, 2020** (as of September 22<sup>nd</sup>, 2020)\*

\*CDC image <https://www.cdc.gov/westnile/statsmaps/preliminarymapsdata2020/incidencestate-2020.html>

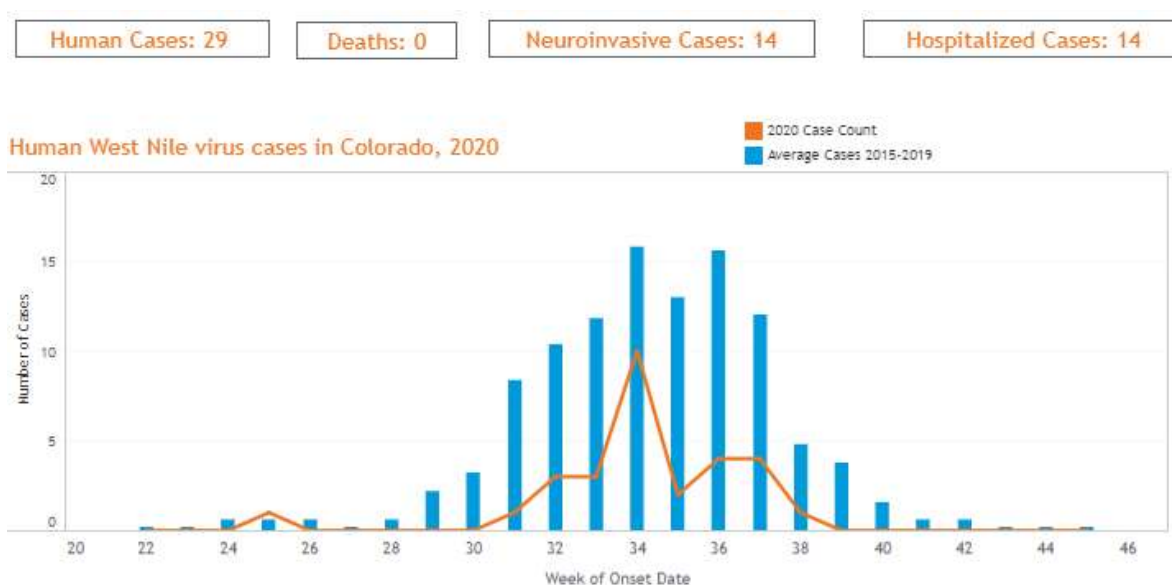


## Colorado 2020

As of September 29<sup>th</sup>, 2020, the Colorado Department of Health and Environment has identified only 29 cases of human West Nile virus (WNV) infections in Colorado (**Figure 5**) compared to 72 cases in 2019. The CDC reports 25 cases as of September 22<sup>nd</sup>, 2020 with 6 (24%) asymptomatic blood donor, 6 (24%) neuroinvasive cases including symptoms of meningitis or encephalitis (including meningoencephalitis), and 13 (52%) non-neuroinvasive which includes cases where individuals are non-symptomatic or present with fever and other minor symptoms (**Figure 6**). There have been no deaths (**Figure 6**) associated with West Nile virus infections in Colorado during the 2020 season at this time. The discrepancy between CDPHE data and CDC data is likely due to lag time in the communication between these entities.

**Figure 5 Weekly WNV Human Case Count 2020 (2014-2018 Average) \***

\*CDPHE image <https://www.colorado.gov/pacific/cdphe/west-nile-virus-data>



**Figure 6 West Nile Virus Disease Cases and Presumptive Viremic Blood Donors by State – United States, 2020 (as of September 22<sup>nd</sup>, 2020)\***

State	Neuroinvasive Disease Cases†	Non-neuroinvasive Disease Cases	Total cases	Deaths	Presumptive viremic blood donors‡
Colorado	6	13	19	0	6

\*CDC image <https://www.cdc.gov/westnile/statsmaps/preliminarymapsdata2020/disease-cases-state-2020.html>

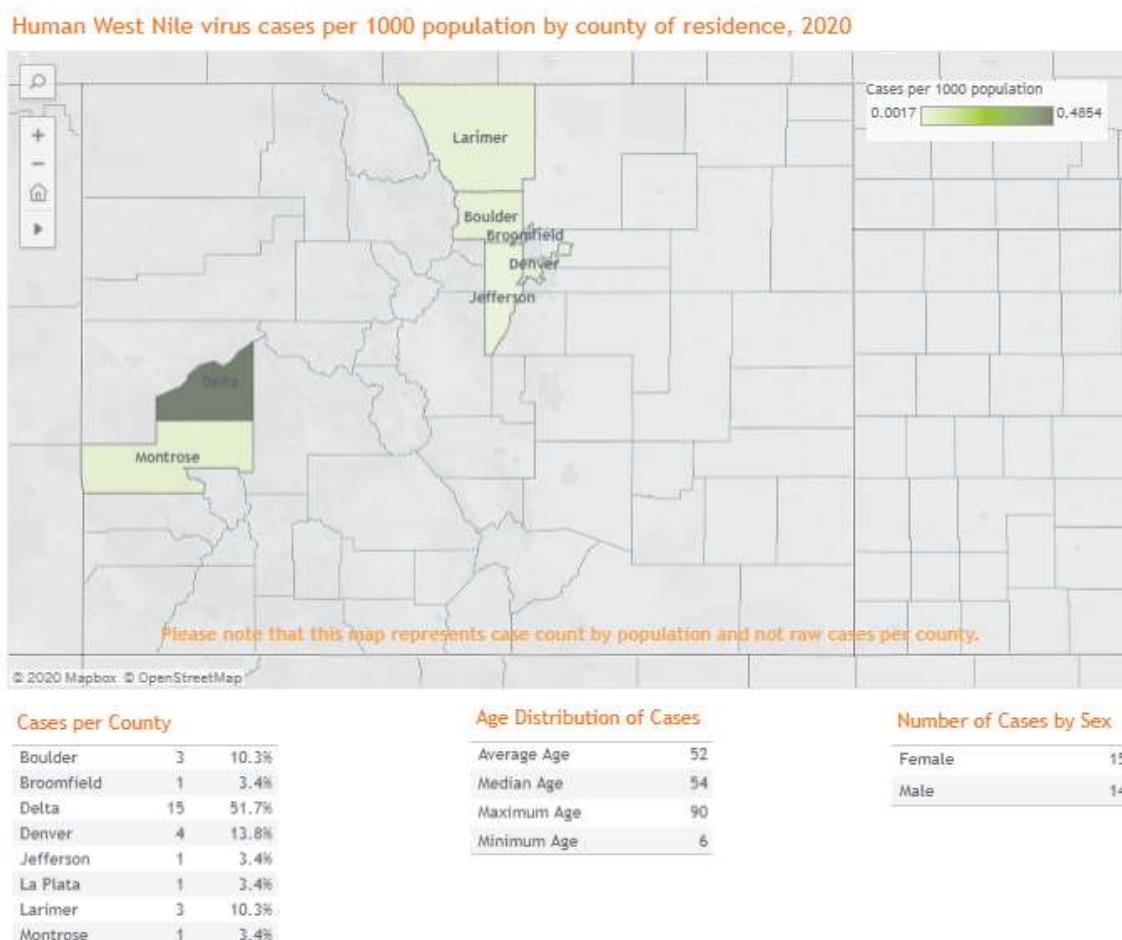
## Boulder County 2020

CDPHE data currently shows Delta County with the most West Nile virus human cases (15) while Denver County ranks 2<sup>nd</sup> with 4 human cases followed by Boulder and Larimer Counties with 3 human cases (**Figure 7**).



**Figure 7 Colorado WNV Human Cases by County, 2020\***

\*CDPHE image <https://www.colorado.gov/pacific/cdphe/west-nile-virus-data>



Adult mosquito surveillance data, submitted mosquito pools, and the resulting WNV infection rates were used by BCPH throughout the season to calculate Vector Index (VI) levels in order to help BCMCD officials determine local areas of concern for public awareness and safety. The VI is a tool used by health officials that takes into account the presence and density of *Culex* mosquitoes and their WNV infection rates, resulting in an early indicator for the risk of human WNV infection. Once the VI reaches levels above 0.75, state and local health departments typically recommend communities take additional action to control both larval and adult mosquitoes, increase public awareness, and encourage personal protection measures.

The actual 2020 weekly Vector Index rates, as calculated by BCPH, for sentinel zones 1, 2 and 3 are illustrated below (**Table 1**). Due to below average WNV activity in 2020, no widespread emergency spraying was conducted within BCMCD during the 2020 mosquito season.



**Table 1 Vector Index, Boulder County Sentinel Zones 1 - 3, 2020**

Boulder County Vector Index 2020 <sup>1</sup>			
	Sentinel Zone 1 <sup>2</sup>	Sentinel Zone 2 <sup>3</sup>	Sentinel Zone 3 <sup>4</sup>
Season Week	Vector Index	Vector Index	Vector Index
Week 25 (June 14-20)	----	----	----
Week 26 (June 21-27)	----	----	----
Week 27 (June 28-July 4)	0.00	0.00	0.00
Week 28 (July 5-11)	0.00	0.00	0.00
Week 29 (July 12-18)	0.00	0.00	0.00
Week 30 (July 19-25)	0.00	0.00	0.00
Week 31 (July 26 -Aug 1)	0.00	0.00	0.00
Week 32 (August 2-8)	0.00	0.00	0.21
Week 33 (August 9-15)	0.00	0.20	0.00
Week 34 (August 16-22)	0.00	0.20	0.21
Week 35 (August 23-29)	0.00	0.15	0.00
Week 36 (Aug 30 - Sept 5)	0.00	0.00	0.00
Week 37 (Sept 6 - 12)	----	----	----
1. Reported by BCPH as of September 15, 2020			
2. City of Boulder; 3. Longmont; 4. Erie, Lafayette, Louisville, Superior			

## Larval Mosquito Control

Larval mosquito control is the foundation of the Boulder County Mosquito Control District's Mosquito Control program and can be an extremely effective way to manage mosquitoes, thereby reducing the number of potential disease vectors and annoyances associated with biting adults. Years of research and practical experience have shown that the most effective way to control mosquito populations is through an aggressive Integrated Mosquito Management (IMM) approach. This approach aims at using a variety of concepts, tools, and products to reduce mosquito populations to a tolerable level.

Pre-season larval control work involved ground truthing GIS maps, remapping areas where new development and altered landscapes occurred. VDCI began larval site inspections the first full week in May. Hiring of seasonal field technicians began in April and continued into May. VDCI's Annual Field Technician Classroom Training Day looked different this season with Covid-19 pandemic restrictions on large gatherings. Instead, each VDCI Colorado office conducted a combination of online video training with small group field training during the week of May 18<sup>th</sup>. A large contingent of returning technicians resulted in only six newly trained field technicians for the 2020 season. Additional field training by VDCI management and veteran employees lasted through May and full-time field activities were in effect by early June.

In 2020, Vector Disease Control International performed 10,340 larval site inspections at 1,851 active breeding sites throughout the District. Of these individual inspections, 7,826 sites (75.7%) were wet upon inspection and 2,811 (27.2%) were producing mosquito larvae in the Boulder County Mosquito Control District. These inspections resulted in 2625 (33.5%) applications in which VDCI applied 4,193.7 lbs. of VectoBac G (*Bti*), 1068.0 lbs. of Vectolex FG (*Bs*), 8.4 lbs. of Vectolex WDG (*Bs*), 1 Altosid briquet (S-Methoprene), 14.0 oz. of Altosid XRG (S-Methoprene), and 70.4 gallons of BVA 2 larvicide oil (**Table 2; Figures 8 and 9**) to 811.6 acres of land within the Boulder County Mosquito Control District.

By comparison, in 2019, Vector Disease Control International performed 9,326 larval site inspections at 1,869 active breeding sites throughout the District. Of these individual inspections, 7,299 sites (78.3%) were wet upon inspection and 3,299 (35.4%) were producing mosquito larvae in the Boulder County Mosquito Control District. These inspections resulted in 3,118 (42.7%) applications in which VDCI applied 5,201.8 lbs. of VectoBac G (*Bti*), 867.4 lbs. of Vectolex FG (*Bs*), 7.4 lbs. of Vectolex WDG (*Bs*), 4 Altosid briquets (S-Methoprene), 1.0 oz. Altosid XRG (S-Methoprene), and 79.4 gallons of BVA 2 larvicide oil (**Table 2 and Figure 9**) to 865.8 acres of land within the Boulder County Mosquito Control District.



In 2018 VDCI performed 12,697 larval site inspections at 1,921 documented breeding sites throughout the District. Of these individual inspections, 8,618 sites (67.9%) were wet upon inspection and 2,711 (21.4%) were producing mosquito larvae in the Boulder County Mosquito Control District. These inspections resulted in 2,678 applications in which VDCI applied 2,129.5 lbs. of VectoBac G (*Bti*), 372.1 lbs. of Vectolex FG (*Bs*), 3.6 lbs. of Vectolex WDG (*Bs*), 1.1 oz. Altosid XRG, and 118.7 gallons of BVA 2 larvicide oil (**Table 2 and Figure 9**) to 385 acres of land within the Boulder County Mosquito Control District.

Larval mosquito control can be achieved in several ways including biological, biochemical, chemical, and mechanical means. No single larvicide product will work effectively in every habitat where mosquito larvae are found, so a variety of products and methods should be employed. Additionally, although there are a variety of methods for reducing larval populations, some may have negative consequences that outweigh their benefits. Mechanical or physical habitat modification is a technique which VDCI uses on relatively small scale projects, as the area to be modified must be carefully reviewed.



VDCI's favored method of larval mosquito control is through the use of bacterial bio-rational products. The main product used by VDCI 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 in accordance with its label, successful control of mosquito larvae can be achieved without impact to non-target species such as other aquatic invertebrates, birds, mammals, fish, amphibians, reptiles, or humans. The label allows for the use of the product in the majority of the habitats throughout the service area. Another bacterial product closely related to *Bti* is *Bacillus sphaericus* (*Bs*). *Bs* provides similar benefits to *Bti* while also providing residual control of certain species of mosquitoes. It is used specifically in difficult to treat areas where *Culex* larvae are the predominant species due to its limitations and high cost.

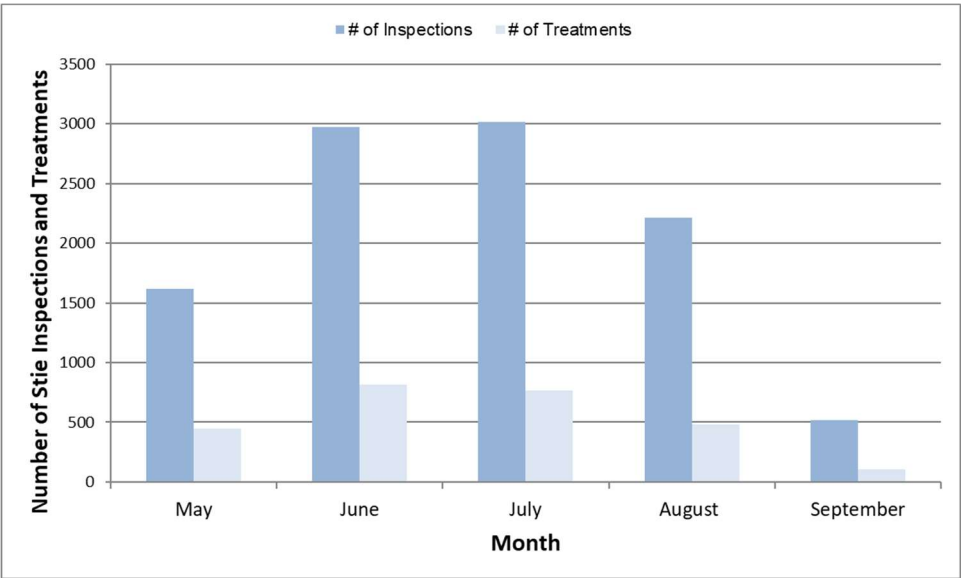
Other larval control products include the insect growth regulator S-methoprene (Altosid), and light mineral oils (BVA 2 larvicide oil). Methoprene is a synthetic version of a juvenile growth hormone in larval mosquitoes. The hormone prevents the normal development of larval mosquitoes into pupae and adults, eventually causing death. VDCI limits the use of chemical larvicides to areas with little biodiversity, such as road side ditches, or areas that chronically produce high mosquito populations. They are only used after a thorough assessment has been made of any habitat where their use is being considered. Mineral oil is the only product effective in controlling mosquito pupae and therefore is an essential tool when pupae are present.

VDCI made available predatory fathead minnows (*Pimephales promelas*) in limited habitats to serve as a biological control for mosquito larvae. Fathead minnows are a native fish species in Colorado that regularly feed off of surface-dwelling aquatic organisms, including mosquito larvae. VDCI will provide minnows to residents that have "closed system" habitats such as ornamental ponds or small farm ponds that are isolated from streams or other areas so the minnows cannot expand indiscriminately. VDCI received no requests for fathead minnows in 2020.

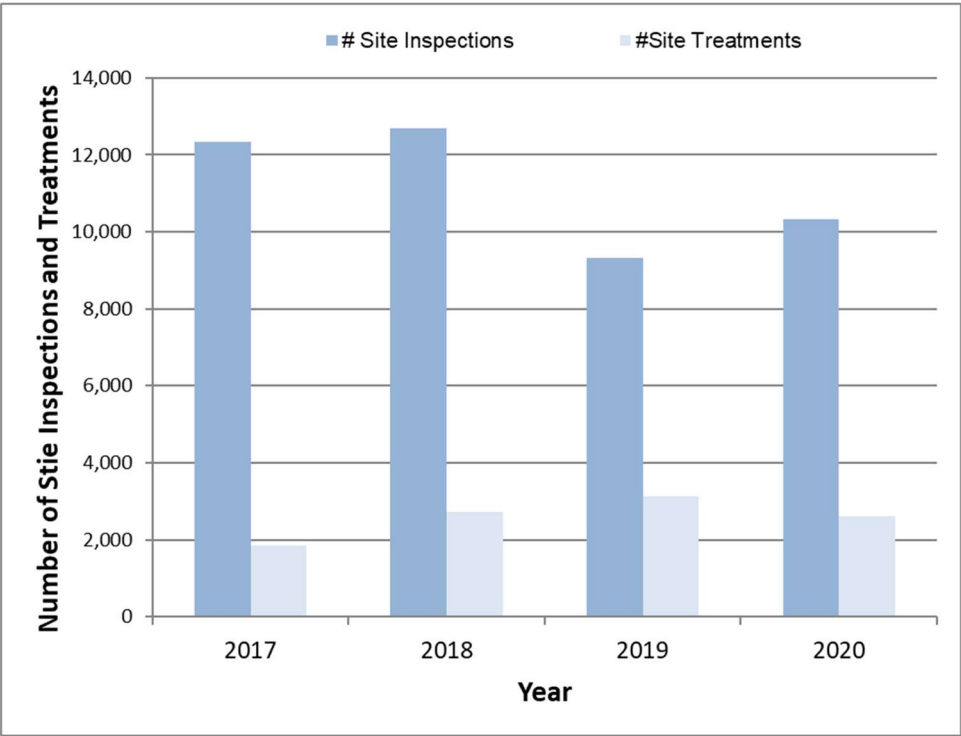
**Table 2 2020 Summary of Larval Control Product Applications by Type**

Larval Control Product Types	2017	2018	2019	2020
<b><i>Bacillus thuringiensis israeliensis (Bti)</i></b>				
Vectobac G (lbs) EPA Reg. #73049-10	4,056.8	2,129.5	5,201.8	4,193.7
<b><i>Bacillus sphaericus (Bs)</i></b>				
Vectolex FG (lbs) EPA Reg. #73049-20	109.0	372.1	867.4	1,068.0
Vectolex WDG (lbs) EPA Reg. #73049-57	5.2	3.6	7.4	8.4
<b>S-Methoprene</b>				
Altosid Briquet (oz) EPA Reg. #2724-375	1.0	0.0	4.0	1.0
Altosid XRG (oz) EPA Reg. #2724-451	-	1.1	1.0	14.0
<b>Mineral Oil</b>				
BVA 2 Larvicide Oil (gal) EPA Reg. #70589-1	76.7	118.7	79.4	70.4

**Figure 8                      2020 Larval Site Inspections and Applications by Month**



**Figure 9                      Comparison of Larval Site Inspections and Applications by Year**



## ***VDCI Adult Mosquito Surveillance and Laboratory***




Information about mosquito abundance and species diversity is essential to any IMM program. Vector Disease Control International's most used adult mosquito surveillance tool 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 CO<sub>2</sub>, the mosquitoes are lured by a small light to a fan that pulls them into a net for collection. Traps are set overnight at carefully selected sites with abundant harborage. They are collected the following morning and returned to VDCI's laboratory, where the contents of the trap nets are counted and speciated by trained technicians.

In 2020, Vector Disease Control International monitored a statewide network of hundreds of weekly trap sites, collecting 519,432 adult mosquitoes that were counted and identified to species by the VDCI Surveillance Laboratories compared to 873,309 in 2019. And a total of 170,328 adult mosquitoes were counted and identified in the entirety of Boulder County in 2020. While individual traps provide current seasonal information, trap data can be interpreted in the context of historical records for the same trap site if such data is available. 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 Laboratories at Vector Disease Control International are trained to provide accurate species-level identification of both larval and adult mosquitoes.




Additionally, the VDCI Surveillance Laboratory conducts an intensive larval identification program with larval mosquito samples collected by field technicians. 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 the effect of larval control efforts. Each mosquito species prefers specific types 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. This helps to illustrate the threat of mosquito-borne disease amplification and transmission because different mosquito species can vector different diseases to people and animals.
-  Determining where adult control efforts were necessary. While mosquito eradication is impossible, significant population reduction is achievable. In places where larval control is insufficient, such as neighborhoods where adult mosquitoes have migrated in from outside of the control area, it may be necessary to use adulticide methods, such as ULV truck fogging or barrier sprays of harborage areas. Trap counts that exceed an acceptable threshold for an area may trigger adult control measures.

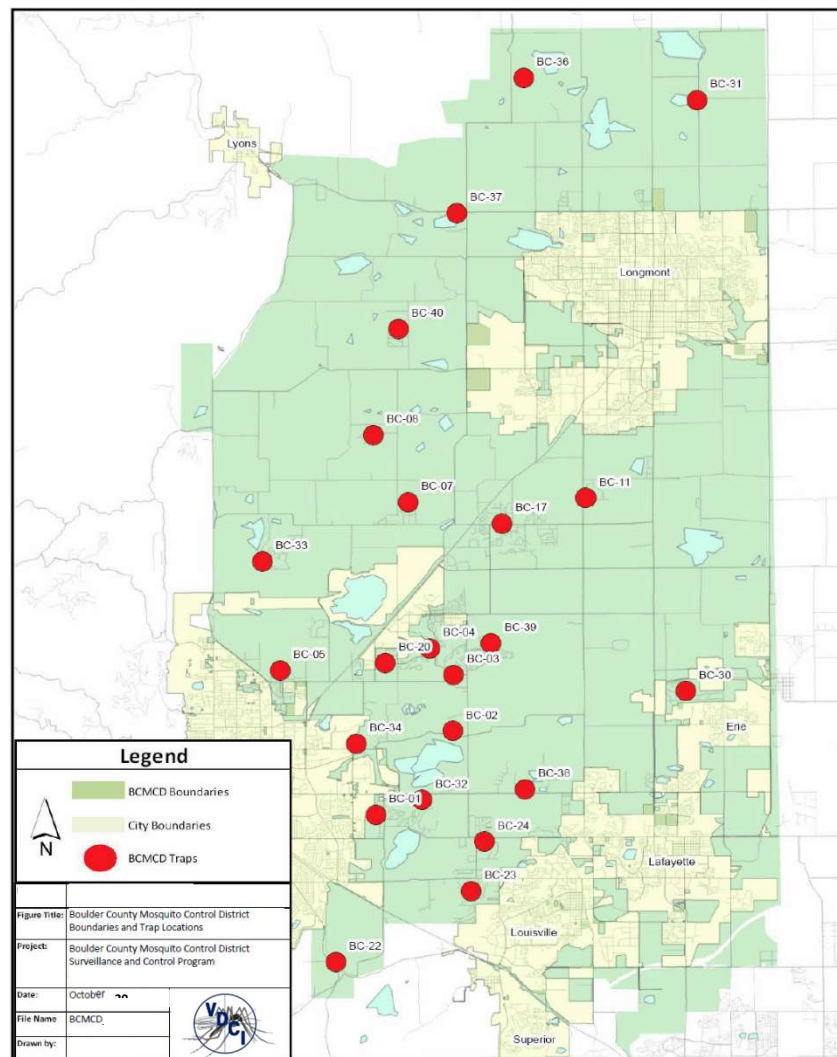


 Surveillance for Mosquito-borne Disease. Historically, VDCI efforts were targeted primarily at controlling mosquito nuisance problems with limited disease surveillance. However, since the arrival of the West Nile virus in Colorado in August of 2002, the paradigm has shifted toward disease prevention 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.

#### **BOULDER COUNTY SURVEILLANCE LIGHT TRAP DATA**

In 2020, an average of 22 surveillance light traps monitored adult mosquito populations within the Boulder County Mosquito Control District on a weekly basis (**Figure 10**). Early season adult surveillance began with select sites (7, 8 & 19 number traps) the weeks of May 11<sup>th</sup>, 18<sup>th</sup> and the 25<sup>th</sup>. VDCI began full surveillance (22 traps) the week of June 1<sup>st</sup> and concluded on September 15<sup>th</sup> corresponding with an unseasonal snowstorm the week prior (September 8<sup>th</sup>) and low adult mosquito activity.

**Figure 10**      **2020 BCMCD Boundaries and Trap Locations**



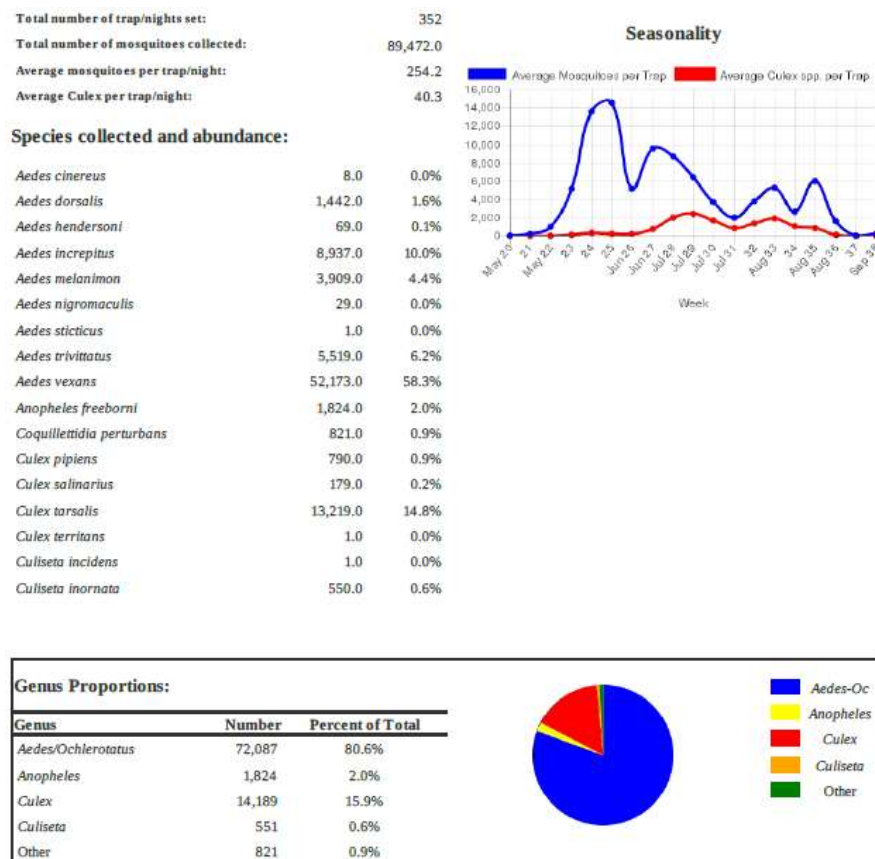
There were 352 CDC light surveillance trap nights set within Boulder County Mosquito Control District during the 2020 season. These traps collected a total of 89,472 mosquitoes. There was an average of 254 mosquitoes caught per trap per night and an average 40 *Culex spp.* mosquitoes per trap per night. The composition of mosquitoes collected was 80.6% (72,087) *Aedes/Ochlerotatus spp.*, 2.0% (1,824) *Anopheles spp.*, 0.9% (821) *Coquillettidia spp.*, 15.9% (14,189) *Culex spp.*, and 0.6% (551) *Culiseta spp.* (**Figure 11**). Please refer to **Appendix A** for BCMCD Individual Light Trap Summaries.

A total of 17 species were represented in 2020 in BCMCD. No exotic/introduced species (such as Asian Tiger Mosquitoes) were collected this season.

By comparison, in 2019 there were 330 CDC light surveillance trap nights set within Boulder County Mosquito Control District. These traps collected a total of 79,897 mosquitoes. There was an average of 242 mosquitoes caught per trap per night and an average 61 *Culex spp.* mosquitoes per trap per night. The composition of mosquitoes collected was 70.4% (56,285) *Aedes/Ochlerotatus spp.*, 1.1% (888) *Anopheles spp.*, 1.7% (1,343) *Coquillettidia spp.*, 25.0% (19,961) *Culex spp.*, and 1.8% (1,420) *Culiseta spp.*

In 2018 there were 390 CDC light surveillance trap nights set within Boulder County Mosquito Control District. These traps collected a total of 61,623 mosquitoes. There was an average of 158 mosquitoes caught per trap per night and an average 38 *Culex spp.* mosquitoes per trap per night. The composition of mosquitoes collected was 72.6% (44,712) *Aedes/Ochlerotatus spp.*, 1.1% (674) *Anopheles spp.*, 1.8% (1,129) *Coquillettidia spp.*, 23.9% (14,702) *Culex spp.*, and <1% (406) *Culiseta spp.*

**Figure 11 2020 Boulder County Mosquito Control District Light Trap Composite Data**





## WEST NILE VIRUS MOSQUITO SAMPLE TESTING RESULTS - BOULDER COUNTY

VDCI and BCMCD used the adult mosquito data collected to help determine local areas of concern for public awareness and safety as well as to monitor the local vector mosquito populations. Many local health departments have moved towards mosquito-based surveillance indicators to assess the weekly risk of West Nile transmission and guide response decisions for adult mosquito control applications. The vector index and infection rate is derived by testing the mosquitoes VDCI collects for the presence of West Nile virus. This value is closely monitored by the CDPHE and local health departments to evaluate the risk posed by the vector mosquito population.

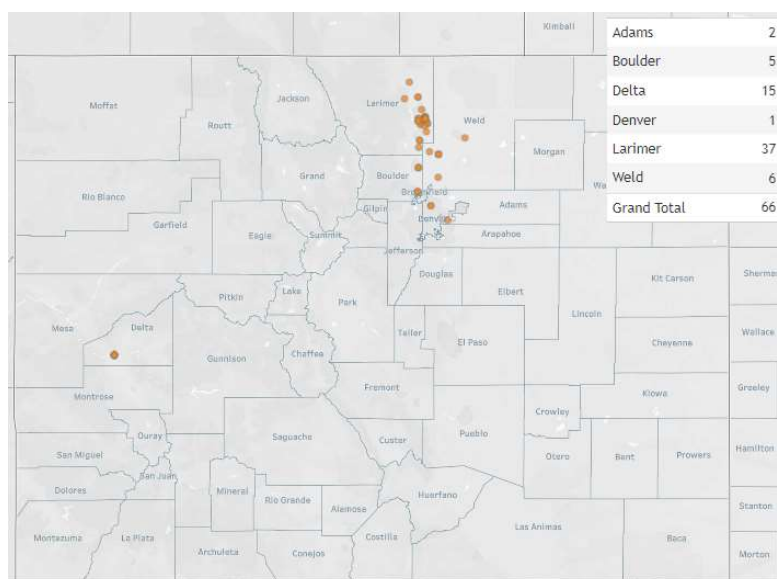
As defined in the CDC guidelines for West Nile virus surveillance, prevention and control, the vector index (VI) is an estimate of the number of West Nile virus infected mosquitoes in an area. This number can serve as a human health risk value. An operational value of 0.75, which was derived from the comparison of historical data for human infections, as well as relative abundance and infection in mosquitoes, serves as an indicator of high risk for West Nile virus transmission to humans in the corresponding area. As the value of the vector index increases there is a corresponding risk of human disease and this value can be used to offset epidemics.

Due to budget cutbacks associated with West Nile virus surveillance in recent years, the CDPHE does not have the ability to test mosquitoes from every trap set across the state. As a result, there is select testing done within three sentinel zones in Boulder County. *Culex species* mosquito samples are sent to CDPHE for WNV testing on a weekly basis as part of the state's Sentinel Encephalitis Surveillance program (**Figure 12**), which VDCI is contracted separately through BCPH to perform.

As of September 15<sup>th</sup>, 2020, CDPHE reported 66 positive mosquito pools from Colorado Sentinel Zones. Larimer County had the most West Nile virus positive mosquito pools (37) while Delta County ranked 2<sup>nd</sup> with 15 positive pools followed by Weld and Boulder Counties with 6 and 5 respectively. The first Colorado West Nile virus positive mosquito sample pool in 2020 was the week of July 12<sup>th</sup> (week 29) in Delta County followed by Larimer County in Week 30 (**Figure 12**).

**Figure 12 Number of Colorado Positive WNV Specimens 2020\***

\*CDPHE image <https://www.colorado.gov/pacific/cdphe/west-nile-virus-data>

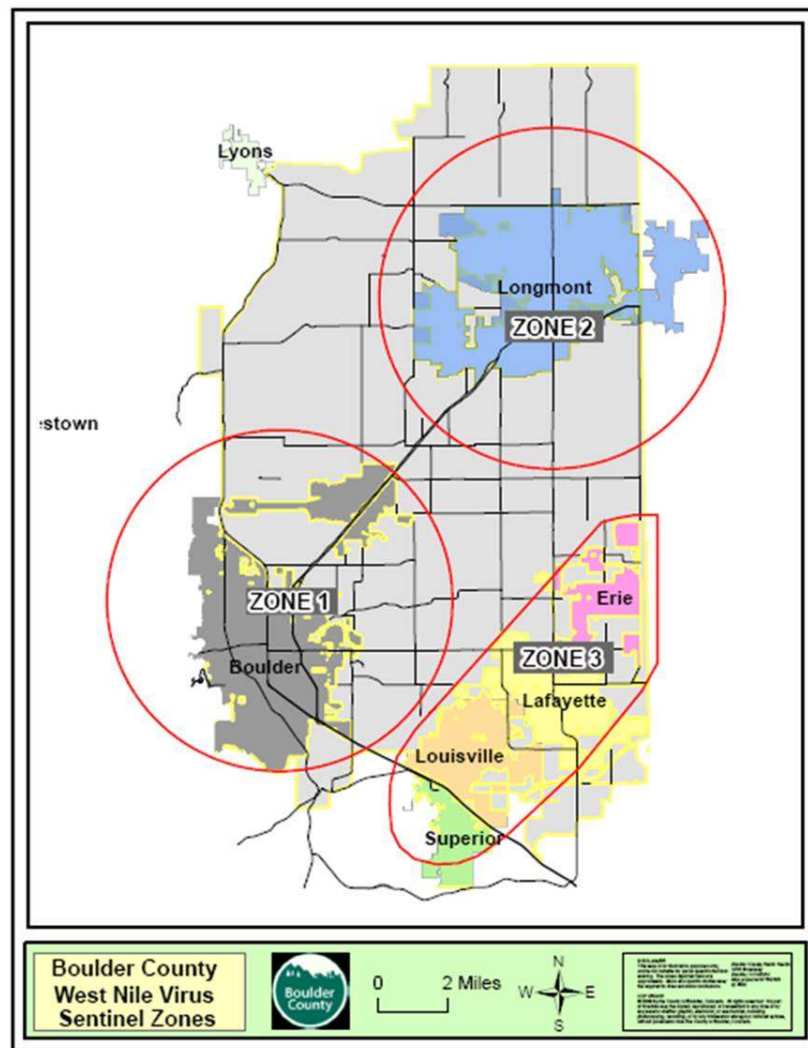


### BOULDER COUNTY PUBLIC HEALTH ADULT MOSQUITO SENTINEL ZONES

The Sentinel Encephalitis Surveillance Program was funded by the Colorado Department of Public Health and Environment and Boulder County Public Health in 2020. VDCI maintained the sentinel system with five surveillance traps at permanent locations in each of three Boulder County Sentinel Zones: City of Boulder (BCZ1); City of Longmont (BCZ2); Town of Erie, City of Lafayette, City of Louisville, Town of Superior (BCZ3) (**Figure 13**). The sentinel light traps were set once a week from June 14<sup>th</sup> (week 25) to September 14<sup>th</sup>, 2020 (week 38). WNV sentinel pool testing began June 21<sup>st</sup> (week 26) and ended August 30<sup>th</sup> (week 36) due to an unseasonably early snowstorm the following week.

As of September 15<sup>th</sup>, 2020 (week 37), CDPHE tested a total of 114 mosquito pools from Boulder County Sentinel Zones. Of the tested mosquito pools, five (5) pools tested positive for West Nile virus out of all three sentinel zones in 2020 (**Appendix B**). The first Boulder County West Nile virus positive mosquito sample pool (1) in 2020 was on August 3<sup>rd</sup>, 2020 (week 32) in BCZ3, the same week as 2019 (**Table 1; Figure 12 and 13**).

**Figure 13** Boulder County Public Health Sentinel Surveillance Zone Map



## **ADULT MOSQUITO CONTROL**

The goal of Vector Disease Control International is to provide our customers with the best options for safe, effective, modern mosquito management. The primary emphasis of the BCMCD Integrated Mosquito Management Program is to control mosquitoes in the larval stage, using safe biological control products. When mosquito counts surpass nuisance and disease threshold numbers of adult mosquitoes, VDCI utilizes least toxic and EPA and CDC approved adulticides to reduce mosquito populations in the BCMCD.

In 2020, BCPH and VDCI continued to use a week to week evaluation of the adult mosquito populations and utilized approximately 250 as a threshold for nuisance mosquitoes and 50 for vector-disease mosquitoes in the Boulder County Mosquito Control District. BCPH's 2018 and 2019 week to week evaluation suggested that a threshold of 50 for vector disease mosquitoes be implemented for the 2020 season. Additionally, a continuing weekly evaluation of several factors was utilized to determine if a neighborhood or spray zone were to have ULV adult control operations conducted June through September. These factors included: the current weekly trap species diversity and abundance (*Aedes* vs. *Culex spp.*), previous weekly trap species diversity and abundance (*Aedes* vs. *Culex spp.*), was the trap diversity and abundance (*Aedes* vs. *Culex spp.*) declining or increasing, did the trap numbers decline the following week naturally or due to ULV adult control, the volume of resident annoyance calls from a neighborhood or spray zone area, the County human population density around the trap, and WNV activity in the area.

BCPH plans to further analyze current and historic adult surveillance and County WNV epidemiology data to aid in the evaluation of recommended threshold numbers for other Boulder County municipalities. Threshold recommendations might be for total adults, a separate *Aedes spp.* threshold and/or separate *Culex spp.* threshold for the 2021 season.

During the 2020 season a total of 343.3 Ultra Low Volume (ULV) miles of roads and access paths within BCMCD were sprayed using the adulticide Aqua-Kontrol® 30-30 or PermaSease UC (Active Ingredient – Permethrin) (**Figure 14**). In addition, a total of 8 gallons of Talstar Pro or Wisdom TC (Active Ingredient – Bifenthrin) were applied as a daytime adult barrier application. A detailed summary of adulticide applications, by neighborhood, can be found in **Appendix C**.

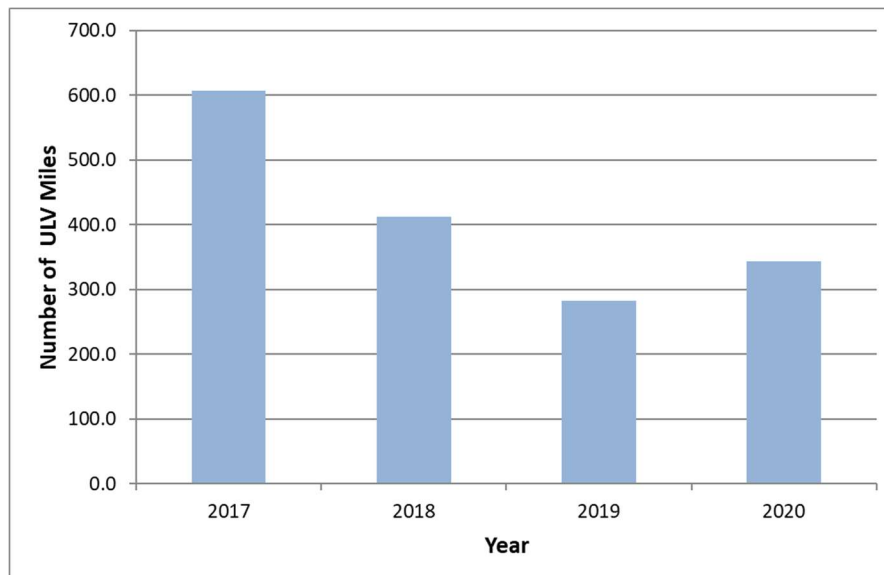
By comparison, in 2019 a total of 282.4 Ultra Low Volume (ULV) miles of roads and access paths within BCMCD were sprayed using the adulticide Aqua-Kontrol® 30-30 (Active Ingredient – Permethrin) (**Figure 14**). In addition, a total of 4 gallons of Talstar Pro (Active Ingredient – Bifenthrin) was applied as a daytime adult barrier application.

In 2018, a total of 412 Ultra Low Volume (ULV) miles of roads and access paths within BCMCD were sprayed using the adulticides Aqualuer® 20-20 and Aqua Kontrol® 30-30 (**Figure 14**).

VDCI uses state of the art technology, calibrated application timing, and least-toxic products to minimize non-target impacts. Adult mosquito control applications are accomplished using Ultra Low Volume (ULV) spray equipment and performed after dusk when the majority of mosquito species are most active. This type of equipment produces droplets averaging 10-25 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 the greatest numbers and non-target insect activity (for example, day-flying pollinators like bees) is greatly reduced. Using this application technique, the overall goal of minimal environmental impact and effective adult control is achieved in the targeted area.



**Figure 14 Comparison of ULV Adulticide Miles by Year**



#### CALL NOTIFICATION & SHUTOFF SYSTEM

Both VDCI and the BCMCD acknowledge that adult mosquito control can be a sensitive matter to many residents; therefore, a Spray Shutoff and/or Notification request option was available to the public. Residents were able to call VDCI's MosquitoLine™ or submit a website request to be notified before adult control applications were performed and/or request that the ULV sprayer be shutoff in front of their address.

At the beginning of the 2020 season, VDCI mailed 244 letters to all Boulder County shutoff and notification households on established ULV adult control routes to verify a current list for the 2020 season. During the season, the majority of new and renewed returned mail and/or website submissions were received mainly during May and June. The 2020 season concluded with 253 households of which 12 were shutoff only, 98

were shutoff and notification, 143 were notification only and 19 were either a floater trap or not on a designated ULV adult control route. Residents on the shutoff and notification list were notified 24 hours in advance when their community was scheduled to be sprayed. VDCI used an automated message service to contact residents and listed weekly ULV spray events on VDCI's website, [www.vdci.net/colorado-schedules](http://www.vdci.net/colorado-schedules), which utilized Google Calendar and Maps. In 2020, VDCI completed 846 BCMCD automated notification calls.

By comparison, in 2019 VDCI sent out 326 letters to all Boulder County shutoff and notification households to establish a current list for the 2019 season. The 2019 season shutoff and notification list concluded with 249 households of which 10 were shutoff only, 98 were shutoff and notification and 140 were notification only. In 2019, VDCI completed 956 BCMCD notification calls.

## ***Public Relations and Education***

VDCI is dedicated to providing strong Public Outreach and Education Programs to residents in all of our communities. Citizen complaints, inquiry, information and satisfaction surveys can aid in evaluating the effectiveness of a program. VDCI constantly looks for ways to better serve the communities we work with and encourages both the citizen and local media involvement in order to increase the effectiveness of our programs. We have clearly demonstrated that commitment and belief by proactively serving Boulder County Mosquito Control District (and all of our contracted communities) with numerous innovative programs, activities and services.

Customer service is always a high priority for VDCI. We take pride in training each and every technician so that they have the knowledge to provide residents with the correct answers to their questions. Each field technician spends part of their day responding to resident concerns in their work area. This in-field customer service personalizes the mosquito control program, provides VDCI with local information on mosquito activity and presents a valuable opportunity to educate our residents about mosquito biology and control.

### **MosquitoLine™**

VDCI maintains a toll-free telephone line specific to Boulder County, (888) 774-2161 and a local line (303) 466-1892 to accept calls from the public concerning:

- ✧ Information requests about mosquito biology and source reduction of mosquito habitats
- ✧ Information on program components, operations and monitoring
- ✧ Seasonal West Nile virus activity
- ✧ Personal protection options for mosquito annoyances and West Nile virus risk
- ✧ Reports about mosquitoes and possible larval mosquito habitats
- ✧ Requests to perform larvicide applications and/or opt-out of any adulticide spraying
- ✧ Request notification when adulticide spraying is planned in their neighborhood
- ✧ Request health and safety information about mosquito control operations and pesticide products used

VDCI has provided Mosquito Hotlines to the residents in communities which we are contracted to also reduce workload by municipal personnel. This enables direct communication and response by mosquito control employees to resident's concerns about West Nile virus and larval site activity and treatment. VDCI maintains a log of calls received and will summarize call activity in monthly and annual reports.

In 2020 Vector Disease Control International received approximately 176 phone calls from residents of BCMCD. Most of these calls (106) were for adult mosquito complaints. Of the rest, 27 calls were requests for habitat assessment, 43 calls were requests for general information or other reasons and 269 requests for ULV adult control shut off and/or call notification (website submission) (**Table 3; Figure 15 and 16**). One habitat call resulted in a new larval site being added to the program.

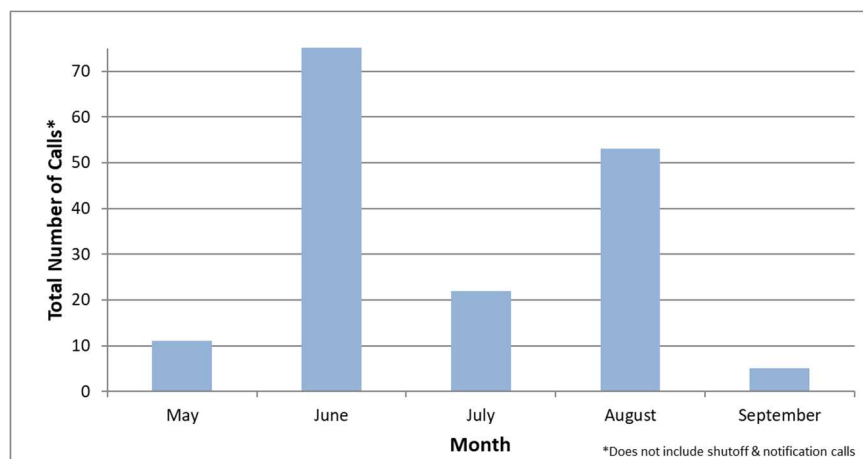
By comparison, in 2019 VDCI received 115 phone calls from residents of BCMCD. Most of these calls (58) were for adult mosquito complaints. Of the rest, 33 calls were requests for habitat assessment, 24 calls were requests for general information or other reasons and 97 website submission requests for shut off and/or call notification prior to ULV adult control (**Figure 16**). Several habitat calls resulted in new or expanded or reinstated previously denied larval sites being added to the program.

In 2018 VDCI received 150 phone calls from residents of BCMCD. 58 calls were adult mosquito complaints, 22 calls were requests to have habitat inspected for mosquito larvae and 32 calls were requests for general information and 38 were requests for shut offs and/or call notifications prior to ULV adult control (**Figure 16**). Three of the habitat calls resulted in new larval sites being added to the program.

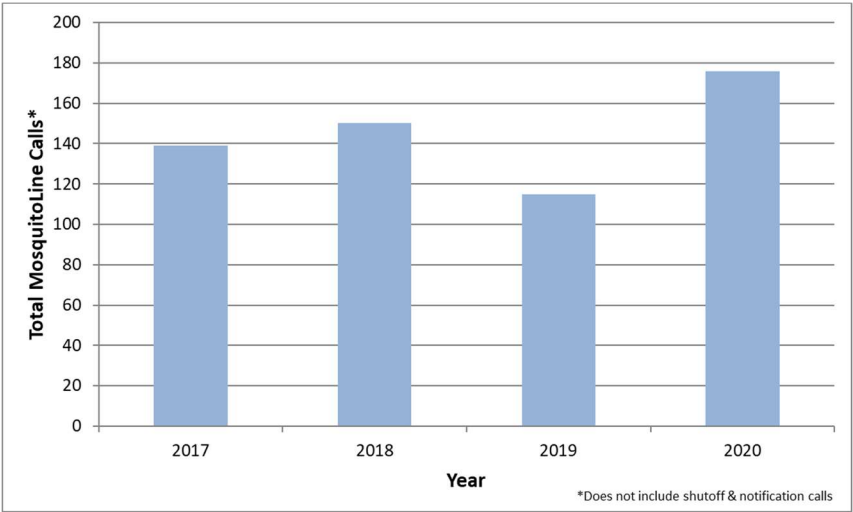
**Table 3 2020 Mosquito Control Calls by Category**

Call Category	2020	
	Number of Calls	Percentage
Adult Complaint	106	23.8%
Habitat Assessment	27	6.1%
General Info/Other	43	9.7%
Fog Shutoff/Notification*	118	26.5%
Fog Notification*	151	33.9%
<b>Total</b>	<b>445</b>	<b>100.0%</b>
*VDCI website submissions or returned letter		

**Figure 15 2020 Mosquito Control Calls by Month**



**Figure 16      Comparison of Mosquito Control Calls by Year**





*Appendix A: Boulder County Mosquito Control District Individual  
Light Trap Summaries*

# BC-02

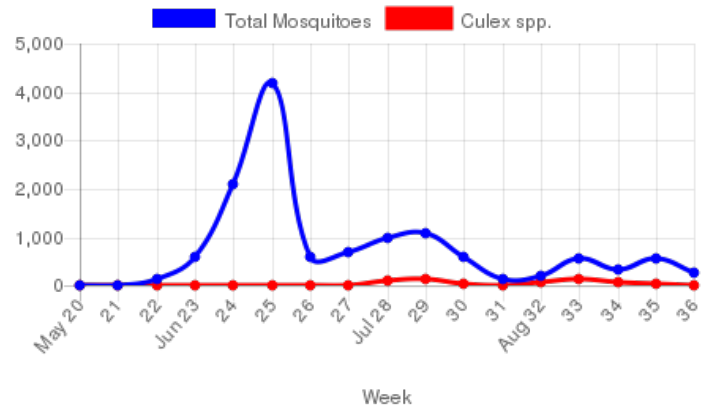
Season: 05/01/2020 - 09/30/2020  
 Trap Type: CDC Light Trap  
 Location: Cottonwood Kennels  
 GPS: 40.03469988689677, -105.18324997276066

Total number of trap/nights set: 17.0  
 Total number of mosquitoes collected: 13,147.0  
 Average mosquitoes per trap/night: 773.4  
 Average Culex per trap/night: 42.8

## Species collected and abundance:

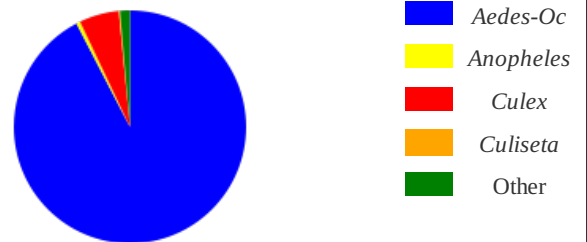
<i>Aedes dorsalis</i>	15.0	0.1%
<i>Aedes hendersoni</i>	11.0	0.1%
<i>Aedes increpitus</i>	3,207.0	24.4%
<i>Aedes melanimon</i>	169.0	1.3%
<i>Aedes trivittatus</i>	510.0	3.9%
<i>Aedes vexans</i>	8,233.0	62.6%
<i>Anopheles freeborni</i>	73.0	0.6%
<i>Coquillettidia perturbans</i>	179.0	1.4%
<i>Culex pipiens</i>	26.0	0.2%
<i>Culex tarsalis</i>	701.0	5.3%
<i>Culiseta inornata</i>	23.0	0.2%

## Seasonality



## Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	12,145.0	92.4%
<i>Anopheles</i>	73.0	0.6%
<i>Culex</i>	727.0	5.5%
<i>Culiseta</i>	23.0	0.2%
Other	179.0	1.4%



# BC-03

Season: 05/01/2020 - 09/30/2020

Trap Type: CDC Light Trap

Location: Gunbarrel SE - Pali Way

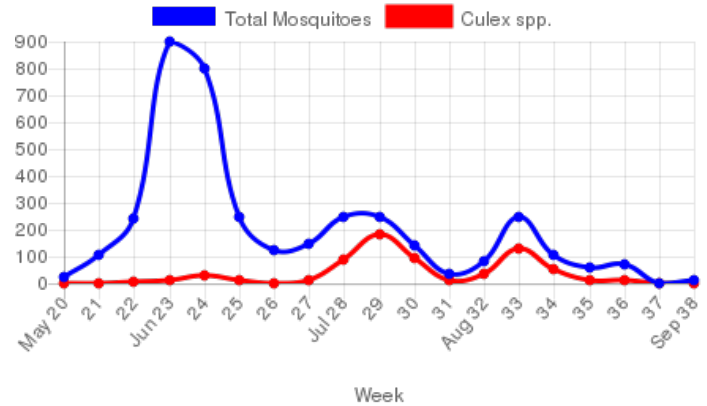
GPS: 40.05284991156167, -105.18390007317066

Total number of trap/nights set: 18.0  
Total number of mosquitoes collected: 3,861.0  
Average mosquitoes per trap/night: 214.5  
Average Culex per trap/night: 40.4

## Species collected and abundance:

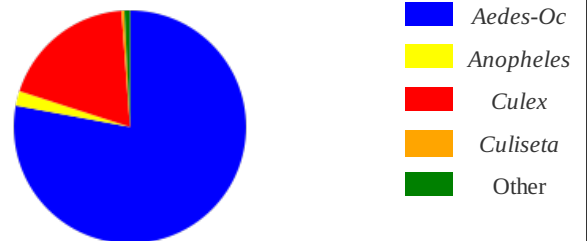
<i>Aedes dorsalis</i>	6.0	0.2%
<i>Aedes hendersoni</i>	1.0	0.0%
<i>Aedes increpitus</i>	1,536.0	39.8%
<i>Aedes melanimon</i>	52.0	1.3%
<i>Aedes nigromaculis</i>	1.0	0.0%
<i>Aedes trivittatus</i>	28.0	0.7%
<i>Aedes vexans</i>	1,385.0	35.9%
<i>Anopheles freeborni</i>	79.0	2.0%
<i>Coquillettia perturbans</i>	29.0	0.8%
<i>Culex pipiens</i>	52.0	1.3%
<i>Culex salinarius</i>	3.0	0.1%
<i>Culex tarsalis</i>	673.0	17.4%
<i>Culiseta inornata</i>	16.0	0.4%

## Seasonality



## Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	3,009.0	77.9%
<i>Anopheles</i>	79.0	2.0%
<i>Culex</i>	728.0	18.9%
<i>Culiseta</i>	16.0	0.4%
Other	29.0	0.8%



# BC-04

Season: 05/01/2020 - 09/30/2020

Trap Type: CDC Light Trap

Location: Gunbarrel NW - Red Fox Hills

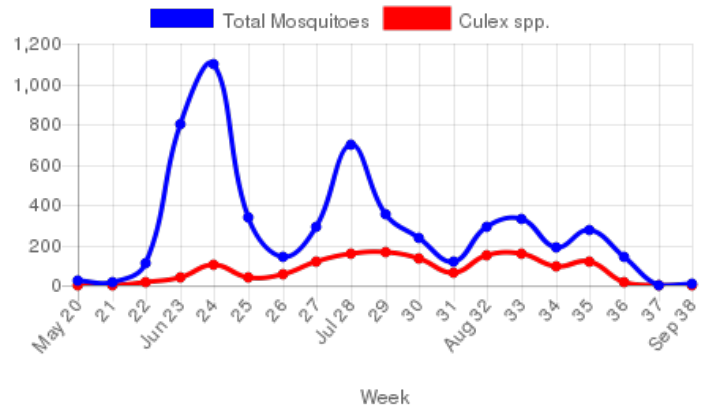
GPS: 40.06164995704901, -105.19394997507334

Total number of trap/nights set: 18.0  
 Total number of mosquitoes collected: 5,497.0  
 Average mosquitoes per trap/night: 305.4  
 Average Culex per trap/night: 81.9

## Species collected and abundance:

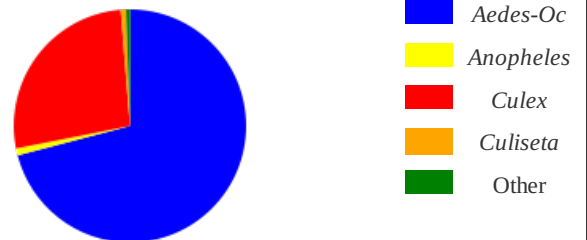
<i>Aedes cinereus</i>	5.0	0.1%
<i>Aedes dorsalis</i>	91.0	1.7%
<i>Aedes increpitus</i>	360.0	6.5%
<i>Aedes melanimon</i>	123.0	2.2%
<i>Aedes trivittatus</i>	38.0	0.7%
<i>Aedes vexans</i>	3,282.0	59.7%
<i>Anopheles freeborni</i>	54.0	1.0%
<i>Coquillettidia perturbans</i>	29.0	0.5%
<i>Culex pipiens</i>	225.0	4.1%
<i>Culex salinarius</i>	64.0	1.2%
<i>Culex tarsalis</i>	1,185.0	21.6%
<i>Culiseta inornata</i>	41.0	0.7%

## Seasonality



## Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	3,899.0	70.9%
<i>Anopheles</i>	54.0	1.0%
<i>Culex</i>	1,474.0	26.8%
<i>Culiseta</i>	41.0	0.7%
Other	29.0	0.5%



# BC-05

Season: 05/01/2020 - 09/30/2020

Trap Type: CDC Light Trap

Location: Orange Orchard

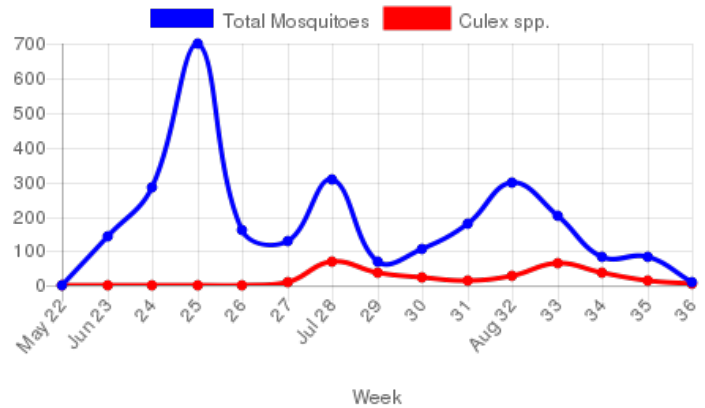
GPS: 40.05409998143732, -105.2547999098897

Total number of trap/nights set: 15.0  
 Total number of mosquitoes collected: 2,761.0  
 Average mosquitoes per trap/night: 184.1  
 Average Culex per trap/night: 20.9

## Species collected and abundance:

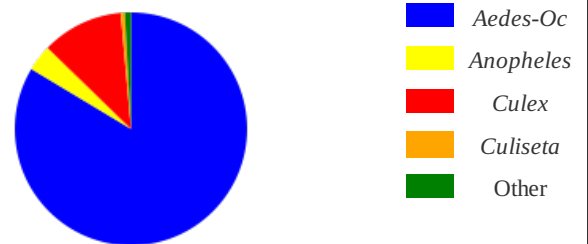
<i>Aedes dorsalis</i>	2.0	0.1%
<i>Aedes inreptus</i>	366.0	13.3%
<i>Aedes melanimon</i>	12.0	0.4%
<i>Aedes trivittatus</i>	26.0	0.9%
<i>Aedes vexans</i>	1,902.0	68.9%
<i>Anopheles freeborni</i>	101.0	3.7%
<i>Coquillettidia perturbans</i>	23.0	0.8%
<i>Culex pipiens</i>	28.0	1.0%
<i>Culex salinarius</i>	4.0	0.1%
<i>Culex tarsalis</i>	281.0	10.2%
<i>Culiseta inornata</i>	16.0	0.6%

## Seasonality



## Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	2,308.0	83.6%
<i>Anopheles</i>	101.0	3.7%
<i>Culex</i>	313.0	11.3%
<i>Culiseta</i>	16.0	0.6%
Other	23.0	0.8%



# BC-07

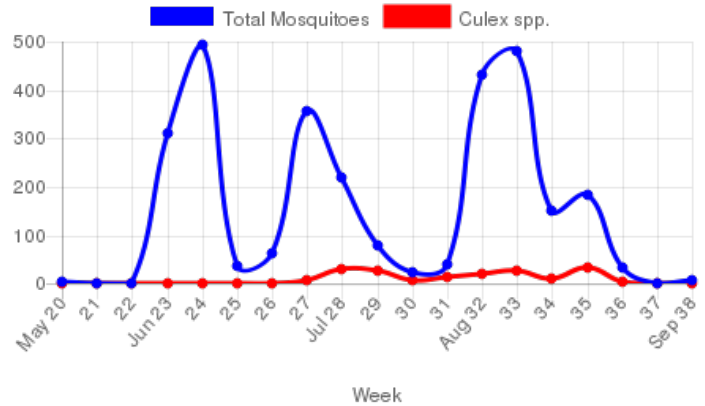
Season: 05/01/2020 - 09/30/2020  
 Trap Type: CDC Light Trap  
 Location: Brigadoon Glen/Left Hand Creek  
 GPS: 40.10855006351473, -105.20234998315573

Total number of trap/nights set: 18.0  
 Total number of mosquitoes collected: 2,923.0  
 Average mosquitoes per trap/night: 162.4  
 Average Culex per trap/night: 10.3

## Species collected and abundance:

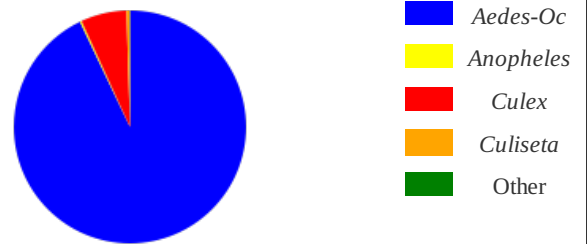
<i>Aedes dorsalis</i>	11.0	0.4%
<i>Aedes hendersoni</i>	2.0	0.1%
<i>Aedes increpitus</i>	2.0	0.1%
<i>Aedes melanimon</i>	116.0	4.0%
<i>Aedes trivittatus</i>	1,427.0	48.8%
<i>Aedes vexans</i>	1,158.0	39.6%
<i>Anopheles freeborni</i>	7.0	0.2%
<i>Coquillettidia perturbans</i>	1.0	0.0%
<i>Culex pipiens</i>	1.0	0.0%
<i>Culex tarsalis</i>	185.0	6.3%
<i>Culiseta inornata</i>	13.0	0.4%

## Seasonality



## Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	2,716.0	92.9%
<i>Anopheles</i>	7.0	0.2%
<i>Culex</i>	186.0	6.4%
<i>Culiseta</i>	13.0	0.4%
Other	1.0	0.0%



# BC-08

Season: 05/01/2020 - 09/30/2020

Trap Type: CDC Light Trap

Location: Boulder Hills

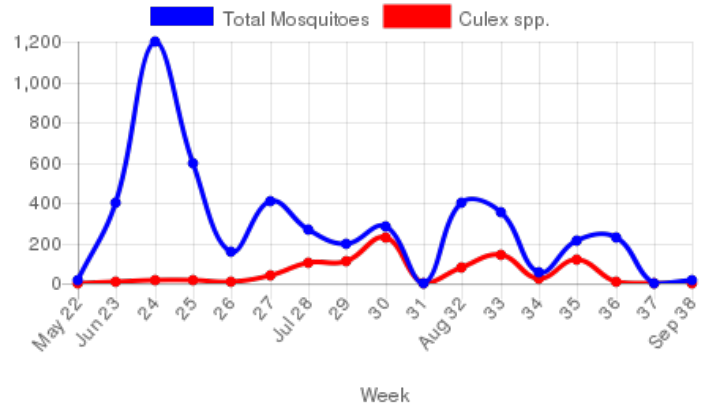
GPS: 40.13065002302139, -105.21675009280443

Total number of trap/nights set: 15.0  
 Total number of mosquitoes collected: 4,804.0  
 Average mosquitoes per trap/night: 320.3  
 Average Culex per trap/night: 62.9

## Species collected and abundance:

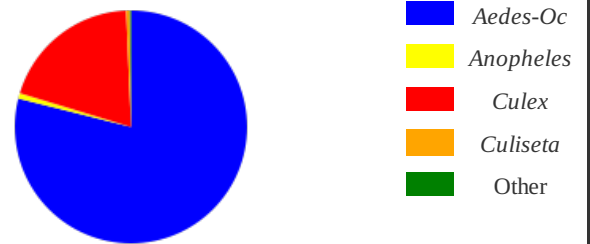
<i>Aedes dorsalis</i>	381.0	7.9%
<i>Aedes inreptus</i>	107.0	2.2%
<i>Aedes melanimon</i>	176.0	3.7%
<i>Aedes trivittatus</i>	794.0	16.5%
<i>Aedes vexans</i>	2,333.0	48.6%
<i>Anopheles freeborni</i>	37.0	0.8%
<i>Coquilletidia perturbans</i>	8.0	0.2%
<i>Culex pipiens</i>	16.0	0.3%
<i>Culex salinarius</i>	11.0	0.2%
<i>Culex tarsalis</i>	917.0	19.1%
<i>Culiseta inornata</i>	24.0	0.5%

## Seasonality



## Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	3,791.0	78.9%
<i>Anopheles</i>	37.0	0.8%
<i>Culex</i>	944.0	19.7%
<i>Culiseta</i>	24.0	0.5%
Other	8.0	0.2%





# BC-11

Season: 05/01/2020 - 09/30/2020

Trap Type: CDC Light Trap

Location: Niwot East - Majestic Road

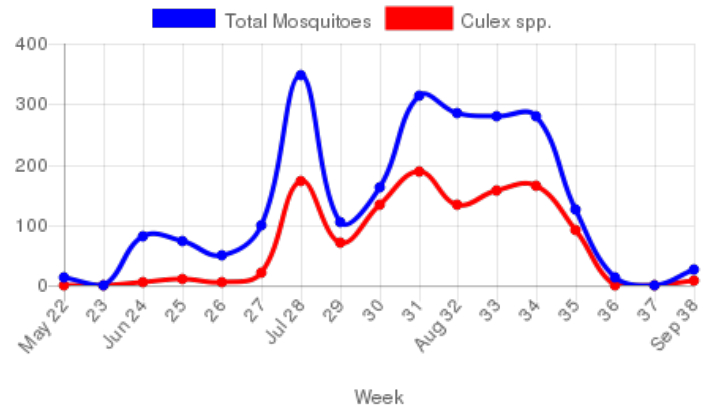
GPS: 40.1099998900239, -105.13030014932157

Total number of trap/nights set: 16.0  
Total number of mosquitoes collected: 2,259.0  
Average mosquitoes per trap/night: 141.2  
Average Culex per trap/night: 73.4

## Species collected and abundance:

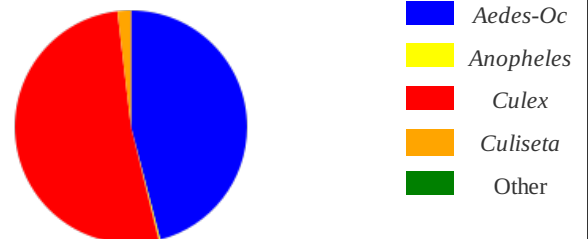
<i>Aedes dorsalis</i>	80.0	3.5%
<i>Aedes inreptus</i>	4.0	0.2%
<i>Aedes melanimon</i>	44.0	1.9%
<i>Aedes trivittatus</i>	18.0	0.8%
<i>Aedes vexans</i>	892.0	39.5%
<i>Anopheles freeborni</i>	5.0	0.2%
<i>Culex pipiens</i>	34.0	1.5%
<i>Culex salinarius</i>	7.0	0.3%
<i>Culex tarsalis</i>	1,133.0	50.2%
<i>Culiseta inornata</i>	42.0	1.9%

## Seasonality



## Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	1,038.0	45.9%
<i>Anopheles</i>	5.0	0.2%
<i>Culex</i>	1,174.0	52.0%
<i>Culiseta</i>	42.0	1.9%
Other	0.0	0.0%



# BC-17

Season: 05/01/2020 - 09/30/2020

Trap Type: CDC Light Trap

Location: Niwot Central

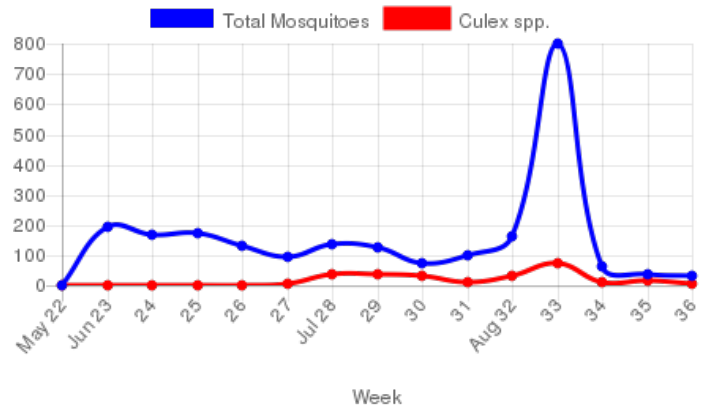
GPS: 40.10180003989972, -105.16405005007982

Total number of trap/nights set: 15.0  
 Total number of mosquitoes collected: 2,308.0  
 Average mosquitoes per trap/night: 153.9  
 Average Culex per trap/night: 18.5

## Species collected and abundance:

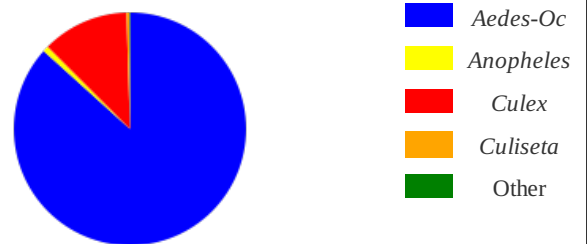
<i>Aedes dorsalis</i>	18.0	0.8%
<i>Aedes hendersoni</i>	1.0	0.0%
<i>Aedes increpitus</i>	24.0	1.0%
<i>Aedes melanimon</i>	49.0	2.1%
<i>Aedes trivittatus</i>	118.0	5.1%
<i>Aedes vexans</i>	1,790.0	77.6%
<i>Anopheles freeborni</i>	19.0	0.8%
<i>Coquillettidia perturbans</i>	2.0	0.1%
<i>Culex pipiens</i>	13.0	0.6%
<i>Culex tarsalis</i>	265.0	11.5%
<i>Culiseta inornata</i>	9.0	0.4%

## Seasonality



## Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	2,000.0	86.7%
<i>Anopheles</i>	19.0	0.8%
<i>Culex</i>	278.0	12.0%
<i>Culiseta</i>	9.0	0.4%
Other	2.0	0.1%



# BC-20

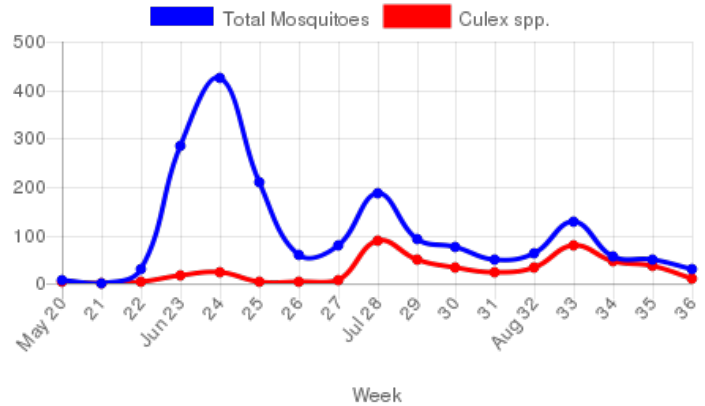
Season: 05/01/2020 - 09/30/2020  
 Trap Type: CDC Light Trap  
 Location: Willows/Gunbarrel Commons Park  
 GPS: 40.05679996173248, -105.21199990063906

Total number of trap/nights set: 16.0  
 Total number of mosquitoes collected: 1,834.0  
 Average mosquitoes per trap/night: 114.6  
 Average Culex per trap/night: 29.7

## Species collected and abundance:

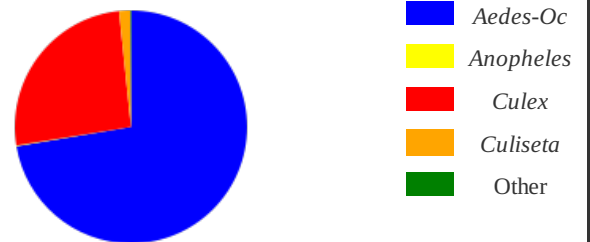
<i>Aedes dorsalis</i>	8.0	0.4%
<i>Aedes inepitatus</i>	434.0	23.7%
<i>Aedes melanimon</i>	10.0	0.5%
<i>Aedes trivittatus</i>	13.0	0.7%
<i>Aedes vexans</i>	862.0	47.0%
<i>Anopheles freeborni</i>	2.0	0.1%
<i>Coquillettidia perturbans</i>	2.0	0.1%
<i>Culex pipiens</i>	146.0	8.0%
<i>Culex salinarius</i>	30.0	1.6%
<i>Culex tarsalis</i>	299.0	16.3%
<i>Culiseta inornata</i>	28.0	1.5%

## Seasonality



## Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	1,327.0	72.4%
<i>Anopheles</i>	2.0	0.1%
<i>Culex</i>	475.0	25.9%
<i>Culiseta</i>	28.0	1.5%
Other	2.0	0.1%



# BC-22

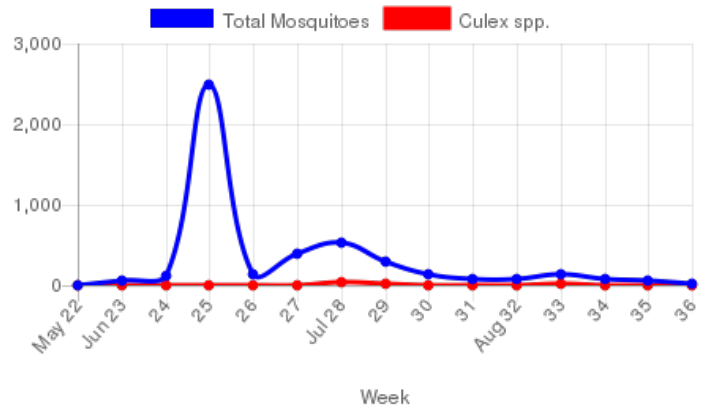
Season: 05/01/2020 - 09/30/2020  
 Trap Type: CDC Light Trap  
 Location: South Boulder Creek at Marshall Rd  
 GPS: 39.95944874334226, -105.23227907717228

Total number of trap/nights set: 15.0  
 Total number of mosquitoes collected: 4,718.0  
 Average mosquitoes per trap/night: 314.5  
 Average Culex per trap/night: 9.3

## Species collected and abundance:

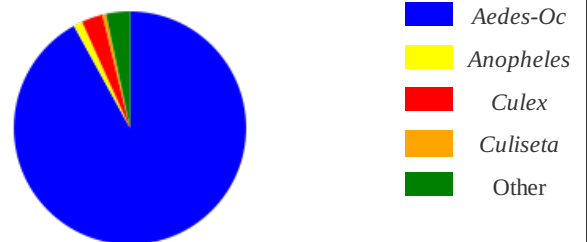
<i>Aedes dorsalis</i>	3.0	0.1%
<i>Aedes hendersoni</i>	33.0	0.7%
<i>Aedes increpitus</i>	199.0	4.2%
<i>Aedes melanimon</i>	113.0	2.4%
<i>Aedes trivittatus</i>	195.0	4.1%
<i>Aedes vexans</i>	3,797.0	80.5%
<i>Anopheles freeborni</i>	59.0	1.3%
<i>Coquillettidia perturbans</i>	155.0	3.3%
<i>Culex pipiens</i>	11.0	0.2%
<i>Culex salinarius</i>	8.0	0.2%
<i>Culex tarsalis</i>	120.0	2.5%
<i>Culiseta inornata</i>	25.0	0.5%

## Seasonality



## Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	4,340.0	92.0%
<i>Anopheles</i>	59.0	1.3%
<i>Culex</i>	139.0	2.9%
<i>Culiseta</i>	25.0	0.5%
Other	155.0	3.3%



# BC-23

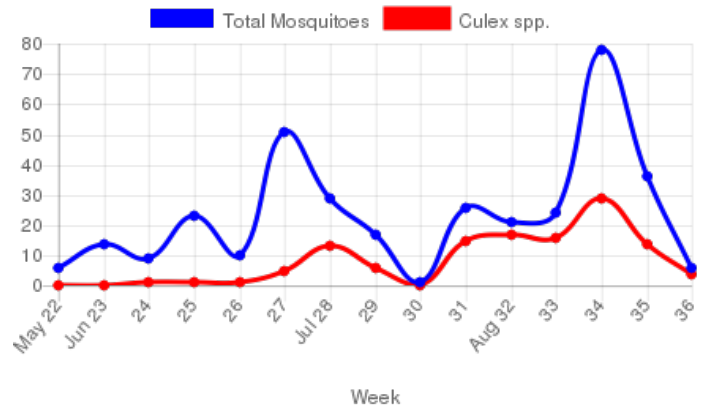
Season: 05/01/2020 - 09/30/2020  
 Trap Type: CDC Light Trap  
 Location: Louisville - Spanish Hills  
 GPS: 39.98264987357784, -105.17714995890856

Total number of trap/nights set: 15.0  
 Total number of mosquitoes collected: 351.0  
 Average mosquitoes per trap/night: 23.4  
 Average Culex per trap/night: 8.1

## Species collected and abundance:

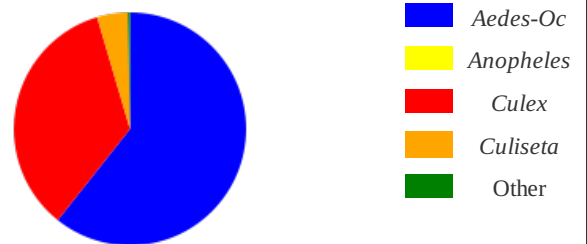
<i>Aedes dorsalis</i>	2.0	0.6%
<i>Aedes inerepitus</i>	13.0	3.7%
<i>Aedes melanimon</i>	41.0	11.7%
<i>Aedes nigromaculis</i>	1.0	0.3%
<i>Aedes trivittatus</i>	3.0	0.9%
<i>Aedes vexans</i>	153.0	43.6%
<i>Coquilletidia perturbans</i>	1.0	0.3%
<i>Culex pipiens</i>	12.0	3.4%
<i>Culex salinarius</i>	3.0	0.9%
<i>Culex tarsalis</i>	107.0	30.5%
<i>Culiseta inornata</i>	15.0	4.3%

## Seasonality



## Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	213.0	60.7%
<i>Anopheles</i>	0.0	0.0%
<i>Culex</i>	122.0	34.8%
<i>Culiseta</i>	15.0	4.3%
Other	1.0	0.3%



# BC-24

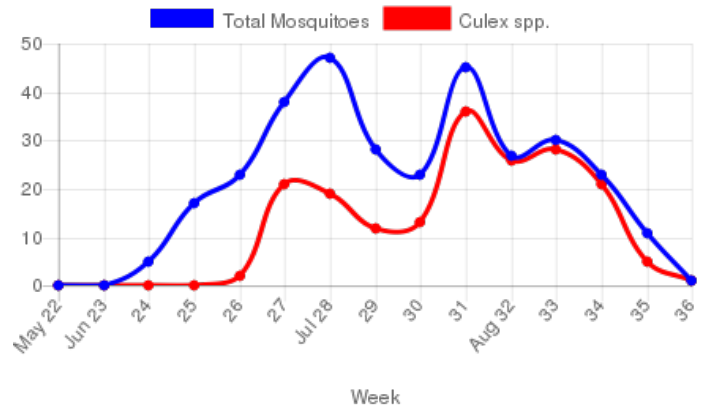
**Season:** 05/01/2020 - 09/30/2020  
**Trap Type:** CDC Light Trap  
**Location:** Louisville - Wewoka Drive  
**GPS:** 39.998750058526376, -105.17175000160933

**Total number of trap/nights set:** 15.0  
**Total number of mosquitoes collected:** 318.0  
**Average mosquitoes per trap/night:** 21.2  
**Average Culex per trap/night:** 12.3

## Species collected and abundance:

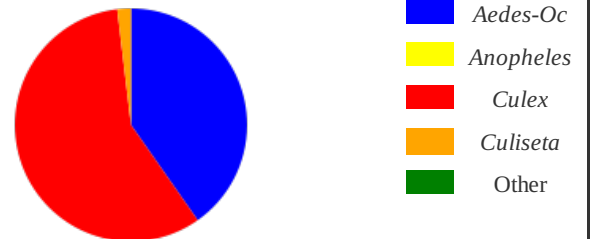
<i>Aedes hendersoni</i>	1.0	0.3%
<i>Aedes increpitus</i>	9.0	2.8%
<i>Aedes melanimon</i>	10.0	3.1%
<i>Aedes trivittatus</i>	1.0	0.3%
<i>Aedes vexans</i>	107.0	33.6%
<i>Culex pipiens</i>	6.0	1.9%
<i>Culex tarsalis</i>	178.0	56.0%
<i>Culiseta inornata</i>	6.0	1.9%

## Seasonality



## Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	128.0	40.3%
<i>Anopheles</i>	0.0	0.0%
<i>Culex</i>	184.0	57.9%
<i>Culiseta</i>	6.0	1.9%
Other	0.0	0.0%



# BC-30

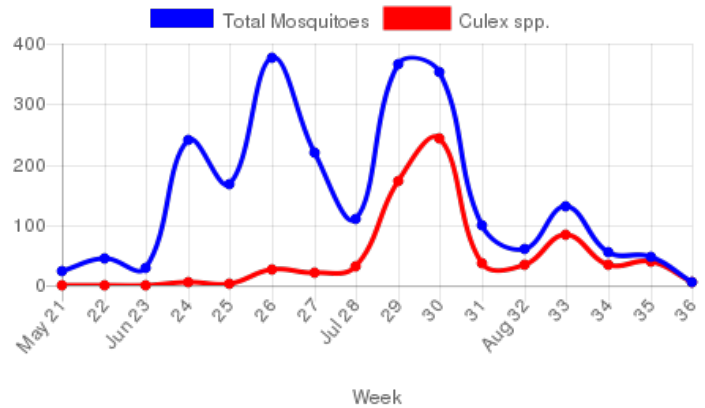
Season: 05/01/2020 - 09/30/2020  
 Trap Type: CDC Light Trap  
 Location: Brownsville - Random Court  
 GPS: 40.04734994769696, -105.08964993059634

Total number of trap/nights set: 16.0  
 Total number of mosquitoes collected: 2,335.0  
 Average mosquitoes per trap/night: 145.9  
 Average Culex per trap/night: 46.9

## Species collected and abundance:

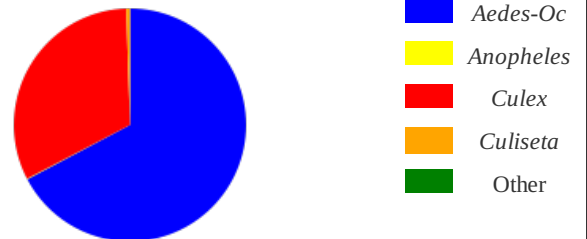
<i>Aedes dorsalis</i>	333.0	14.3%
<i>Aedes inreptus</i>	8.0	0.3%
<i>Aedes melanimon</i>	153.0	6.6%
<i>Aedes trivittatus</i>	1.0	0.0%
<i>Aedes vexans</i>	1,076.0	46.1%
<i>Anopheles freeborni</i>	2.0	0.1%
<i>Culex pipiens</i>	9.0	0.4%
<i>Culex salinarius</i>	1.0	0.0%
<i>Culex tarsalis</i>	740.0	31.7%
<i>Culiseta inornata</i>	12.0	0.5%

## Seasonality



## Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	1,571.0	67.3%
<i>Anopheles</i>	2.0	0.1%
<i>Culex</i>	750.0	32.1%
<i>Culiseta</i>	12.0	0.5%
Other	0.0	0.0%





# BC-31

Season: 05/01/2020 - 09/30/2020

Trap Type: CDC Light Trap

Location: Divide Reservoir

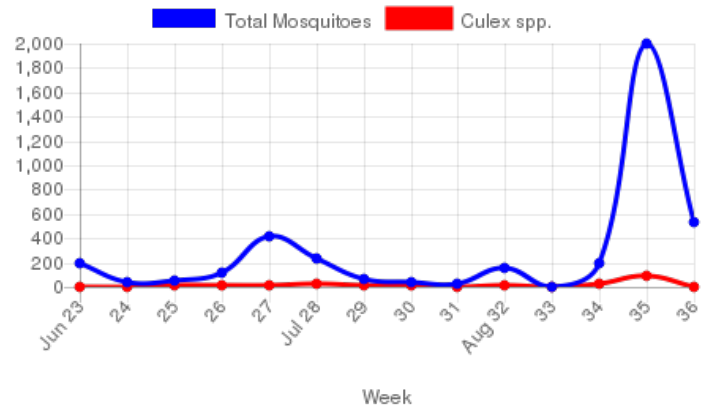
GPS: 40.23899997117141, -105.08389994502066

Total number of trap/nights set: 13.0  
Total number of mosquitoes collected: 4,112.0  
Average mosquitoes per trap/night: 316.3  
Average Culex per trap/night: 17.2

## Species collected and abundance:

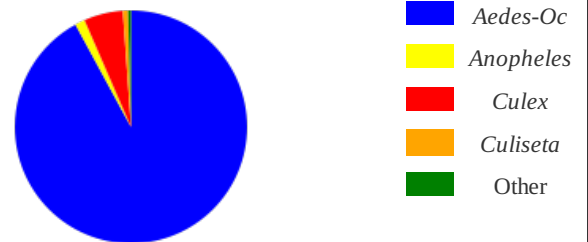
<i>Aedes dorsalis</i>	286.0	7.0%
<i>Aedes melanimon</i>	120.0	2.9%
<i>Aedes nigromaculis</i>	26.0	0.6%
<i>Aedes trivittatus</i>	785.0	19.1%
<i>Aedes vexans</i>	2,569.0	62.5%
<i>Anopheles freeborni</i>	57.0	1.4%
<i>Coquillettidia perturbans</i>	16.0	0.4%
<i>Culex pipiens</i>	10.0	0.2%
<i>Culex salinarius</i>	7.0	0.2%
<i>Culex tarsalis</i>	206.0	5.0%
<i>Culiseta inornata</i>	30.0	0.7%

## Seasonality



## Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	3,786.0	92.1%
<i>Anopheles</i>	57.0	1.4%
<i>Culex</i>	223.0	5.4%
<i>Culiseta</i>	30.0	0.7%
Other	16.0	0.4%



# BC-33

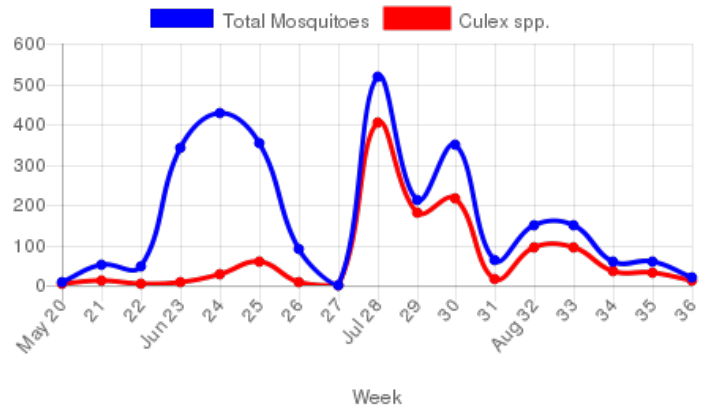
Season: 05/01/2020 - 09/30/2020  
 Trap Type: CDC Light Trap  
 Location: Lake Valley Estates  
 GPS: 40.0896500025398, -105.2624998614192

Total number of trap/nights set: 16.0  
 Total number of mosquitoes collected: 2,914.0  
 Average mosquitoes per trap/night: 182.1  
 Average Culex per trap/night: 76.4

## Species collected and abundance:

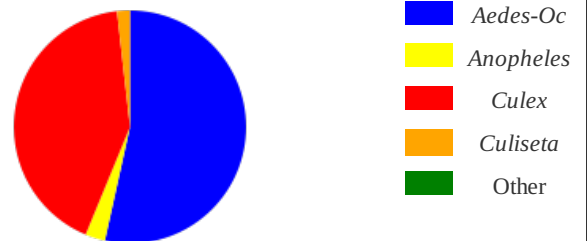
<i>Aedes cinereus</i>	3.0	0.1%
<i>Aedes inreptus</i>	257.0	8.8%
<i>Aedes melanimon</i>	9.0	0.3%
<i>Aedes trivittatus</i>	126.0	4.3%
<i>Aedes vexans</i>	1,163.0	39.9%
<i>Anopheles freeborni</i>	81.0	2.8%
<i>Culex pipiens</i>	44.0	1.5%
<i>Culex salinarius</i>	11.0	0.4%
<i>Culex tarsalis</i>	1,168.0	40.1%
<i>Culiseta inornata</i>	52.0	1.8%

## Seasonality



## Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	1,558.0	53.5%
<i>Anopheles</i>	81.0	2.8%
<i>Culex</i>	1,223.0	42.0%
<i>Culiseta</i>	52.0	1.8%
Other	0.0	0.0%



# BC-34

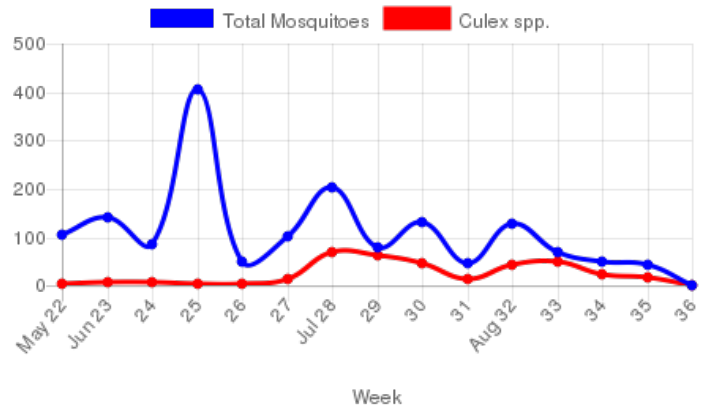
Season: 05/01/2020 - 09/30/2020  
 Trap Type: CDC Light Trap  
 Location: Cline Trout Farm  
 GPS: 40.032999959590526, -105.22269990295172

Total number of trap/nights set: 15.0  
 Total number of mosquitoes collected: 1,648.0  
 Average mosquitoes per trap/night: 109.9  
 Average Culex per trap/night: 25.1

## Species collected and abundance:

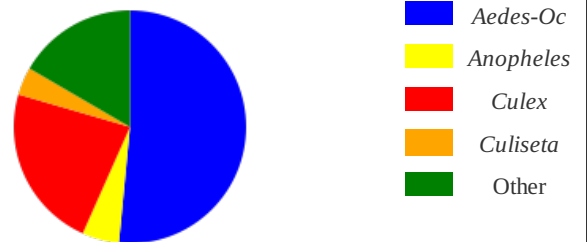
<i>Aedes hendersoni</i>	1.0	0.1%
<i>Aedes increpitus</i>	276.0	16.7%
<i>Aedes melanimon</i>	3.0	0.2%
<i>Aedes trivittatus</i>	19.0	1.2%
<i>Aedes vexans</i>	550.0	33.4%
<i>Anopheles freeborni</i>	85.0	5.2%
<i>Coquillettidia perturbans</i>	274.0	16.6%
<i>Culex pipiens</i>	28.0	1.7%
<i>Culex salinarius</i>	3.0	0.2%
<i>Culex tarsalis</i>	345.0	20.9%
<i>Culiseta inornata</i>	64.0	3.9%

## Seasonality



## Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	849.0	51.5%
<i>Anopheles</i>	85.0	5.2%
<i>Culex</i>	376.0	22.8%
<i>Culiseta</i>	64.0	3.9%
Other	274.0	16.6%



# BC-36

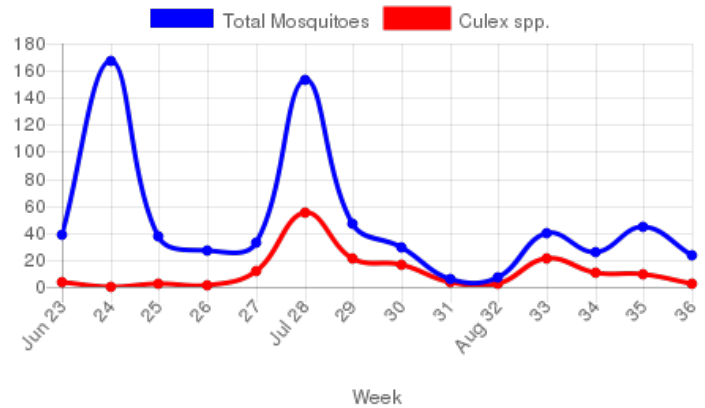
Season: 05/01/2020 - 09/30/2020  
 Trap Type: CDC Light Trap  
 Location: Yellowstone Road  
 GPS: 40.2467999152123, -105.15225000679492

Total number of trap/nights set: 14.0  
 Total number of mosquitoes collected: 680.0  
 Average mosquitoes per trap/night: 48.6  
 Average Culex per trap/night: 11.6

## Species collected and abundance:

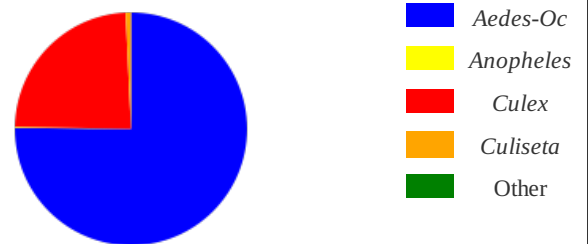
<i>Aedes dorsalis</i>	3.0	0.4%
<i>Aedes hendersoni</i>	2.0	0.3%
<i>Aedes increpitus</i>	10.0	1.5%
<i>Aedes melanimon</i>	54.0	7.9%
<i>Aedes trivittatus</i>	165.0	24.3%
<i>Aedes vexans</i>	277.0	40.7%
<i>Anopheles freeborni</i>	1.0	0.1%
<i>Culex pipiens</i>	1.0	0.1%
<i>Culex salinarius</i>	2.0	0.3%
<i>Culex tarsalis</i>	160.0	23.5%
<i>Culiseta inornata</i>	5.0	0.7%

## Seasonality



## Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	511.0	75.1%
<i>Anopheles</i>	1.0	0.1%
<i>Culex</i>	163.0	24.0%
<i>Culiseta</i>	5.0	0.7%
Other	0.0	0.0%



# BC-37

Season: 05/01/2020 - 09/30/2020

Trap Type: CDC Light Trap

Location: Burch Reservoir

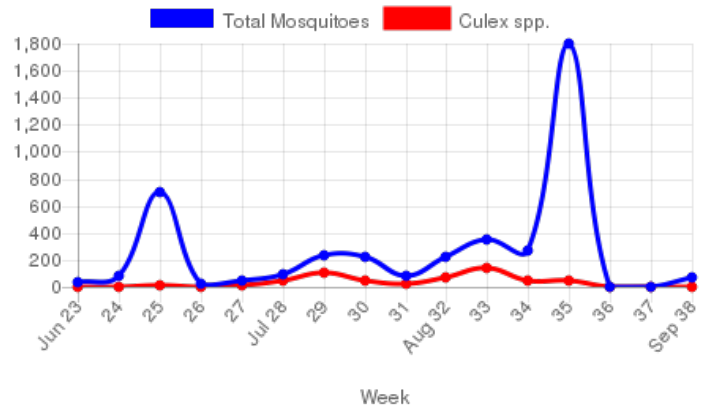
GPS: 40.2025501103469, -105.18224984407425

Total number of trap/nights set: 15.0  
 Total number of mosquitoes collected: 4,271.0  
 Average mosquitoes per trap/night: 284.7  
 Average Culex per trap/night: 37.7

## Species collected and abundance:

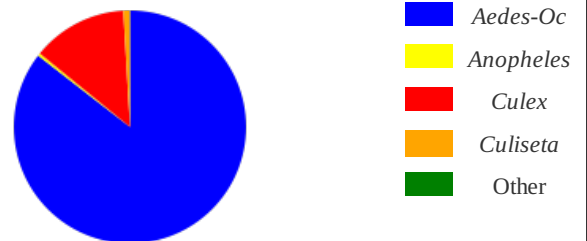
<i>Aedes dorsalis</i>	4.0	0.1%
<i>Aedes hendersoni</i>	12.0	0.3%
<i>Aedes increpitus</i>	26.0	0.6%
<i>Aedes melanimon</i>	27.0	0.6%
<i>Aedes trivittatus</i>	383.0	9.0%
<i>Aedes vexans</i>	3,199.0	74.9%
<i>Anopheles freeborni</i>	16.0	0.4%
<i>Coquillettidia perturbans</i>	1.0	0.0%
<i>Culex pipiens</i>	21.0	0.5%
<i>Culex salinarius</i>	14.0	0.3%
<i>Culex tarsalis</i>	529.0	12.4%
<i>Culex territans</i>	1.0	0.0%
<i>Culiseta inornata</i>	38.0	0.9%

## Seasonality



## Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	3,651.0	85.5%
<i>Anopheles</i>	16.0	0.4%
<i>Culex</i>	565.0	13.2%
<i>Culiseta</i>	38.0	0.9%
Other	1.0	0.0%



# BC-38

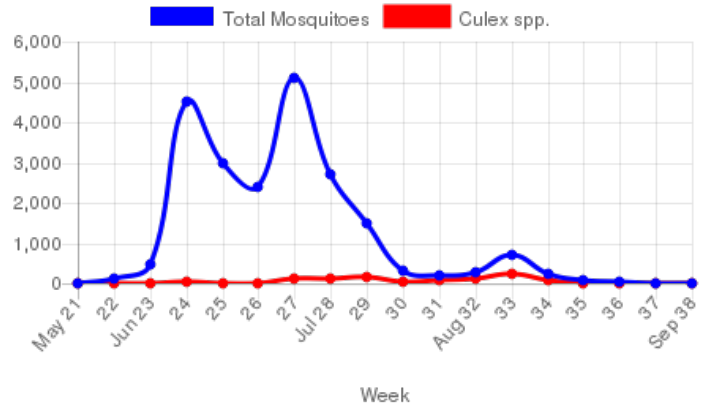
Season: 05/01/2020 - 09/30/2020  
 Trap Type: CDC Light Trap  
 Location: Willow Glenn - Teller Lakes  
 GPS: 40.01694996225301, -105.15480011701584

Total number of trap/nights set: 17.0  
 Total number of mosquitoes collected: 21,786.0  
 Average mosquitoes per trap/night: 1,281.5  
 Average Culex per trap/night: 66.7

## Species collected and abundance:

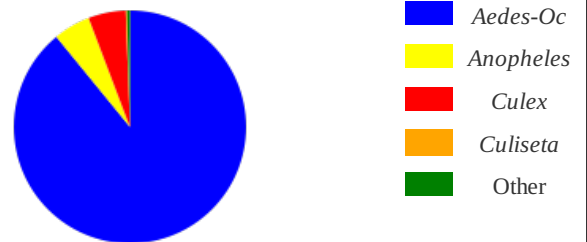
<i>Aedes dorsalis</i>	63.0	0.3%
<i>Aedes inreptus</i>	1,820.0	8.4%
<i>Aedes melanimon</i>	2,453.0	11.3%
<i>Aedes trivittatus</i>	4.0	0.0%
<i>Aedes vexans</i>	15,065.0	69.1%
<i>Anopheles freeborni</i>	1,121.0	5.1%
<i>Coquillettidia perturbans</i>	88.0	0.4%
<i>Culex pipiens</i>	12.0	0.1%
<i>Culex salinarius</i>	2.0	0.0%
<i>Culex tarsalis</i>	1,120.0	5.1%
<i>Culiseta inornata</i>	38.0	0.2%

## Seasonality



## Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	19,405.0	89.1%
<i>Anopheles</i>	1,121.0	5.1%
<i>Culex</i>	1,134.0	5.2%
<i>Culiseta</i>	38.0	0.2%
Other	88.0	0.4%



# BC-39

Season: 05/01/2020 - 09/30/2020

Trap Type: CDC Light Trap

Location: Heatherwood

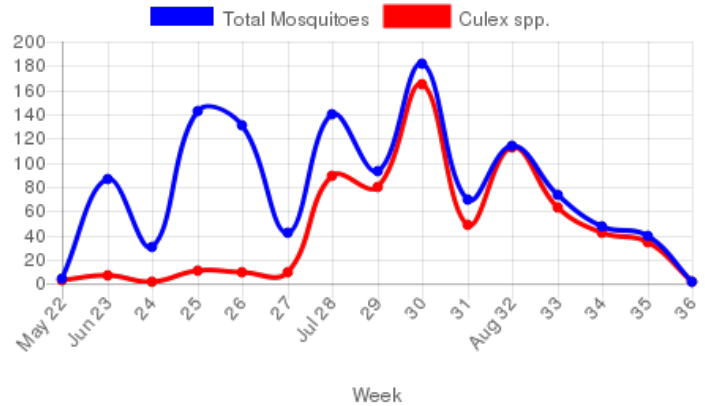
GPS: 40.062150077142704, -105.16924984753132

Total number of trap/nights set: 15.0  
 Total number of mosquitoes collected: 1,199.0  
 Average mosquitoes per trap/night: 79.9  
 Average Culex per trap/night: 45.3

## Species collected and abundance:

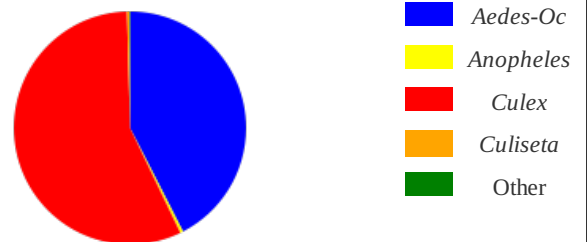
<i>Aedes dorsalis</i>	41.0	3.4%
<i>Aedes increpitus</i>	39.0	3.3%
<i>Aedes melanimon</i>	37.0	3.1%
<i>Aedes nigromaculis</i>	1.0	0.1%
<i>Aedes trivittatus</i>	2.0	0.2%
<i>Aedes vexans</i>	389.0	32.4%
<i>Anopheles freeborni</i>	5.0	0.4%
<i>Coquillettidia perturbans</i>	1.0	0.1%
<i>Culex pipiens</i>	25.0	2.1%
<i>Culex salinarius</i>	6.0	0.5%
<i>Culex tarsalis</i>	649.0	54.1%
<i>Culiseta inornata</i>	4.0	0.3%

## Seasonality



## Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	509.0	42.5%
<i>Anopheles</i>	5.0	0.4%
<i>Culex</i>	680.0	56.7%
<i>Culiseta</i>	4.0	0.3%
Other	1.0	0.1%





# BC-40

Season: 05/01/2020 - 09/30/2020

Trap Type: CDC Light Trap

Location: Chance Acres

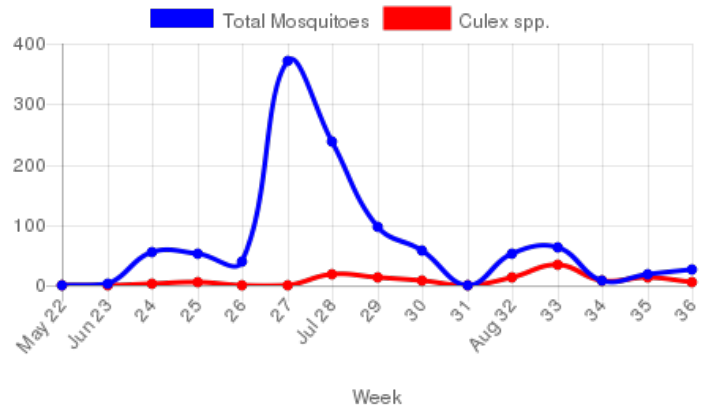
GPS: 40.15964996228525, -105.20589988678694

Total number of trap/nights set: 14.0  
 Total number of mosquitoes collected: 1,089.0  
 Average mosquitoes per trap/night: 77.8  
 Average Culex per trap/night: 9.4

## Species collected and abundance:

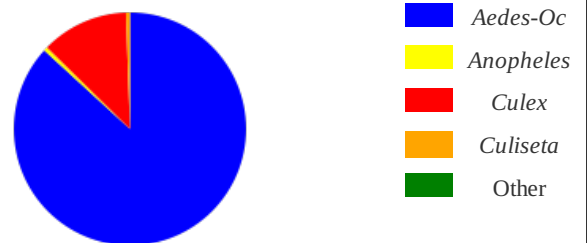
<i>Aedes dorsalis</i>	7.0	0.6%
<i>Aedes hendersoni</i>	1.0	0.1%
<i>Aedes increpitus</i>	5.0	0.5%
<i>Aedes melanimon</i>	10.0	0.9%
<i>Aedes trivittatus</i>	541.0	49.7%
<i>Aedes vexans</i>	381.0	35.0%
<i>Anopheles freeborni</i>	6.0	0.6%
<i>Culex pipiens</i>	2.0	0.2%
<i>Culex tarsalis</i>	130.0	11.9%
<i>Culiseta inornata</i>	6.0	0.6%

## Seasonality



## Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	945.0	86.8%
<i>Anopheles</i>	6.0	0.6%
<i>Culex</i>	132.0	12.1%
<i>Culiseta</i>	6.0	0.6%
Other	0.0	0.0%



## BC-47

Season: 05/01/2020 - 09/30/2020

Trap Type: CDC Light Trap

Location: Baseline Heights - Chinook Way

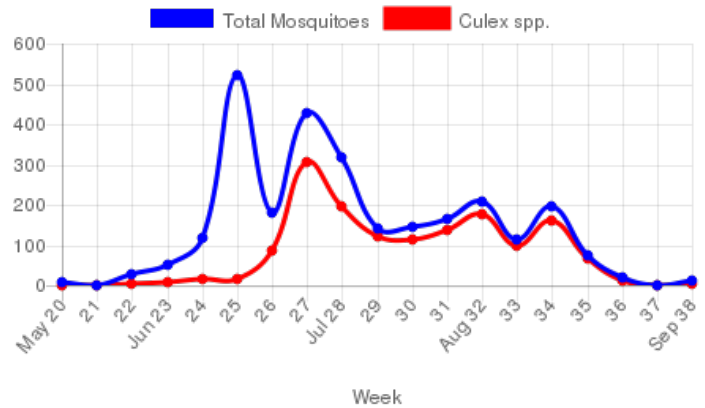
GPS: 40.00951213723779, -105.19707709550858

Total number of trap/nights set: 18.0  
 Total number of mosquitoes collected: 2,746.0  
 Average mosquitoes per trap/night: 152.6  
 Average Culex per trap/night: 85.1

### Species collected and abundance:

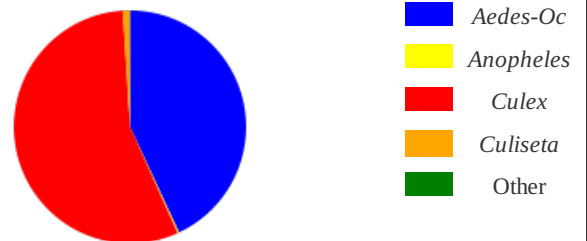
<i>Aedes dorsalis</i>	71.0	2.6%
<i>Aedes increpitus</i>	219.0	8.0%
<i>Aedes melanimon</i>	99.0	3.6%
<i>Aedes sticticus</i>	1.0	0.0%
<i>Aedes trivittatus</i>	12.0	0.4%
<i>Aedes vexans</i>	781.0	28.4%
<i>Anopheles freeborni</i>	5.0	0.2%
<i>Coquillettidia perturbans</i>	1.0	0.0%
<i>Culex pipiens</i>	50.0	1.8%
<i>Culex salinarius</i>	3.0	0.1%
<i>Culex tarsalis</i>	1,478.0	53.8%
<i>Culiseta incidens</i>	1.0	0.0%
<i>Culiseta inornata</i>	25.0	0.9%

### Seasonality



### Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	1,183.0	43.1%
<i>Anopheles</i>	5.0	0.2%
<i>Culex</i>	1,531.0	55.8%
<i>Culiseta</i>	26.0	0.9%
Other	1.0	0.0%



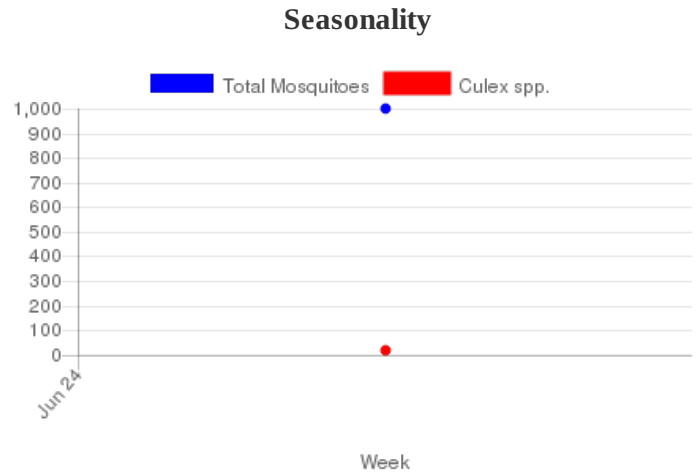
# BC-48

Season: 05/01/2020 - 09/30/2020  
 Trap Type: CDC Light Trap  
 Location: Gunbarrel Estates  
 GPS: 40.07825767706422, -105.18403518944979

Total number of trap/nights set: 1.0  
 Total number of mosquitoes collected: 1,000.0  
 Average mosquitoes per trap/night: 1,000.0  
 Average Culex per trap/night: 17.0

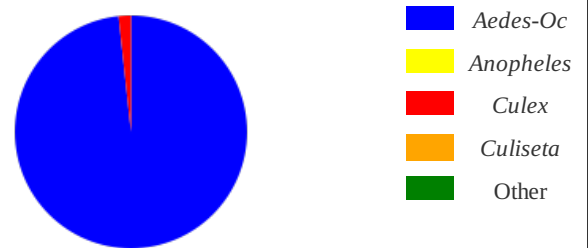
## Species collected and abundance:

<i>Aedes increpitus</i>	13.0	1.3%
<i>Aedes melanimon</i>	17.0	1.7%
<i>Aedes trivittatus</i>	297.0	29.7%
<i>Aedes vexans</i>	656.0	65.6%
<i>Culex tarsalis</i>	17.0	1.7%



## Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	983.0	98.3%
<i>Anopheles</i>	0.0	0.0%
<i>Culex</i>	17.0	1.7%
<i>Culiseta</i>	0.0	0.0%
Other	0.0	0.0%



# F1 - Park Lake HOA

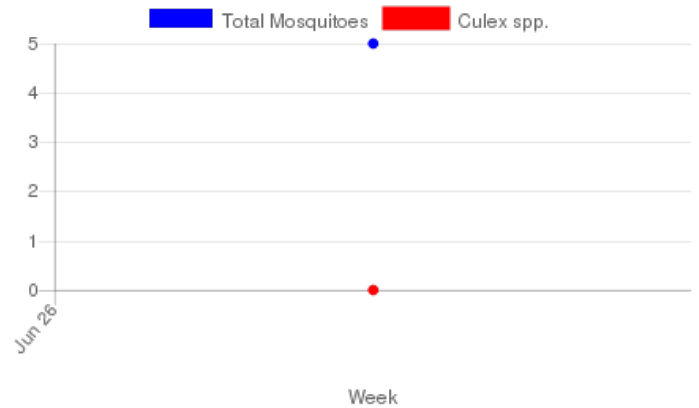
Season: 05/01/2020 - 09/30/2020  
 Trap Type: CDC Light Trap  
 Location: Park Lake HOA  
 GPS: 40.02447349958347, -105.14762353152037

Total number of trap/nights set: 1.0  
 Total number of mosquitoes collected: 5.0  
 Average mosquitoes per trap/night: 5.0  
 Average Culex per trap/night: 0.0

## Species collected and abundance:

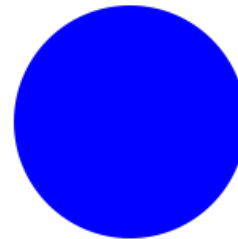
<i>Aedes melanimon</i>	3.0	60.0%
<i>Aedes vexans</i>	2.0	40.0%

## Seasonality



## Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	5.0	100.0%
<i>Anopheles</i>	0.0	0.0%
<i>Culex</i>	0.0	0.0%
<i>Culiseta</i>	0.0	0.0%
Other	0.0	0.0%



- *Aedes-Oc*
- *Anopheles*
- *Culex*
- *Culiseta*
- Other

# F3 - Lagerman Reservoir

Season: 05/01/2020 - 09/30/2020

Trap Type: CDC Light Trap

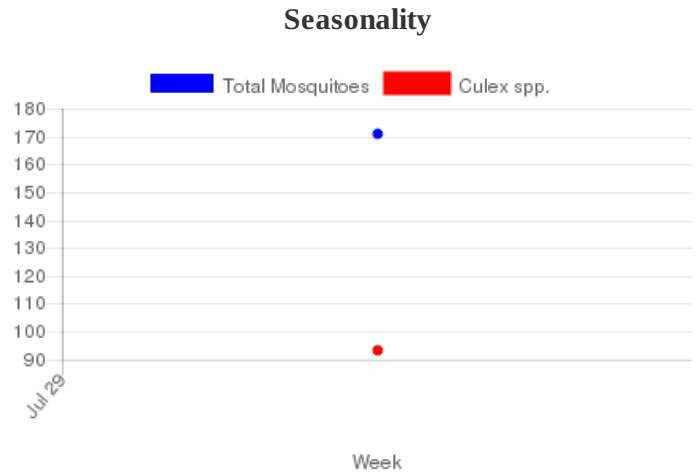
Location: Lagerman Reservoir

GPS: 40.130661045826336, -105.17832644283773

Total number of trap/nights set: 1.0  
 Total number of mosquitoes collected: 171.0  
 Average mosquitoes per trap/night: 171.0  
 Average Culex per trap/night: 93.0

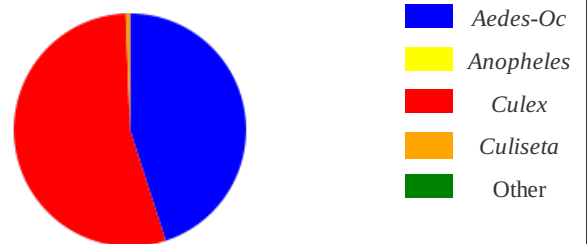
## Species collected and abundance:

<i>Aedes dorsalis</i>	15.0	8.8%
<i>Aedes melanimon</i>	2.0	1.2%
<i>Aedes trivittatus</i>	10.0	5.8%
<i>Aedes vexans</i>	50.0	29.2%
<i>Culex pipiens</i>	1.0	0.6%
<i>Culex tarsalis</i>	92.0	53.8%
<i>Culiseta inornata</i>	1.0	0.6%



## Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	77.0	45.0%
<i>Anopheles</i>	0.0	0.0%
<i>Culex</i>	93.0	54.4%
<i>Culiseta</i>	1.0	0.6%
Other	0.0	0.0%



## F4 Sombrero Marsh

Season: 05/01/2020 - 09/30/2020

Trap Type: CDC Light Trap

Location: Sombrero Marsh

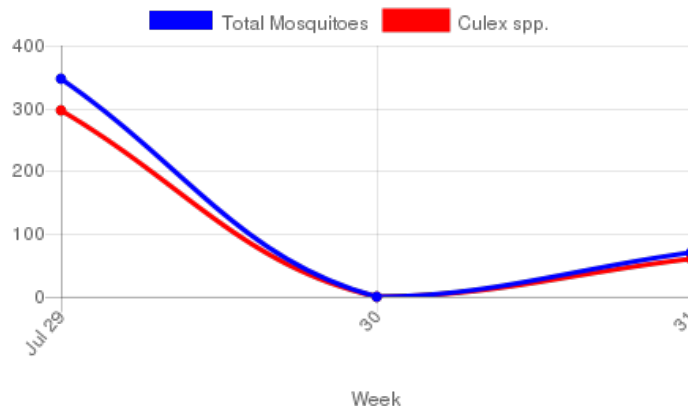
GPS: 40.01072294147664, -105.2092308551073

Total number of trap/nights set: 2.0  
 Total number of mosquitoes collected: 417.0  
 Average mosquitoes per trap/night: 208.5  
 Average Culex per trap/night: 177.5

### Species collected and abundance:

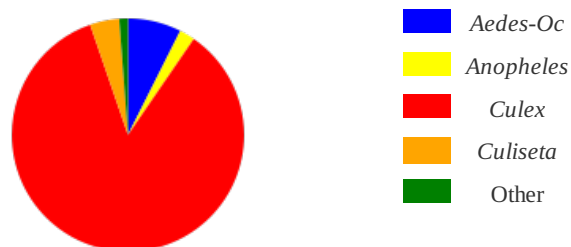
<i>Aedes melanimon</i>	1.0	0.2%
<i>Aedes vexans</i>	30.0	7.2%
<i>Anopheles freeborni</i>	9.0	2.2%
<i>Coquillettidia perturbans</i>	5.0	1.2%
<i>Culex pipiens</i>	16.0	3.8%
<i>Culex tarsalis</i>	339.0	81.3%
<i>Culiseta inornata</i>	17.0	4.1%

### Seasonality



### Genus Proportions:

Genus	Number	Percent of Total
<i>Aedes/Ochlerotatus</i>	31.0	7.4%
<i>Anopheles</i>	9.0	2.2%
<i>Culex</i>	355.0	85.1%
<i>Culiseta</i>	17.0	4.1%
Other	5.0	1.2%



*Appendix B: Adult Sample Pool Test Results for West Nile Virus  
Positive Location*



# Arboviral Surveillance Results

Start Date: 06/01/2020

End Date: 09/05/2020

## Boulder County Mosquito Control District

Trap Number	Trap Date	Trap Type	Date Tested	Pool No.	Mosquito Species	Pool Size	Results	Assay
Treatment Area BC-08 Test Results								
BC-11	06/29/2020	CDC Light Trap	07/02/2020	S323586	<i>Culex tarsalis</i>	21	Negative	RT-PCR
BC-11	07/06/2020	CDC Light Trap	07/09/2020	S323589	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BC-11	07/06/2020	CDC Light Trap	07/09/2020	S323590	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BC-11	07/13/2020	CDC Light Trap	07/15/2020	S323603	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BC-11	07/20/2020	CDC Light Trap	07/21/2020	S323616	<i>Culex tarsalis</i>	4	Negative	RT-PCR
BC-11	07/20/2020	CDC Light Trap	07/21/2020	S323617	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BC-11	07/20/2020	CDC Light Trap	07/21/2020	S323618	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BC-11	07/27/2020	CDC Light Trap	07/28/2020	S323629	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BC-11	07/27/2020	CDC Light Trap	07/28/2020	S323630	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BC-11	07/27/2020	CDC Light Trap	07/28/2020	S323631	<i>Culex tarsalis</i>	40	Negative	RT-PCR
BC-11	08/03/2020	CDC Light Trap	08/04/2020	S323638	<i>Culex tarsalis</i>	2	Negative	RT-PCR
BC-11	08/03/2020	CDC Light Trap	08/04/2020	S323639	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BC-11	08/03/2020	CDC Light Trap	08/04/2020	S323640	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BC-11	08/10/2020	CDC Light Trap	08/12/2020	S323651	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BC-11	08/10/2020	CDC Light Trap	08/12/2020	S323652	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BC-11	08/17/2020	CDC Light Trap	08/18/2020	S323665	<i>Culex tarsalis</i>	65	Negative	RT-PCR

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Trap Number	Trap Date	Trap Type	Date Tested	Pool No.	Mosquito Species	Pool Size	Results	Assay
BC-11	08/24/2020	CDC Light Trap	08/25/2020	S323673	<i>Culex tarsalis</i>	18	Negative	RT-PCR
BC-11	08/24/2020	CDC Light Trap	08/25/2020	S323674	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BC-11	08/31/2020	CDC Light Trap	09/01/2020	S323681	<i>Culex tarsalis</i>	2	Negative	RT-PCR
Treatment Area BC-10 Test Results								
BC-03	06/29/2020	CDC Light Trap	07/02/2020	S323586	<i>Culex tarsalis</i>	13	Negative	RT-PCR
BC-03	07/06/2020	CDC Light Trap	07/09/2020	S323587	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BC-03	07/13/2020	CDC Light Trap	07/15/2020	S323600	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BC-03	07/13/2020	CDC Light Trap	07/15/2020	S323601	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BC-03	07/13/2020	CDC Light Trap	07/15/2020	S323602	<i>Culex tarsalis</i>	32	Negative	RT-PCR
BC-03	07/20/2020	CDC Light Trap	07/21/2020	S323615	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BC-03	07/20/2020	CDC Light Trap	07/21/2020	S323616	<i>Culex tarsalis</i>	27	Negative	RT-PCR
BC-03	07/27/2020	CDC Light Trap	07/28/2020	S323631	<i>Culex tarsalis</i>	14	Negative	RT-PCR
BC-03	08/03/2020	CDC Light Trap	08/04/2020	S323638	<i>Culex tarsalis</i>	34	Negative	RT-PCR
BC-03	08/10/2020	CDC Light Trap	08/12/2020	S323649	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BC-03	08/10/2020	CDC Light Trap	08/12/2020	S323650	<i>Culex tarsalis</i>	7	Negative	RT-PCR
BC-03	08/17/2020	CDC Light Trap	08/18/2020	S323664	<i>Culex tarsalis</i>	38	Negative	RT-PCR
BC-03	08/24/2020	CDC Light Trap	08/25/2020	S323673	<i>Culex tarsalis</i>	16	Negative	RT-PCR
BC-03	08/31/2020	CDC Light Trap	09/01/2020	S323681	<i>Culex tarsalis</i>	10	Negative	RT-PCR
Treatment Area BC-11 Test Results								
BC-05	06/29/2020	CDC Light Trap	07/02/2020	S323586	<i>Culex tarsalis</i>	10	Negative	RT-PCR
BC-05	07/06/2020	CDC Light Trap	07/09/2020	S323588	<i>Culex tarsalis</i>	65	Negative	RT-PCR
BC-05	07/13/2020	CDC Light Trap	07/15/2020	S323602	<i>Culex tarsalis</i>	33	Negative	RT-PCR
BC-05	07/20/2020	CDC Light Trap	07/21/2020	S323616	<i>Culex tarsalis</i>	22	Negative	RT-PCR
BC-05	07/27/2020	CDC Light Trap	07/28/2020	S323631	<i>Culex tarsalis</i>	11	Negative	RT-PCR

Trap Number	Trap Date	Trap Type	Date Tested	Pool No.	Mosquito Species	Pool Size	Results	Assay
BC-05	08/03/2020	CDC Light Trap	08/04/2020	S323638	<i>Culex tarsalis</i>	26	Negative	RT-PCR
BC-05	08/10/2020	CDC Light Trap	08/12/2020	S323650	<i>Culex tarsalis</i>	58	Negative	RT-PCR
BC-05	08/17/2020	CDC Light Trap	08/18/2020	S323664	<i>Culex tarsalis</i>	27	Negative	RT-PCR
BC-05	08/24/2020	CDC Light Trap	08/25/2020	S323673	<i>Culex tarsalis</i>	11	Negative	RT-PCR
BC-05	08/31/2020	CDC Light Trap	09/01/2020	S323681	<i>Culex tarsalis</i>	3	Negative	RT-PCR
<b>Total Pools Tested: 43   Total Mosquitoes Tested: 1714   Total Negative: 43   Total Positive: 0</b>								



# Arboviral Surveillance Results

**Start Date:** 06/01/2020

**End Date:** 09/04/2020

## Longmont

Trap Number	Trap Date	Trap Type	Date Tested	Pool No.	Mosquito Species	Pool Size	Results	Assay
Treatment Area LM - Longmont Test Results								
LM-03	06/29/2020	CDC Light Trap	07/01/2020	S323580	<i>Culex tarsalis</i>	25	Negative	RT-PCR
LM-03	07/06/2020	CDC Light Trap	07/09/2020	S323593	<i>Culex tarsalis</i>	53	Negative	RT-PCR
LM-03	07/13/2020	CDC Light Trap	07/15/2020	S323604	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-03	07/13/2020	CDC Light Trap	07/15/2020	S323605	<i>Culex tarsalis</i>	43	Negative	RT-PCR
LM-03	07/20/2020	CDC Light Trap	07/21/2020	S323619	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-03	07/20/2020	CDC Light Trap	07/21/2020	S323620	<i>Culex tarsalis</i>	16	Negative	RT-PCR
LM-03	07/27/2020	CDC Light Trap	07/28/2020	S323632	<i>Culex tarsalis</i>	21	Negative	RT-PCR
LM-03	08/03/2020	CDC Light Trap	08/04/2020	S323641	<i>Culex tarsalis</i>	56	Negative	RT-PCR
LM-03	08/10/2020	CDC Light Trap	08/12/2020	S323653	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-03	08/17/2020	CDC Light Trap	08/18/2020	S323666	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-03	08/24/2020	CDC Light Trap	08/25/2020	S323675	<i>Culex tarsalis</i>	25	WNV+	RT-PCR
LM-03	08/31/2020	CDC Light Trap	09/01/2020	S323682	<i>Culex tarsalis</i>	3	Negative	RT-PCR
LM-17	06/29/2020	CDC Light Trap	07/02/2020	S323580	<i>Culex tarsalis</i>	4	Negative	RT-PCR
LM-17	07/06/2020	CDC Light Trap	07/09/2020	S323591	<i>Culex tarsalis</i>	18	Negative	RT-PCR
LM-17	07/13/2020	CDC Light Trap	07/15/2020	S323608	<i>Culex tarsalis</i>	10	Negative	RT-PCR
LM-17	07/20/2020	CDC Light Trap	07/21/2020	S323620	<i>Culex tarsalis</i>	7	Negative	RT-PCR

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Trap Number	Trap Date	Trap Type	Date Tested	Pool No.	Mosquito Species	Pool Size	Results	Assay
LM-17	07/27/2020	CDC Light Trap	07/28/2020	S323633	<i>Culex tarsalis</i>	6	Negative	RT-PCR
LM-17	08/03/2020	CDC Light Trap	08/04/2020	S323641	<i>Culex tarsalis</i>	9	Negative	RT-PCR
LM-17	08/10/2020	CDC Light Trap	08/12/2020	S323655	<i>Culex tarsalis</i>	28	Negative	RT-PCR
LM-17	08/17/2020	CDC Light Trap	08/18/2020	S323667	<i>Culex tarsalis</i>	21	WNV+	RT-PCR
LM-17	08/24/2020	CDC Light Trap	08/25/2020	S323675	<i>Culex tarsalis</i>	8	WNV+	RT-PCR
LM-17	08/31/2020	CDC Light Trap	09/01/2020	S323682	<i>Culex tarsalis</i>	1	Negative	RT-PCR
LM-28	06/29/2020	CDC Light Trap	07/02/2020	S323581	<i>Culex tarsalis</i>	26	Negative	RT-PCR
LM-28	07/06/2020	CDC Light Trap	07/09/2020	S323592	<i>Culex tarsalis</i>	30	Negative	RT-PCR
LM-28	07/06/2020	CDC Light Trap	07/09/2020	S323593	<i>Culex tarsalis</i>	6	Negative	RT-PCR
LM-28	07/13/2020	CDC Light Trap	07/15/2020	S323605	<i>Culex tarsalis</i>	15	Negative	RT-PCR
LM-28	07/13/2020	CDC Light Trap	07/15/2020	S323606	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-28	07/20/2020	CDC Light Trap	07/21/2020	S323620	<i>Culex tarsalis</i>	16	Negative	RT-PCR
LM-28	07/20/2020	CDC Light Trap	07/21/2020	S323621	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-28	07/20/2020	CDC Light Trap	07/21/2020	S323622	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-28	07/27/2020	CDC Light Trap	07/28/2020	S323632	<i>Culex tarsalis</i>	36	Negative	RT-PCR
LM-28	08/03/2020	CDC Light Trap	08/04/2020	S323642	<i>Culex tarsalis</i>	25	Negative	RT-PCR
LM-28	08/10/2020	CDC Light Trap	08/12/2020	S323655	<i>Culex tarsalis</i>	16	Negative	RT-PCR
LM-28	08/10/2020	CDC Light Trap	08/12/2020	S323656	<i>Culex tarsalis</i>	9	WNV+	RT-PCR
LM-28	08/17/2020	CDC Light Trap	08/18/2020	S323667	<i>Culex tarsalis</i>	23	WNV+	RT-PCR
LM-28	08/24/2020	CDC Light Trap	08/25/2020	S323676	<i>Culex tarsalis</i>	13	Negative	RT-PCR
LM-28	08/31/2020	CDC Light Trap	09/01/2020	S323682	<i>Culex tarsalis</i>	1	Negative	RT-PCR
LM-34	06/29/2020	CDC Light Trap	07/02/2020	S323580	<i>Culex tarsalis</i>	12	Negative	RT-PCR
LM-34	07/06/2020	CDC Light Trap	07/09/2020	S323591	<i>Culex tarsalis</i>	46	Negative	RT-PCR
LM-34	07/13/2020	CDC Light Trap	07/15/2020	S323607	<i>Culex tarsalis</i>	43	Negative	RT-PCR

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Trap Number	Trap Date	Trap Type	Date Tested	Pool No.	Mosquito Species	Pool Size	Results	Assay
LM-34	07/20/2020	CDC Light Trap	07/21/2020	S323623	<i>Culex tarsalis</i>	27	Negative	RT-PCR
LM-34	07/27/2020	CDC Light Trap	07/28/2020	S323633	<i>Culex tarsalis</i>	22	Negative	RT-PCR
LM-34	08/03/2020	CDC Light Trap	08/04/2020	S323642	<i>Culex tarsalis</i>	4	Negative	RT-PCR
LM-34	08/03/2020	CDC Light Trap	08/04/2020	S323643	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-34	08/10/2020	CDC Light Trap	08/12/2020	S323654	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LM-34	08/10/2020	CDC Light Trap	08/12/2020	S323655	<i>Culex tarsalis</i>	21	Negative	RT-PCR
LM-34	08/17/2020	CDC Light Trap	08/18/2020	S323668	<i>Culex tarsalis</i>	63	Negative	RT-PCR
LM-34	08/24/2020	CDC Light Trap	08/25/2020	S323676	<i>Culex tarsalis</i>	34	Negative	RT-PCR
LM-34	08/31/2020	CDC Light Trap	09/01/2020	S323682	<i>Culex tarsalis</i>	23	Negative	RT-PCR
LM-42	06/29/2020	CDC Light Trap	07/02/2020	S323581	<i>Culex tarsalis</i>	12	Negative	RT-PCR
LM-42	07/06/2020	CDC Light Trap	07/09/2020	S323592	<i>Culex tarsalis</i>	35	Negative	RT-PCR
LM-42	07/13/2020	CDC Light Trap	07/15/2020	S323608	<i>Culex tarsalis</i>	50	Negative	RT-PCR
LM-42	07/20/2020	CDC Light Trap	07/21/2020	S323623	<i>Culex tarsalis</i>	38	Negative	RT-PCR
LM-42	07/27/2020	CDC Light Trap	07/28/2020	S323633	<i>Culex tarsalis</i>	18	Negative	RT-PCR
LM-42	08/03/2020	CDC Light Trap	08/04/2020	S323642	<i>Culex tarsalis</i>	30	Negative	RT-PCR
LM-42	08/10/2020	CDC Light Trap	08/12/2020	S323656	<i>Culex tarsalis</i>	56	WNV+	RT-PCR
LM-42	08/17/2020	CDC Light Trap	08/18/2020	S323667	<i>Culex tarsalis</i>	21	WNV+	RT-PCR
LM-42	08/24/2020	CDC Light Trap	08/25/2020	S323676	<i>Culex tarsalis</i>	17	Negative	RT-PCR

**Total Pools Tested: 58   Total Mosquitoes Tested: 1727   Total Negative: 51   Total Positive: 7**



# Arboviral Surveillance Results

Start Date: 06/01/2020

End Date: 09/04/2020

City of Louisville

Trap Number	Trap Date	Trap Type	Date Tested	Pool No.	Mosquito Species	Pool Size	Results	Assay
Treatment Area LO-01 Test Results								
LO-01	06/29/2020	CDC Light Trap	07/02/2020	S323585	<i>Culex tarsalis</i>	11	Negative	RT-PCR
LO-01	07/06/2020	CDC Light Trap	07/09/2020	S323596	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LO-01	07/06/2020	CDC Light Trap	07/09/2020	S323597	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LO-01	07/13/2020	CDC Light Trap	07/15/2020	S323613	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LO-01	07/20/2020	CDC Light Trap	07/21/2020	S323628	<i>Culex tarsalis</i>	25	Negative	RT-PCR
LO-01	07/27/2020	CDC Light Trap	07/28/2020	S323637	<i>Culex tarsalis</i>	19	Negative	RT-PCR
LO-01	08/03/2020	CDC Light Trap	08/04/2020	S323647	<i>Culex tarsalis</i>	39	WNV+	RT-PCR
LO-01	08/10/2020	CDC Light Trap	08/12/2020	S323662	<i>Culex tarsalis</i>	49	Negative	RT-PCR
LO-01	08/17/2020	CDC Light Trap	08/18/2020	S323672	<i>Culex tarsalis</i>	25	Negative	RT-PCR
LO-01	08/24/2020	CDC Light Trap	08/25/2020	S323680	<i>Culex tarsalis</i>	8	Negative	RT-PCR
LO-01	08/31/2020	CDC Light Trap	09/01/2020	S323683	<i>Culex tarsalis</i>	13	Negative	RT-PCR
LO-08	06/29/2020	CDC Light Trap	07/02/2020	S323585	<i>Culex tarsalis</i>	50	Negative	RT-PCR
LO-08	07/06/2020	CDC Light Trap	07/09/2020	S323598	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LO-08	07/13/2020	CDC Light Trap	07/15/2020	S323614	<i>Culex tarsalis</i>	15	Negative	RT-PCR
LO-08	07/20/2020	CDC Light Trap	07/21/2020	S323628	<i>Culex tarsalis</i>	18	Negative	RT-PCR
LO-08	07/27/2020	CDC Light Trap	07/28/2020	S323637	<i>Culex tarsalis</i>	21	Negative	RT-PCR

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Trap Number	Trap Date	Trap Type	Date Tested	Pool No.	Mosquito Species	Pool Size	Results	Assay
LO-08	08/03/2020	CDC Light Trap	08/04/2020	S323647	<i>Culex tarsalis</i>	9	WNV+	RT-PCR
LO-08	08/03/2020	CDC Light Trap	08/04/2020	S323648	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LO-08	08/10/2020	CDC Light Trap	08/12/2020	S323663	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LO-08	08/17/2020	CDC Light Trap	08/18/2020	S323672	<i>Culex tarsalis</i>	31	Negative	RT-PCR
LO-08	08/24/2020	CDC Light Trap	08/25/2020	S323680	<i>Culex tarsalis</i>	27	Negative	RT-PCR
LO-08	08/31/2020	CDC Light Trap	09/01/2020	S323683	<i>Culex tarsalis</i>	11	Negative	RT-PCR
<b>Total Pools Tested: 22   Total Mosquitoes Tested: 761   Total Negative: 20   Total Positive: 2</b>								



# Arboviral Surveillance Results

**Start Date:** 06/01/2020

**End Date:** 09/04/2020

**City of Lafayette**

Trap Number	Trap Date	Trap Type	Date Tested	Pool No.	Mosquito Species	Pool Size	Results	Assay
Treatment Area LA-01 Test Results								
LA-11	06/29/2020	CDC Light Trap	07/02/2020	S323584	<i>Culex tarsalis</i>	29	Negative	RT-PCR
LA-11	07/06/2020	CDC Light Trap	07/09/2020	S323595	<i>Culex tarsalis</i>	45	Negative	RT-PCR
LA-11	07/13/2020	CDC Light Trap	07/15/2020	S323611	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LA-11	07/13/2020	CDC Light Trap	07/15/2020	S323612	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LA-11	07/20/2020	CDC Light Trap	07/21/2020	S323625	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LA-11	07/20/2020	CDC Light Trap	07/21/2020	S323627	<i>Culex tarsalis</i>	50	Negative	RT-PCR
LA-11	07/27/2020	CDC Light Trap	07/28/2020	S323636	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LA-11	07/27/2020	CDC Light Trap	07/28/2020	S323637	<i>Culex tarsalis</i>	12	Negative	RT-PCR
LA-11	08/03/2020	CDC Light Trap	08/04/2020	S323646	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LA-11	08/10/2020	CDC Light Trap	08/12/2020	S323660	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LA-11	08/10/2020	CDC Light Trap	08/12/2020	S323661	<i>Culex tarsalis</i>	65	Negative	RT-PCR
LA-11	08/17/2020	CDC Light Trap	08/18/2020	S323670	<i>Culex tarsalis</i>	65	WNV+	RT-PCR
LA-11	08/17/2020	CDC Light Trap	08/18/2020	S323671	<i>Culex tarsalis</i>	43	Negative	RT-PCR
LA-11	08/24/2020	CDC Light Trap	08/25/2020	S323679	<i>Culex tarsalis</i>	41	Negative	RT-PCR
LA-11	08/31/2020	CDC Light Trap	09/01/2020	S323683	<i>Culex tarsalis</i>	16	Negative	RT-PCR

**Total Pools Tested: 15   Total Mosquitoes Tested: 756   Total Negative: 14   Total Positive: 1**

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# Arboviral Surveillance Results

**Start Date:** 06/01/2020

**End Date:** 09/04/2020

## Town of Erie

Trap Number	Trap Date	Trap Type	Date Tested	Pool No.	Mosquito Species	Pool Size	Results	Assay
Treatment Area ER-01 Test Results								
ER-03	06/29/2020	CDC Light Trap	07/02/2020	S323582	<i>Culex tarsalis</i>	65	Negative	RT-PCR
ER-03	06/29/2020	CDC Light Trap	07/02/2020	S323583	<i>Culex tarsalis</i>	65	Negative	RT-PCR
ER-03	06/29/2020	CDC Light Trap	07/02/2020	S323584	<i>Culex tarsalis</i>	2	Negative	RT-PCR
ER-03	07/06/2020	CDC Light Trap	07/09/2020	S323594	<i>Culex tarsalis</i>	65	Negative	RT-PCR
ER-03	07/06/2020	CDC Light Trap	07/09/2020	S323595	<i>Culex tarsalis</i>	18	Negative	RT-PCR
ER-03	07/13/2020	CDC Light Trap	07/15/2020	S323609	<i>Culex tarsalis</i>	65	Negative	RT-PCR
ER-03	07/13/2020	CDC Light Trap	07/15/2020	S323610	<i>Culex tarsalis</i>	65	Negative	RT-PCR
ER-03	07/20/2020	CDC Light Trap	07/21/2020	S323624	<i>Culex tarsalis</i>	65	Negative	RT-PCR
ER-03	07/20/2020	CDC Light Trap	07/21/2020	S323626	<i>Culex tarsalis</i>	39	Negative	RT-PCR
ER-03	07/27/2020	CDC Light Trap	07/28/2020	S323634	<i>Culex tarsalis</i>	65	Negative	RT-PCR
ER-03	07/27/2020	CDC Light Trap	07/28/2020	S323635	<i>Culex tarsalis</i>	53	Negative	RT-PCR
ER-03	08/03/2020	CDC Light Trap	08/04/2020	S323644	<i>Culex tarsalis</i>	65	Negative	RT-PCR
ER-03	08/03/2020	CDC Light Trap	08/04/2020	S323645	<i>Culex tarsalis</i>	65	Negative	RT-PCR
ER-03	08/10/2020	CDC Light Trap	08/12/2020	S323657	<i>Culex tarsalis</i>	65	Negative	RT-PCR
ER-03	08/10/2020	CDC Light Trap	08/12/2020	S323658	<i>Culex tarsalis</i>	65	Negative	RT-PCR
ER-03	08/10/2020	CDC Light Trap	08/12/2020	S323659	<i>Culex tarsalis</i>	65	Negative	RT-PCR

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Trap Number	Trap Date	Trap Type	Date Tested	Pool No.	Mosquito Species	Pool Size	Results	Assay
ER-03	08/17/2020	CDC Light Trap	08/18/2020	S323669	<i>Culex tarsalis</i>	65	Negative	RT-PCR
ER-03	08/17/2020	CDC Light Trap	08/18/2020	S323671	<i>Culex tarsalis</i>	22	Negative	RT-PCR
ER-03	08/24/2020	CDC Light Trap	08/25/2020	S323677	<i>Culex tarsalis</i>	65	Negative	RT-PCR
ER-03	08/24/2020	CDC Light Trap	08/25/2020	S323678	<i>Culex tarsalis</i>	65	Negative	RT-PCR
ER-03	08/31/2020	CDC Light Trap	09/01/2020	S323683	<i>Culex tarsalis</i>	10	Negative	RT-PCR
<b>Total Pools Tested: 21   Total Mosquitoes Tested: 1119   Total Negative: 21   Total Positive: 0</b>								



# Arboviral Surveillance Results

**Start Date:** 06/01/2020    **End Date:** 09/04/2020

## Town of Superior

Trap Number	Trap Date	Trap Type	Date Tested	Pool No.	Mosquito Species	Pool Size	Results	Assay
Treatment Area SU-01 Test Results								
SU-02	06/29/2020	CDC Light Trap	07/02/2020	S323585	<i>Culex tarsalis</i>	1	Negative	RT-PCR
SU-02	07/06/2020	CDC Light Trap	07/09/2020	S323599	<i>Culex tarsalis</i>	65	Negative	RT-PCR
SU-02	07/13/2020	CDC Light Trap	07/15/2020	S323614	<i>Culex tarsalis</i>	30	Negative	RT-PCR
SU-02	07/20/2020	CDC Light Trap	07/21/2020	S323628	<i>Culex tarsalis</i>	9	Negative	RT-PCR
SU-02	07/27/2020	CDC Light Trap	07/28/2020	S323637	<i>Culex tarsalis</i>	6	Negative	RT-PCR
SU-02	08/03/2020	CDC Light Trap	08/04/2020	S323647	<i>Culex tarsalis</i>	9	WNV+	RT-PCR
SU-02	08/10/2020	CDC Light Trap	08/12/2020	S323662	<i>Culex tarsalis</i>	16	Negative	RT-PCR
SU-02	08/17/2020	CDC Light Trap	08/18/2020	S323672	<i>Culex tarsalis</i>	9	Negative	RT-PCR
SU-02	08/24/2020	CDC Light Trap	08/25/2020	S323680	<i>Culex tarsalis</i>	5	Negative	RT-PCR
SU-02	08/31/2020	CDC Light Trap	09/01/2020	S323683	<i>Culex tarsalis</i>	2	Negative	RT-PCR

**Total Pools Tested: 10    Total Mosquitoes Tested: 152    Total Negative: 9    Total Positive: 1**

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Little Rock, AR 72202**

*Appendix C: Boulder County Mosquito Control District Adulticide  
Application Data*



# Ground Adulticide Applications

**Start Date:** 06/01/2020

**End Date:** 08/31/2020

## *Boulder County Mosquito Control District*

Month	Date	Municipality	Chemical	Mix Ratio	Trip Miles	Spray Miles	Spray Acres	Gallons Sprayed
Boulder Hills Applications								
August 2020	08/26/2020		PermaSease UC (53883-459-86291)	1:5	12.3	3.8	138.9	1.1
<i>Total PermaSease UC Applied:</i>								<i>1.1</i>
June 2020	06/10/2020		Aqua Kontrol 30-30 (73748-11)	1:3	6.1	4.3	155.5	1.3
	06/17/2020		Aqua Kontrol 30-30 (73748-11)	1:3	12.1	3.8	138.7	1.1
July 2020	07/01/2020		Aqua Kontrol 30-30 (73748-11)	1:5	8.5	3.7	135.1	1.1
	07/08/2020		Aqua Kontrol 30-30 (73748-11)	1:5	15.5	4.0	145.3	1.2
	07/15/2020		Aqua Kontrol 30-30 (73748-11)	1:5	15.8	4.0	145.7	1.2
	07/22/2020		Aqua Kontrol 30-30 (73748-11)	1:5	14.2	3.8	136.5	1.1
August 2020	08/05/2020		Aqua Kontrol 30-30 (73748-11)	1:5	12.5	3.8	139.8	1.1

**Vector Disease Control International**  
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**Broomfield, CO 80020**

Month	Date	Municipality	Chemical	Mix Ratio	Trip Miles	Spray Miles	Spray Acres	Gallons Sprayed
	08/12/2020		Aqua Kontrol 30-30 (73748-11)	1:5	12.4	3.9	140.0	1.1
<i>Total Aqua Kontrol 30-30 Applied:</i>								9.2
<i>Boulder Hills Totals:</i>					109.5	35.1	1,275.7	10.3

#### Brigadoon Glen/Rangeview/Oriole Applications

June 2020	06/10/2020		Aqua Kontrol 30-30 (73748-11)	1:3	19.5	8.1	296.9	2.4
July 2020	07/01/2020		Aqua Kontrol 30-30 (73748-11)	1:5	32.2	6.0	216.5	1.7
August 2020	08/05/2020		Aqua Kontrol 30-30 (73748-11)	1:5	14.2	6.4	232.6	1.9
	08/11/2020		Aqua Kontrol 30-30 (73748-11)	1:5	15.8	6.6	240.3	1.9
<i>Total Aqua Kontrol 30-30 Applied:</i>								7.9
<i>Brigadoon Glen/Rangeview/Oriole Totals:</i>					81.6	27.0	986.3	7.9

#### Brownsville/Canfield Applications

June 2020	06/24/2020		Aqua Kontrol 30-30 (73748-11)	1:3	15.8	5.5	198.7	1.6
July 2020	07/15/2020		Aqua Kontrol 30-30 (73748-11)	1:5	24.9	5.5	201.1	1.6

Month	Date	Municipality	Chemical	Mix Ratio	Trip Miles	Spray Miles	Spray Acres	Gallons Sprayed
	07/22/2020		Aqua Kontrol 30-30 (73748-11)	1:5	25.2	7.3	263.8	2.1
August 2020	08/13/2020		Aqua Kontrol 30-30 (73748-11)	1:5	20.7	5.2	190.7	1.5
<i>Total Aqua Kontrol 30-30 Applied:</i>								<i>6.9</i>
<i>Brownsville/Canfield Totals:</i>					<i>86.6</i>	<i>23.5</i>	<i>854.3</i>	<i>6.9</i>

#### Chance Acres Applications

July 2020	07/01/2020		Aqua Kontrol 30-30 (73748-11)	1:5	11.5	1.9	67.6	0.5
<i>Total Aqua Kontrol 30-30 Applied:</i>								<i>0.5</i>
<i>Chance Acres Totals:</i>					<i>11.5</i>	<i>1.9</i>	<i>67.6</i>	<i>0.5</i>

#### Gaynor Lake Applications

August 2020	08/26/2020		Aqua Kontrol 30-30 (73748-11)	1:5	18.4	1.9	68.3	0.6
<i>Total Aqua Kontrol 30-30 Applied:</i>								<i>0.6</i>
<i>Gaynor Lake Totals:</i>					<i>18.4</i>	<i>1.9</i>	<i>68.3</i>	<i>0.6</i>

#### Gunbarrel Estates Applications

June 2020	06/10/2020		Aqua Kontrol 30-30 (73748-11)	1:3	7.3	4.1	149.2	1.2
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**Vector Disease Control International**  
**7230 W 118th Pl. Unit E**  
**Broomfield, CO 80020**

Month	Date	Municipality	Chemical	Mix Ratio	Trip Miles	Spray Miles	Spray Acres	Gallons Sprayed
August 2020	08/12/2020		Aqua Kontrol 30-30 (73748-11)	1:5	5.6	2.0	72.6	0.6
<i>Total Aqua Kontrol 30-30 Applied:</i>								<i>1.8</i>
<i>Gunbarrel Estates Totals:</i>					<i>12.9</i>	<i>6.1</i>	<i>221.8</i>	<i>1.8</i>

Gunbarrel Green Applications								
June 2020	06/10/2020		Aqua Kontrol 30-30 (73748-11)	1:3	23.8	4.6	168.2	1.4
July 2020	07/08/2020		Aqua Kontrol 30-30 (73748-11)	1:5	7.3	4.9	177.8	1.4
	07/15/2020		Aqua Kontrol 30-30 (73748-11)	1:5	10.3	5.0	182.9	1.5
	07/22/2020		Aqua Kontrol 30-30 (73748-11)	1:5	10.6	5.0	182.8	1.5
<i>Total Aqua Kontrol 30-30 Applied:</i>								<i>5.8</i>
<i>Gunbarrel Green Totals:</i>					<i>52.0</i>	<i>19.6</i>	<i>711.7</i>	<i>5.8</i>

Heatherwood Applications								
July 2020	07/08/2020		Aqua Kontrol 30-30 (73748-11)	1:5	7.9	4.6	166.2	1.3
	07/15/2020		Aqua Kontrol 30-30 (73748-11)	1:5	8.0	4.4	160.1	1.3



Month	Date	Municipality	Chemical	Mix Ratio	Trip Miles	Spray Miles	Spray Acres	Gallons Sprayed
	07/22/2020		Aqua Kontrol 30-30 (73748-11)	1:5	7.9	4.6	166.6	1.3
August 2020	08/05/2020		Aqua Kontrol 30-30 (73748-11)	1:5	10.1	4.7	172.5	1.4
<i>Total Aqua Kontrol 30-30 Applied:</i>								<i>5.4</i>
<i>Heatherwood Totals:</i>					<i>33.9</i>	<i>18.3</i>	<i>665.4</i>	<i>5.4</i>

#### Hillcrest Heights Applications

August 2020	08/19/2020		PermaSease UC (53883-459-86291)	1:5	21.8	3.0	110.8	0.9
<i>Total PermaSease UC Applied:</i>								<i>0.9</i>
July 2020	07/08/2020		Aqua Kontrol 30-30 (73748-11)	1:5	21.8	2.8	102.7	0.8
	07/15/2020		Aqua Kontrol 30-30 (73748-11)	1:5	22.6	2.8	100.5	0.8
	07/22/2020		Aqua Kontrol 30-30 (73748-11)	1:5	4.7	2.9	106.1	0.9
	07/29/2020		Aqua Kontrol 30-30 (73748-11)	1:5	22.6	2.8	100.6	0.8
August 2020	08/05/2020		Aqua Kontrol 30-30 (73748-11)	1:5	21.7	2.9	103.8	0.8
	08/12/2020		Aqua Kontrol 30-30 (73748-11)	1:5	12.1	3.1	112.0	0.9

**Vector Disease Control International**  
**7230 W 118th Pl. Unit E**  
**Broomfield, CO 80020**

Month	Date	Municipality	Chemical	Mix Ratio	Trip Miles	Spray Miles	Spray Acres	Gallons Sprayed
	08/26/2020		Aqua Kontrol 30-30 (73748-11)	1:5	5.8	3.6	131.0	1.1
<i>Total Aqua Kontrol 30-30 Applied:</i>								<i>6.1</i>
<i>Hillcrest Heights Totals:</i>					<i>133.2</i>	<i>23.9</i>	<i>867.6</i>	<i>7.0</i>

Hygiene/Hygiene Heights Applications								
June 2020	06/17/2020		Aqua Kontrol 30-30 (73748-11)	1:3	36.5	4.3	155.8	1.3
July 2020	07/15/2020		Aqua Kontrol 30-30 (73748-11)	1:5	16.2	3.9	143.0	1.2
August 2020	08/05/2020		Aqua Kontrol 30-30 (73748-11)	1:5	33.2	4.2	151.6	1.2
<i>Total Aqua Kontrol 30-30 Applied:</i>								<i>3.6</i>
<i>Hygiene/Hygiene Heights Totals:</i>					<i>85.9</i>	<i>12.4</i>	<i>450.4</i>	<i>3.6</i>

Marshall Road Applications								
June 2020	06/17/2020		Aqua Kontrol 30-30 (73748-11)	1:3	14.0	1.0	35.8	0.3
<i>Total Aqua Kontrol 30-30 Applied:</i>								<i>0.3</i>
<i>Marshall Road Totals:</i>					<i>14.0</i>	<i>1.0</i>	<i>35.8</i>	<i>0.3</i>

McCall Lake/Hygiene Applications								
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Month	Date	Municipality	Chemical	Mix Ratio	Trip Miles	Spray Miles	Spray Acres	Gallons Sprayed
August 2020	08/26/2020		PermaSease UC (53883-459-86291)	1:5	40.8	6.4	234.4	1.9
<i>Total PermaSease UC Applied:</i>								<i>1.9</i>
August 2020	08/12/2020		Aqua Kontrol 30-30 (73748-11)	1:5	33.0	5.0	181.2	1.5
<i>Total Aqua Kontrol 30-30 Applied:</i>								<i>1.5</i>
<i>McCall Lake/Hygiene Totals:</i>					<i>73.9</i>	<i>11.4</i>	<i>415.6</i>	<i>3.4</i>

#### Niwot NW Applications

August 2020	08/11/2020		Aqua Kontrol 30-30 (73748-11)	1:5	5.0	1.8	65.7	0.5
<i>Total Aqua Kontrol 30-30 Applied:</i>								<i>0.5</i>
<i>Niwot NW Totals:</i>					<i>5.0</i>	<i>1.8</i>	<i>65.7</i>	<i>0.5</i>

#### North Rim/Lake Valley Estates Applications

June 2020	06/10/2020		Aqua Kontrol 30-30 (73748-11)	1:3	9.8	5.9	215.3	1.7
	06/17/2020		Aqua Kontrol 30-30 (73748-11)	1:3	10.6	5.2	190.1	1.5
July 2020	07/08/2020		Aqua Kontrol 30-30 (73748-11)	1:5	12.7	5.3	193.2	1.6
	07/15/2020		Aqua Kontrol 30-30 (73748-11)	1:5	13.0	5.3	193.0	1.5

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**Broomfield, CO 80020**

Month	Date	Municipality	Chemical	Mix Ratio	Trip Miles	Spray Miles	Spray Acres	Gallons Sprayed
	07/22/2020		Aqua Kontrol 30-30 (73748-11)	1:5	2.6	1.3	47.1	0.4
	07/23/2020		Aqua Kontrol 30-30 (73748-11)	1:5	30.6	5.1	185.3	1.5
August 2020	08/05/2020		Aqua Kontrol 30-30 (73748-11)	1:5	12.3	5.3	194.2	1.6
<i>Total Aqua Kontrol 30-30 Applied:</i>								<i>9.8</i>
<i>North Rim/Lake Valley Estates Totals:</i>					<i>91.8</i>	<i>33.5</i>	<i>1,218.2</i>	<i>9.8</i>

#### Orange Orchard/Pleasant Ridge Applications

June 2020	06/17/2020		Aqua Kontrol 30-30 (73748-11)	1:3	10.6	1.9	69.6	0.6
July 2020	07/08/2020		Aqua Kontrol 30-30 (73748-11)	1:5	10.6	1.9	69.3	0.6
<i>Total Aqua Kontrol 30-30 Applied:</i>								<i>1.1</i>
<i>Orange Orchard/Pleasant Ridge Totals:</i>					<i>21.2</i>	<i>3.8</i>	<i>139.0</i>	<i>1.1</i>

#### Park Lake Applications

August 2020	08/19/2020		PermaSease UC (53883-459-86291)	1:5	5.1	1.9	70.0	0.6
<i>Total PermaSease UC Applied:</i>								<i>0.6</i>
June 2020	06/10/2020		Aqua Kontrol 30-30 (73748-11)	1:3	14.6	2.1	76.8	0.6

**Vector Disease Control International**  
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**Broomfield, CO 80020**

Month	Date	Municipality	Chemical	Mix Ratio	Trip Miles	Spray Miles	Spray Acres	Gallons Sprayed
July 2020	06/17/2020		Aqua Kontrol 30-30 (73748-11)	1:3	5.3	2.1	77.0	0.6
	06/24/2020		Aqua Kontrol 30-30 (73748-11)	1:3	14.5	1.9	69.8	0.6
	07/01/2020		Aqua Kontrol 30-30 (73748-11)	1:3	14.6	1.8	65.6	0.6
	07/08/2020		Aqua Kontrol 30-30 (73748-11)	1:5	14.4	1.9	67.4	0.6
	07/15/2020		Aqua Kontrol 30-30 (73748-11)	1:5	3.0	2.0	72.3	0.6
August 2020	07/29/2020		Aqua Kontrol 30-30 (73748-11)	1:5	8.9	1.9	70.8	0.6
	08/05/2020		Aqua Kontrol 30-30 (73748-11)	1:5	11.4	2.0	71.4	0.6
	08/12/2020		Aqua Kontrol 30-30 (73748-11)	1:5	11.3	1.9	70.4	0.6
<i>Total Aqua Kontrol 30-30 Applied:</i>								<i>5.3</i>
<i>Park Lake Totals:</i>					<i>102.9</i>	<i>19.6</i>	<i>711.4</i>	<i>5.8</i>

#### Private/Misc Spray Applications

June 2020	06/10/2020		Aqua Kontrol 30-30 (73748-11)	1:3	4.3	2.2	78.2	0.6
	06/10/2020		Aqua Kontrol 30-30 (73748-11)	1:3	3.6	2.1	75.7	0.6

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Month	Date	Municipality	Chemical	Mix Ratio	Trip Miles	Spray Miles	Spray Acres	Gallons Sprayed
	06/24/2020		Aqua Kontrol 30-30 (73748-11)	1:3	22.8	2.8	100.7	0.8
July 2020	07/01/2020		Aqua Kontrol 30-30 (73748-11)	1:5	27.6	2.7	98.1	0.8
	07/14/2020		Aqua Kontrol 30-30 (73748-11)	1:5	2.3	1.8	63.8	0.5
	07/22/2020		Aqua Kontrol 30-30 (73748-11)	1:5	22.8	2.7	100.0	0.8
<i>Total Aqua Kontrol 30-30 Applied:</i>								<i>4.2</i>
<i>Private/Misc Spray Totals:</i>					<i>83.4</i>	<i>14.2</i>	<i>516.6</i>	<i>4.2</i>

Red Fox Hills Applications								
July 2020	07/01/2020		Aqua Kontrol 30-30 (73748-11)	1:3	8.0	1.1	38.9	0.4
	07/22/2020		Aqua Kontrol 30-30 (73748-11)	1:5	19.8	0.9	34.1	0.3
August 2020	08/12/2020		Aqua Kontrol 30-30 (73748-11)	1:5	3.2	1.0	35.5	0.3
	08/19/2020		Aqua Kontrol 30-30 (73748-11)	1:5	3.7	1.7	61.6	0.5
<i>Total Aqua Kontrol 30-30 Applied:</i>								<i>1.4</i>
<i>Red Fox Hills Totals:</i>					<i>34.7</i>	<i>4.7</i>	<i>170.1</i>	<i>1.4</i>

Month	Date	Municipality	Chemical	Mix Ratio	Trip Miles	Spray Miles	Spray Acres	Gallons Sprayed
Red Fox Hill/Twin Lakes Applications								
July 2020	07/08/2020		Aqua Kontrol 30-30 (73748-11)	1:5	5.4	2.4	85.8	0.7
	07/15/2020		Aqua Kontrol 30-30 (73748-11)	1:5	22.5	2.4	85.7	0.7
August 2020	08/05/2020		Aqua Kontrol 30-30 (73748-11)	1:5	4.6	2.4	86.5	0.7
<i>Total Aqua Kontrol 30-30 Applied:</i>								<i>2.1</i>
<b><i>Red Fox Hill/Twin Lakes Totals:</i></b>					<b><i>32.5</i></b>	<b><i>7.1</i></b>	<b><i>257.9</i></b>	<b><i>2.1</i></b>

Ridg Lea Hills/Crestmoor Applications								
August 2020	08/19/2020		PermaSease UC (53883-459-86291)	1:5	6.6	2.4	88.2	0.7
<i>Total PermaSease UC Applied:</i>								<i>0.7</i>
June 2020	06/17/2020		Aqua Kontrol 30-30 (73748-11)	1:3	6.5	2.5	92.2	0.7
	06/24/2020		Aqua Kontrol 30-30 (73748-11)	1:3	18.9	2.5	91.4	0.7
July 2020	07/01/2020		Aqua Kontrol 30-30 (73748-11)	1:5	13.4	2.6	96.0	0.8
	07/08/2020		Aqua Kontrol 30-30 (73748-11)	1:5	5.4	2.5	90.7	0.7

Month	Date	Municipality	Chemical	Mix Ratio	Trip Miles	Spray Miles	Spray Acres	Gallons Sprayed
	07/15/2020		Aqua Kontrol 30-30 (73748-11)	1:5	5.4	2.5	91.8	0.7
	07/22/2020		Aqua Kontrol 30-30 (73748-11)	1:5	11.0	2.8	100.3	0.8
	07/29/2020		Aqua Kontrol 30-30 (73748-11)	1:5	5.4	2.6	94.8	0.8
August 2020	08/05/2020		Aqua Kontrol 30-30 (73748-11)	1:5	4.8	2.4	87.6	0.7
	08/12/2020		Aqua Kontrol 30-30 (73748-11)	1:5	6.2	2.6	93.9	0.8
<i>Total Aqua Kontrol 30-30 Applied:</i>								<i>6.7</i>
<i>Ridglea Hills/Crestmoor Totals:</i>					<i>83.6</i>	<i>25.5</i>	<i>926.9</i>	<i>7.5</i>

#### South Meadow Applications

June 2020	06/10/2020		Aqua Kontrol 30-30 (73748-11)	1:3	3.0	1.9	68.3	0.6
July 2020	07/08/2020		Aqua Kontrol 30-30 (73748-11)	1:5	4.4	2.0	73.5	0.6
	07/15/2020		Aqua Kontrol 30-30 (73748-11)	1:5	4.5	2.1	75.7	0.6
	07/22/2020		Aqua Kontrol 30-30 (73748-11)	1:5	4.4	2.1	76.7	0.6
August 2020	08/12/2020		Aqua Kontrol 30-30 (73748-11)	1:5	5.9	2.1	75.9	0.6

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Month	Date	Municipality	Chemical	Mix Ratio	Trip Miles	Spray Miles	Spray Acres	Gallons Sprayed
<i>Total Aqua Kontrol 30-30 Applied:</i>								<i>3.0</i>
<i>South Meadow Totals:</i>					<i>22.2</i>	<i>10.2</i>	<i>370.0</i>	<i>3.0</i>

#### Twin Lakes Regional Trail Applications

June 2020	06/10/2020		Aqua Kontrol 30-30 (73748-11)	1:3	10.1	2.9	106.4	0.9
<i>Total Aqua Kontrol 30-30 Applied:</i>								<i>0.9</i>
<i>Twin Lakes Regional Trail Totals:</i>					<i>10.1</i>	<i>2.9</i>	<i>106.4</i>	<i>0.9</i>

#### Valmont and 61st Applications

June 2020	06/10/2020		Aqua Kontrol 30-30 (73748-11)	1:3	3.3	1.2	45.1	0.4
	06/17/2020		Aqua Kontrol 30-30 (73748-11)	1:3	1.9	1.3	48.9	0.4
August 2020	08/12/2020		Aqua Kontrol 30-30 (73748-11)	1:5	17.3	1.8	63.8	0.5
	08/19/2020		Aqua Kontrol 30-30 (73748-11)	1:5	1.8	1.9	64.2	0.5
<i>Total Aqua Kontrol 30-30 Applied:</i>								<i>1.8</i>
<i>Valmont and 61st Totals:</i>					<i>24.2</i>	<i>6.2</i>	<i>222.0</i>	<i>1.8</i>

#### Valmont and 75th Applications

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**7230 W 118th Pl. Unit E**  
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Month	Date	Municipality	Chemical	Mix Ratio	Trip Miles	Spray Miles	Spray Acres	Gallons Sprayed
June 2020	06/10/2020		Aqua Kontrol 30-30 (73748-11)	1:3	6.3	2.4	86.1	0.7
	06/17/2020		Aqua Kontrol 30-30 (73748-11)	1:3	8.9	3.7	134.5	1.1
July 2020	07/08/2020		Aqua Kontrol 30-30 (73748-11)	1:5	7.9	2.3	82.5	0.7
August 2020	08/05/2020		Aqua Kontrol 30-30 (73748-11)	1:5	3.9	2.3	85.1	0.7
	08/12/2020		Aqua Kontrol 30-30 (73748-11)	1:5	3.9	2.3	85.0	0.7
<i>Total Aqua Kontrol 30-30 Applied:</i>								<i>3.9</i>
<i>Valmont and 75th Totals:</i>					<i>30.9</i>	<i>13.0</i>	<i>473.3</i>	<i>3.9</i>

#### Willow Glen/Fox Run Applications

August 2020	08/19/2020		PermaSease UC (53883-459-86291)	1:5	10.9	1.3	45.6	0.4
<i>Total PermaSease UC Applied:</i>								<i>0.4</i>
June 2020	06/10/2020		Aqua Kontrol 30-30 (73748-11)	1:3	4.4	1.6	58.6	0.4
	06/17/2020		Aqua Kontrol 30-30 (73748-11)	1:3	5.5	1.6	58.9	0.5
	06/24/2020		Aqua Kontrol 30-30 (73748-11)	1:3	4.4	1.5	55.9	0.5

Month	Date	Municipality	Chemical	Mix Ratio	Trip Miles	Spray Miles	Spray Acres	Gallons Sprayed
July 2020	07/01/2020		Aqua Kontrol 30-30 (73748-11)	1:3	4.4	1.6	57.2	0.5
	07/08/2020		Aqua Kontrol 30-30 (73748-11)	1:5	4.4	1.6	57.4	0.4
	07/15/2020		Aqua Kontrol 30-30 (73748-11)	1:5	3.9	1.3	45.6	0.4
	07/29/2020		Aqua Kontrol 30-30 (73748-11)	1:5	3.7	1.3	45.8	0.4
August 2020	08/05/2020		Aqua Kontrol 30-30 (73748-11)	1:5	4.4	1.6	57.5	0.5
	08/13/2020		Aqua Kontrol 30-30 (73748-11)	1:5	3.7	1.2	45.0	0.4
<i>Total Aqua Kontrol 30-30 Applied:</i>								<i>3.8</i>
<i>Willow Glen/Fox Run Totals:</i>					<i>49.6</i>	<i>14.5</i>	<i>527.6</i>	<i>4.2</i>

#### Willows Applications

June 2020	06/10/2020		Aqua Kontrol 30-30 (73748-11)	1:3	3.0	2.1	74.8	0.6
July 2020	07/08/2020		Aqua Kontrol 30-30 (73748-11)	1:5	20.5	0.8	28.2	0.3
<i>Total Aqua Kontrol 30-30 Applied:</i>								<i>0.9</i>
<i>Willows Totals:</i>					<i>23.4</i>	<i>2.8</i>	<i>103.0</i>	<i>0.9</i>

Month	Date	Municipality	Chemical	Mix Ratio	Trip Miles	Spray Miles	Spray Acres	Gallons Sprayed
Woodbourne Hollow/Rustic Knolls Applications								
August 2020	08/19/2020		Aqua Kontrol 30-30 (73748-11)	1:5	3.4	0.7	25.7	0.3
	08/26/2020		Aqua Kontrol 30-30 (73748-11)	1:5	11.0	0.8	29.0	0.2
<i>Total Aqua Kontrol 30-30 Applied:</i>								<i>0.5</i>
<i>Woodbourne Hollow/Rustic Knolls Totals:</i>					<i>14.4</i>	<i>1.5</i>	<i>54.7</i>	<i>0.5</i>
<i>Grand Totals:</i>					<i>1,343.1</i>	<i>343.3</i>	<i>12,483.3</i>	<i>101.0</i>



# Ground Adulticide Applications

**Start Date:** 06/01/2020

**End Date:** 09/30/2020

*Boulder County Mosquito Control District*

Month	Date	Municipality	Chemical	Mix Ratio	Trip Miles	Spray Miles	Spray Acres	Gallons Sprayed
Cline Trout Farm Applications								
June 2020	06/17/2020		Talstar Pro (279-3206)	1:128	0.0	0.0	0.1	4.0
July 2020	07/08/2020		Talstar Pro (279-3206)	1:128	0.0	0.0	0.1	4.0
					<i>Total Talstar Pro Applied:</i>			<i>8.0</i>
<i>Cline Trout Farm Totals:</i>					<i>0.0</i>	<i>0.0</i>	<i>0.2</i>	<i>8.0</i>
<i>Grand Totals:</i>					<i>0.0</i>	<i>0.0</i>	<i>0.2</i>	<i>8.0</i>

Vector Disease Control International  
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### *Appendix D: 2020 BCMCD Program Elements by Hours*

2020 PROGRAM TIME EXPENDITURES BY CATEGORY		
Program Category	Approximate Hours	Percentage
Larval Surveillance & Control	9,232	87%
Adult Surveillance & Laboratory	532	5%
Adult ULV Control	262	2%
Public Education/Relations and Reporting	590	6%
Total	10,616	100%