

Canyon County Mosquito Abatement District

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www.2cmad.org

2023 Work Plan & Prior Year Annual Report

Submitted to Canyon County Board of County Commissioners

2023 CCMAD Work Plan

Mission:

The mission of the Canyon County Mosquito Abatement District (CCMAD) is to protect its citizens, their pets, and livestock from the physical and economic harm caused by mosquitoes and the diseases they carry.

Integrated Mosquito Management:

Integrated Mosquito Management (IMM) is defined as “A comprehensive strategy that utilizes available mosquito control methods to exploit the vulnerabilities of mosquitoes to reduce their numbers, while maintaining a quality environment”. By utilizing all seven of IMM’s elements in concert including public education, source reduction, cultural control, biological control, surveillance, larval control, and adult control CCMAD is able to utilize our limited resources in the most efficient manor possible.

Public Education: An informed public is extremely advantageous to our control program. The District uses numerous methods to reach the public with our message. These include presentations, fair/event booths, pamphlets, press releases, door hangers, and our website. This portion of the program can be particularly challenging as it requires an interested audience and is resource heavy.

Source Reduction: Removing litter/tires, modifying irrigation practices, drainage, removing harborage, etc., is an often permanent method of reducing mosquito populations. These actions are generally carried out by landowners as a result of our public education efforts. Source reduction typically has a large upfront cost but can provide a lasting solution in certain circumstances.

Cultural Control: Avoiding activities at dusk and dawn when mosquitoes are active, wearing insect repellant and vaccinating horses for West Nile virus are all examples of

cultural control. These actions are extremely beneficial to the individual and are promoted through our public education program.

Biological Control: Natural predators including bats, dragonflies and swallows are a welcome addition to our other control activities however they do not play a significant role in controlling mosquito populations. The District began using mosquitofish during the 2022 season following consultation with Idaho Fish and Game.

Surveillance: A robust surveillance program informs all our control decisions. We utilize larval, adult and disease surveillance to identify potential issues so action can be taken before our citizens are impacted.

Larval Control: Controlling mosquitoes in their larval habitat before they become flying biting adults is the largest portion of the District's control effort. Larval habitats are extremely diverse varying from urban storm drains to rural flood irrigated pastures. This portion of the mosquito lifecycle is extremely short making these applications very time sensitive.

Adult Control: This is the most noticeable and most recognized portion of the program by the public. Adult Control serves as our last line of defense against mosquitoes and is the only way to stop a disease transmission cycle once it begins.

Program Details:

Jurisdictional Area: 578 square miles, the entirety of Canyon County, Idaho.

Population Served: 249,688 (2022 Estimate) 231,105 (2020 Census)

Staff: 11 full-time and 31 seasonal employees when fully staffed.

Facility: 2 acre property located south east of Lake Lowell. 11981 sq/ft building which includes offices, lab, conference room, 7 shop bays, and a chemical storage area.

Vehicles: 13 mid-sized & 6 full-sized pickups, 6 ATV's, & 3 ATV trailers.

Application Equipment: 2 larvicide drones, 7 ULV adulticide machines, 6 ATV mounted granular spreaders, 21 backpack granular blowers, & numerous liquid backpacks. The District also contracts 2 single engine aircraft for larvicide applications, and 1 twin engine aircraft for adulticide applications.

Lab/Surveillance Equipment: 2 RAMP readers, 2 microcentrifuges, 2 vortex machines, 40 EVS traps, 12 gravid traps, 3 BG counter traps, 1 bottle rotator trap, and other assorted lab equipment.

Control Zones:

CCMAD is divided into the following Control Zones for operational and management efficiency. Priority Control Zones are centered on population densities and where the interaction between mosquitoes and constituents are greatest. Zones are continually evaluated, and larval production sites are updated on continual bases.

- **Caldwell Zone:** The city limits of Caldwell. There are several main sources of mosquitoes for this zone: Boise River, Simplot Plant, Canyon Hill area east to Middleton. South of Middleton, south of the Boise River, north to Marble Front Road to the Boise River.
- **Greenleaf Zone:** Ustick Road to the south and Howe Road/Allendale Road, to the north, including the city of Greenleaf and along Simplot Blvd. (Hwy 19).
- **Lake Lowell Zone:** Constitutes areas around Lake Lowell including Deer Flat National Wildlife Refuge. The zones encompass parts of the city limits of Nampa south of Greenhurst Road. **Note: No adult mosquito control operations are performed on Deer Flat National Wildlife Refuge.**
- **Melba/Snake River Zone:** Map Rock Road to the west and Celebration Park to the east and includes the city of Melba and borders to the north at Belmont Road.
- **Middleton/Sand Hollow Zone** North to Gem County line. City of Middleton, to Boise River to Ada County line. West border: I84. North boarder; Oasis Road (Payette County/Gem County line. Purple Sage golf Course and to the west to Stafford Lane. Farmway Village to Highway 20-26.
- **Nampa Zone:** City limits of Nampa. The main sources of mosquitoes are concentrated on the east side of the city and the boundary ends at McDermott Road /Ada County line.
- **Notus/Boise River Road Zone:** From Howe Road to the north to Boise River Road and east to Dixie River Road. To the west along the Boise River to the intersection of Boise River Road and Highway 95. North of Boise River along Hwy 20/26, city of Notus, north to Payette county line.
- **Parma Zone:** City limits of Parma, Parma Waste Water Treatment Facility, and University of Idaho Agricultural Experiment Station. Areas south and west of Parma, Hwy 16 to Oregon State Line, Roswell Marsh WMA. North to Payette County line along the Snake River and the Fort Boise WMA.
- **Wilder/Arena Valley Zone:** The city limits of Wilder, River Bend Golf Course, and Arena Valley area to the Snake River. The areas south of Wilder to Owyhee County line.

Products Intended For Use:

Product	EPA Registration #	Description
<u>Short Term Larval Control Products</u>		
VectoBac 12AS	73049-38	Liquid BTI
VectoBac GR	73049-486	Organic Granular BTI
VectoBac GS	73049-10	Granular BTI
VectoPrime	73049-501	Granular BTI & Insect Growth Regulator
<u>Residual Larval Control Products</u>		
Altosid	2724-421	Insect Growth Regulator with ~150 Days Control
Briquets		
Altosid P-35	89459-95	Insect Growth Regulator ~35 Days Control
Altosid XR-G	2724-451	Insect Growth Regulator ~21 Days Control
MetoLarv SP-T	73049-475	Insect Growth Regulator ~42 Days Control
Natular G30	8329-83	Spinosad ~30 Days Control
Natular XRT	8329-84	Spinosad ~180 Days Control
VectoMax FG	73049-429	Organic BTI & B sphaericus ~28 days control
<u>Pupal Control Products</u>		
BVA2	70589-1	Mineral Oil Surface Film
<u>Ground ULV Adult Control Products</u>		
Anvil 10+10	1021-1688-8329	Sumithrin & PBO
Merus 3.0	8329-108	Organic Pyrethrin
Zenivex E4 RTU	2724-807	Etofenprox
<u>Aerial Adult Control Products</u>		
Dibrom	5481-480	Naled
<u>Adult Control Barrier Products</u>		
Suspend	5481-480	Deltamethrin
Polyzone		

2023 Budget:

<u>Expenditure Category</u>	<u>Expenditure</u>
Labor & Payroll Liabilities	\$ 1,867,167
Outside Services	\$ 40,000
Field Operations, Supplies, & Tools	\$ 68,000
Legal Expense	\$ 23,000
Facilities	\$ 59,000
Surveillance & Arbovirus Testing	\$ 65,000
Management Expense	\$ 102,500
Vehicle Expense	\$ 65,500

Insurance Expense	\$ 13,500
Pesticides & Contract Applications	\$ 1,360,000
Information Technology	\$ 30,000
Capital Outlay	\$ 850,000
<u>Unappropriated Ending Fund Balance</u>	<u>\$ 370,382</u>
Total	\$ 4,848,549

<u>Revenue</u>	<u>Revenue</u>
Beginning Fund Balance	\$ 1,694,779
Property Tax (levy rate 0.000132407)	\$ 3,050,770
Sales Tax	\$ 100,000
Grants	\$ 0
Interest	\$ 500
<u>Miscellaneous</u>	<u>\$ 2,500</u>
Total	\$4,848,549

Governance & Oversight:

Federal: Federal Insecticide, Fungicide & Rodenticide Act, National Pollution Discharge Elimination System Permit, Federal Aviation Administration (FAA) Part 107, FAA Conditional Operating Authorization, and United States Fish and Wildlife Services Special Use Permit.

State: Idaho Code Title 39 Health and Safety Chapter 28 Abatement Districts, Idaho State Department of Agriculture, and Idaho State Department of Health.

Local: Canyon County Board of Commissioners, Southwest District Health, CCMAD Board of Trustees.

2022 Annual Report

Operational Challenges:

- Inflation made budgeting difficult.
- Meeting the conditions of the Clean Water Act National Pollution Discharge Elimination System (NPDES) continues to be a significant obstacle with added pre- and post-treatment inspections and paperwork.
- Increased intermingling of agricultural and residential areas has created a reduced tolerance level to mosquitoes. The species of mosquitoes occupying these areas has also shifted to those closely related to man made habitats which are more difficult to control.

- Low unemployment and higher wages regionally made it difficult to compete for qualified employees and meet our labor demands.
- Aggressive and threatening actions by the public towards District staff has increased.

Operational Highlights:

- Increased aerial larval control operations have greatly reduced adult mosquito populations near Lake Lowell.
- Adult mosquito control operational changes have increased the number of acres each employee can treat per night.
- The biological control agent *Gambusia affinis* (mosquitofish) was added to the control program following consultation with Idaho Fish and Game Department.
- Drone operations have decreased the number of seasonal staff necessary to treat large flooded pastures.

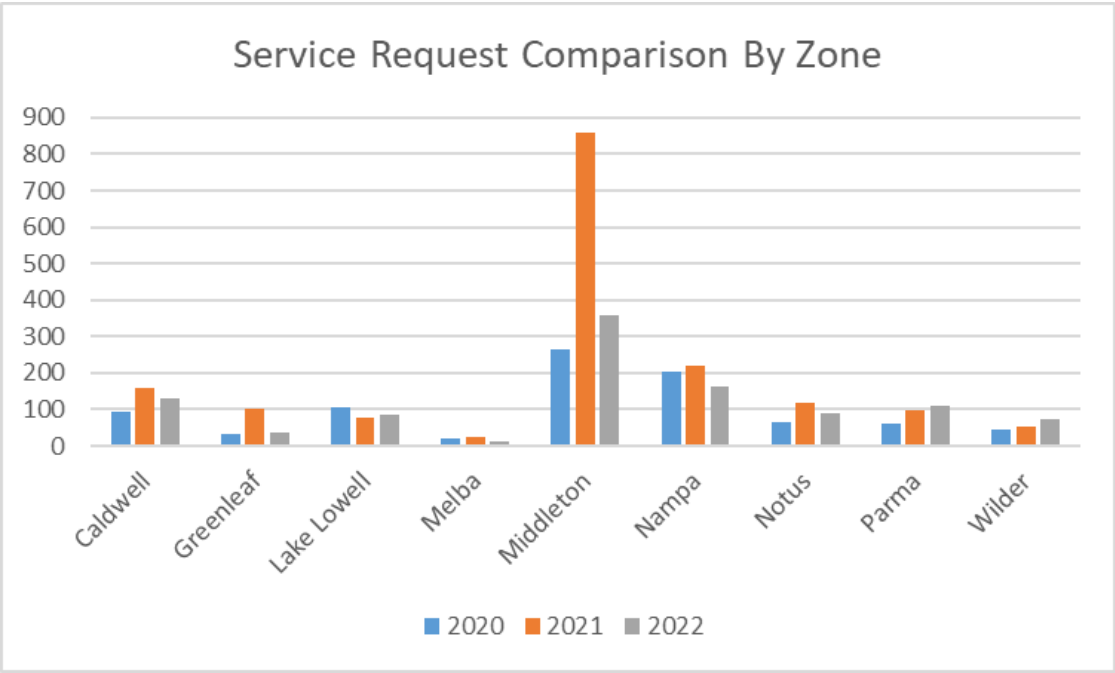
Public Relations and Public Outreach:

- CCMAD staff issued numerous press releases regarding West Nile virus horse vaccinations, how the public can protect themselves from mosquitoes, source reduction, and West Nile virus activity.
- CCMAD partnered with Ada County Mosquito Abatement to operate a mosquito control public information both at the 2022 Western Idaho Fair.
- The CCMAD webpage (www.2cmad.org) provides valuable information on mosquitoes, their control, and West Nile virus activity both locally and state-wide. Links to the Center of Disease Control and Prevention web page which tracks West Nile virus and other mosquito borne disease activity are also available.
- CCMAD Facebook page provided updates on local mosquito abatement treatments as well as national news regarding mosquitoes and virus transmission.

Service Requests:

Citizen reports of adult mosquitoes, standing water, green pools and other potential indications of a mosquito problem are extremely helpful in minimizing their impact on our citizens. These reports are particularly useful in areas where other types of surveillance are not currently in place or where an unexpected event (a broken pipe for instance) causes a new mosquito production site.

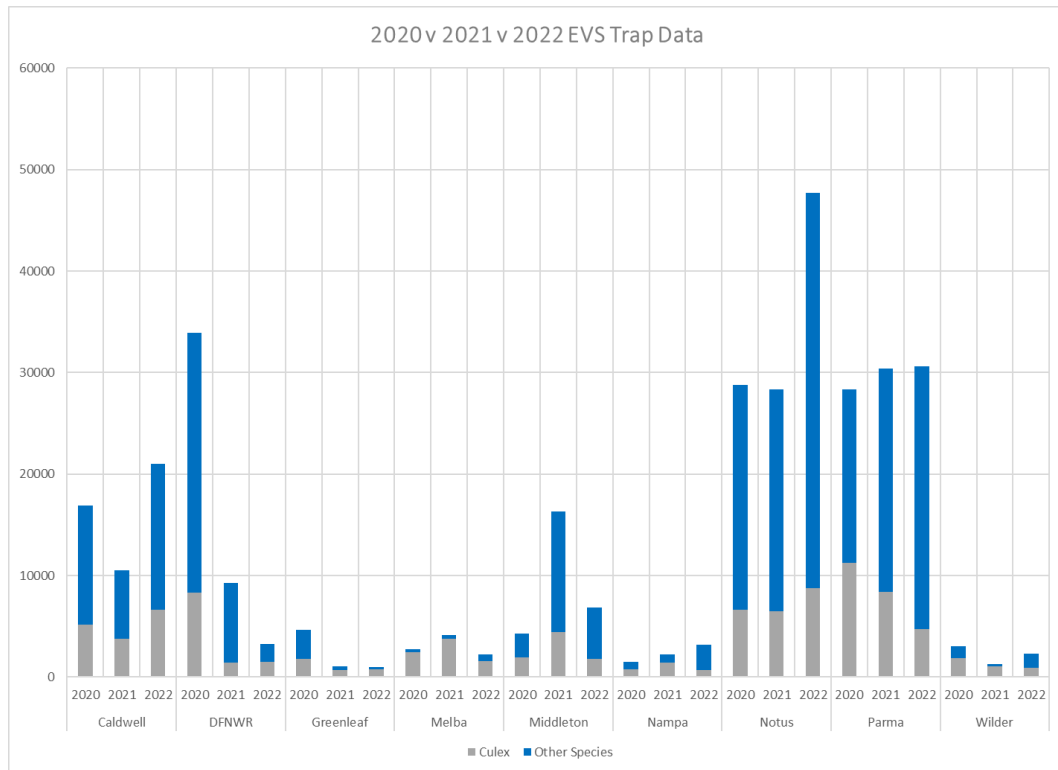
The following table is a comparison of mosquito requests received by area over the previous three season.



Adult Mosquito Surveillance

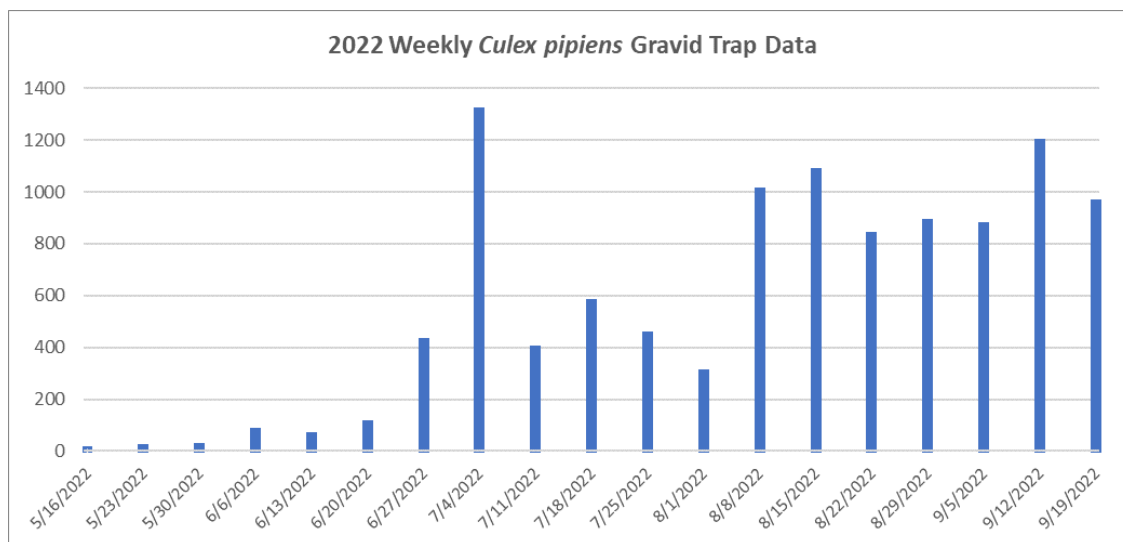
CCMAD deploys approximately 120 EVS traps a week throughout the county to monitor mosquito activity and track WNV vectors. These traps catch a wide range of mosquitoes both disease carrying (Culex) and pestiferous. An EVS trap’s ability to catch diverse types of mosquitoes makes them particularly useful in identifying mosquito problems associated with agriculture and other flood events.

The following table is a comparison of our EVS trapping numbers over the previous three years.



The District uses 11 Gravid traps to monitor for species (primarily *Cx. pipiens*) closely related to man-made habitats in urban environments. The Gravid trap program began in 2020 to better quantify the potential disease threat in these areas. The utilization of these traps has greatly improved our ability to both quantify the mosquito problem and monitor for disease in these areas where other trapping methods are less effective. Expanded use of Gravid traps will become increasingly important as more farmland is converted to subdivisions and industrial space in the coming years.

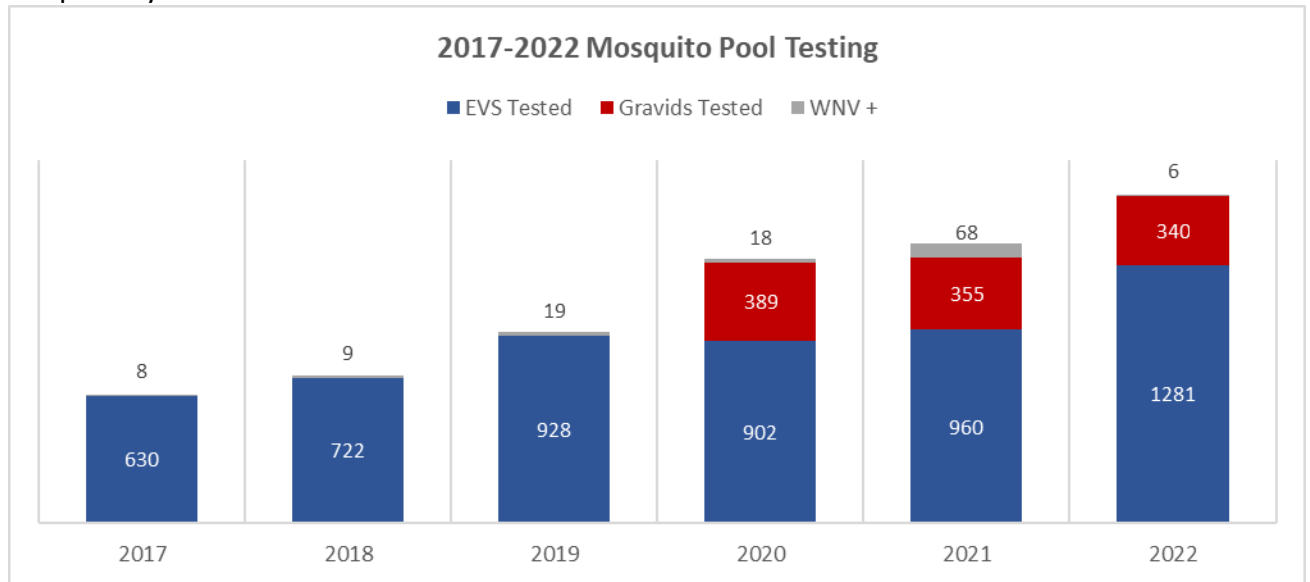
The following graph shows our weekly Gravid trap data.



Disease Surveillance:

The District maintains a robust disease surveillance program to allow us to quickly react to potential disease threats. Adult mosquitoes collected using EVS and Gravid traps are tested for the presence of West Nile virus, Saint Loise Encephalitis, and Western Equine Encephalitis. We will continue to increase our testing capacity to better protect the citizens of Canyon County.

The following graph shows a historical perspective of mosquito-borne virus activity over the past 6 years:



*Note: 2020 First year of District Gravid trap program.

Biological Control:

Following consultation with the Idaho Fish and Game Department the District added mosquitofish (*Gambusia affinis*) to our control program. Canyon County Mosquito Abatement District is the first program in Idaho to be allowed to utilize this method of control. Mosquitofish are only used in aquaria such as stock troughs, abandoned swimming pools and ornamental ponds. Mosquitofish were placed in 790 sites in our first season. We expect this program to continue to expand as the agricultural community learns of this new tool.

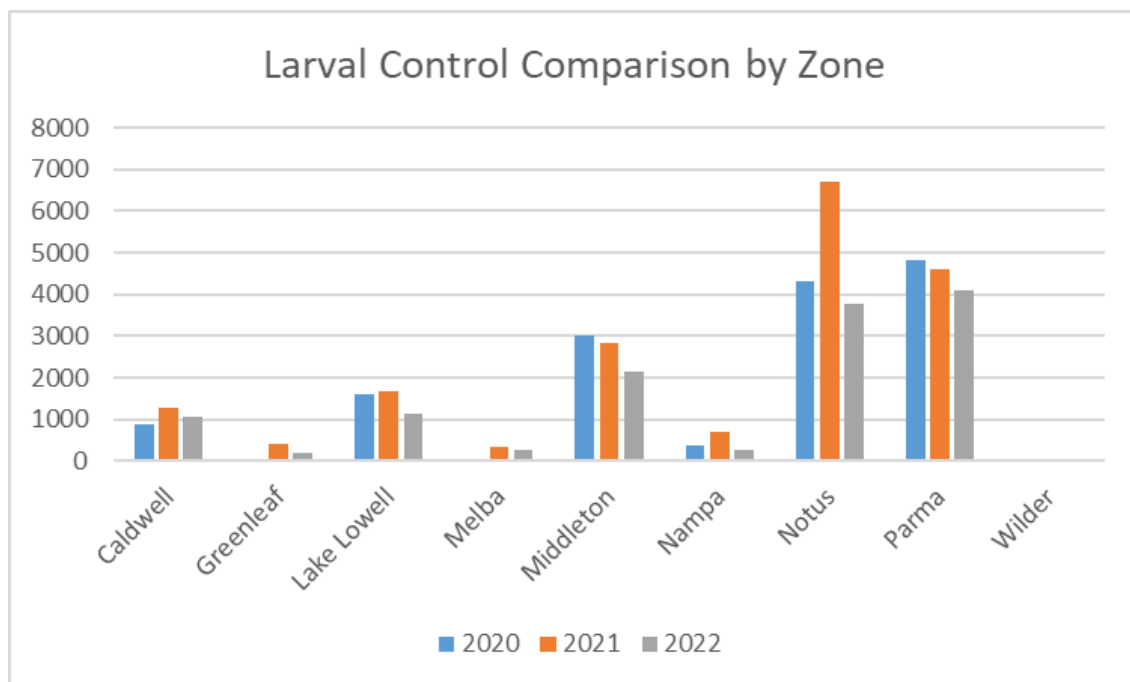
Larval Control:

As hiring seasonal staff has become more difficult, our larval control program has increasingly relied on aerial applications to quickly and efficiently control mosquito populations. A drone program was added in 2021 to fill the gap between fixed wing applications and ATV treatments and comprised 17% of our acres treated in 2022. We expect these treatments to increase to 25% in 2023.

The following table shows the amount and acres treated of each larval control product used in 2022.

Product	Total Amount	Acres Treated	EPA Reg. No.
Altosid 30-day Briquet	166 ea.	0.387	2724-375
Altosid P35	40 lbs.	13.33	89459-95
Altosid XR Briquet	14475 ea.	41.578	2724-421
Altosid XR-G	4013.9 lbs.	803.53	2724-451
BVA 2	97.63 gal.	32.54	70589-1
Metolav S-PT	6618 lbs.	2191.27	73049-475
Natular G	733 lbs.	104.74	8329-80
Natular G30	21854.53 lbs.	3848.23	8329-83
Vectobac 12 AS	1.44 gal.	11.5	73049-38
Vectobac GR	8382 lbs.	1676.2	73049-486
Vectobac GS	27857.05 lbs.	3482.13	73049-10
VectoMax FG	3273.77 lbs.	1163.36	73049-429
VectoPrime FG	3131.55 lbs.	626.31	73049-501

The following table shows a comparison of larval control acres by zone for the previous three years.



Adult Mosquito Control:

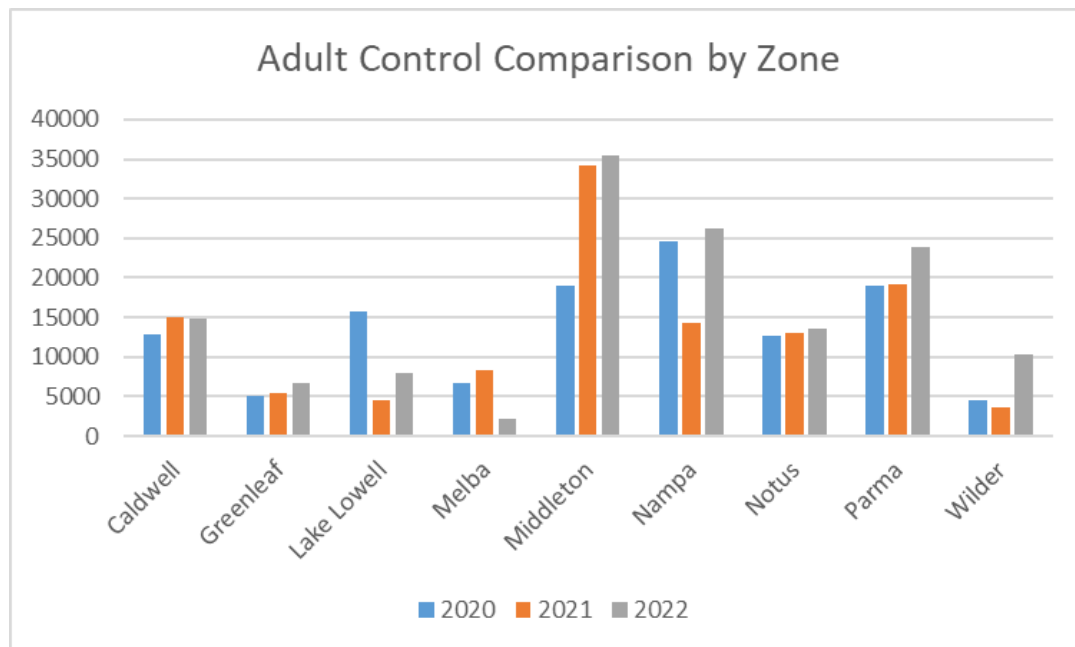
Adult mosquito control applications are conducted primarily by truck mounted ultra-low volume (ULV) machines. During large scale emergence events, or during peak virus transmission, applications can be made via fixed wing aircraft however that was not

necessary this past season. In the future we plan to add an ATV mounted ULV machine to control hard to reach areas.

The following table shows the amount and acres treated of each adult control product used in 2022.

Adult Mosquito Control Product	Gallons Used	Acres Treated	EPA Reg No.
Anvil 10+10	103.7	35187.39	1021-1688-8329
Duet	184.51	22680.33	1021-1795-8329
DeltaGard	174.76	35682.99	432-1534
Suspend Polyzone	.10	.30	432-1514
Zenivex E4	271.31	47330.45	2724-807

The following table shows a comparison of adult control acres by zone for the previous three years.



2022 Annual Report Summary:

- A strong surveillance program remains the backbone of our Integrated Pest Management Program.
- A below average snowpack reduced flooding, especially along the Boise River, limiting the need for aerial larval control activities.
- The monitoring for invasive mosquito species has become an added challenge and responsibility of the district.

- Surveillance for other arthropod borne disease such as Lyme will become necessary as vector populations increase outside of historical ranges.

The Canyon County Mosquito Abatement District wishes to thank the Board of County Commissioners, County PIO Joe Decker and other County personnel for their support.

Respectfully submitted,

A handwritten signature in blue ink, appearing to read "J. Lunders", with a stylized flourish at the end.

James J. Lunders, District Director