

CANYON COUNTY MOSQUITO ABATEMENT DISTRICT
9719 Booker Lane
Nampa, Idaho 83686

Phone – (208) 461-8633
Fax – (208) 461-4459

Members: AMCA, NWMVCA, IMVCA
NPMA

Deer Flat National Wildlife Refuge Summary of Mosquito Activity and Pesticide Use Report for 2010

Mosquito larval inspection activities started in early April and adult mosquito surveillance began in late May. A two man team conducted mosquito larval inspections starting the first week of April and concluded in September. The inspection team was on the refuge 5 days a week conducting inspection and mosquito larvae monitoring. A total of 161 visits were made with 800 man hours logged. A larval density count action level threshold of an average of 4 mosquitoes per dip//10 dips using standard dipping methods was used to determine if mosquito larvicide operations would be considered. CCMAD contracted with Valley Air Service to conduct larvae control operations on DFNWR. In some instances, mainly in area that air craft could not fly, ground operations were conducted. Included is a report of pesticides used on Deer Flat Wildlife Refuge. CCMAD mosquito control measures on refuge properties were targeted larvae control measure using Bti products (Bacillus thuringiensis) brand names: Vectobac 12AS, Vectobac CG, Teknar and Aquabac xt. Also a trail operation of VectoMax CG (a combination of Bacillus thuringiensis and Bacillus sphaericus) was conducted in mid June.

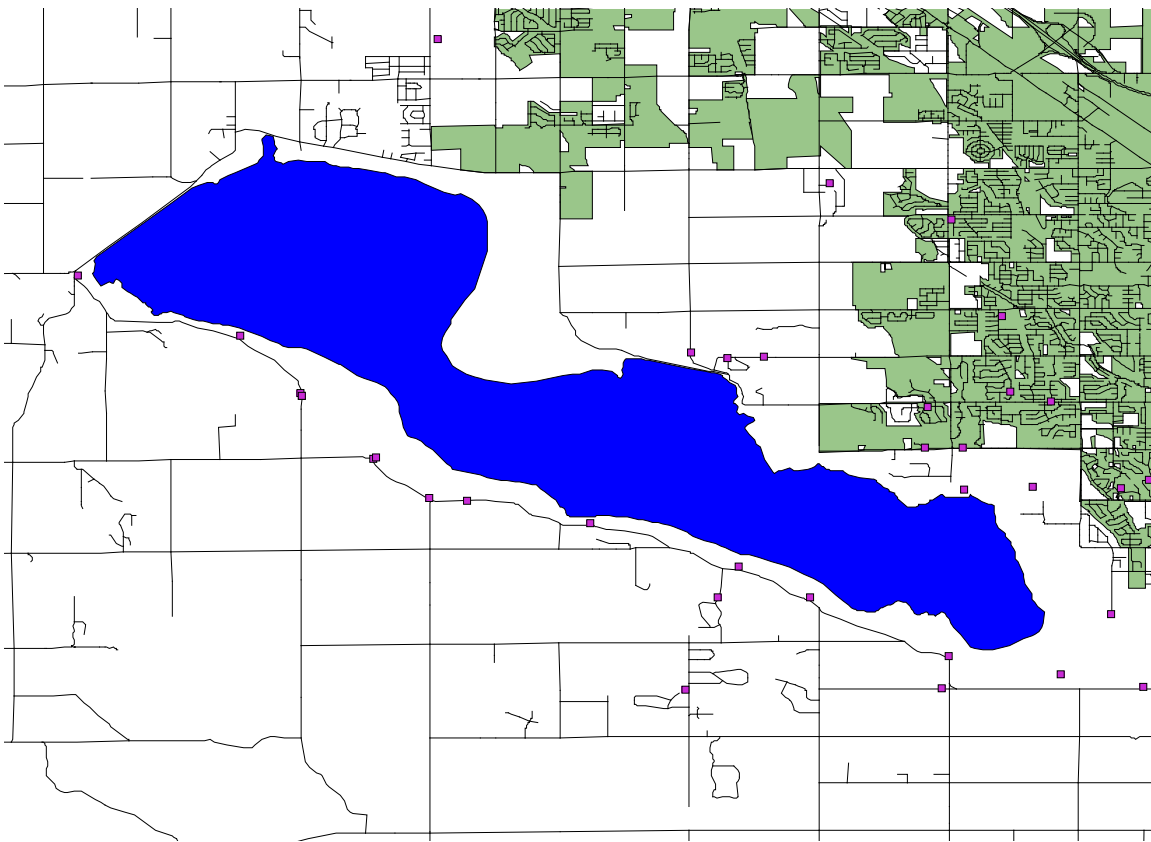
Mosquito Control Products Used on Deer Flat National Wildlife Refuge:

Vectobac 12 AS: EPA Reg. no. 73049-38
Vectobac CG: EPA Reg. no. 73049-19
Tecknar CG: EPA Reg. no. 73049-403
Aquabac xt: EPA Reg. no. 62637-1
VectoMax CG: EPA Reg. no. 73049-429

Rates of Application of Products used on Deer Flat National Wildlife Refuge:

Vectobac 12 AS: 1 pt. /acre
Vectobac CG: 8 to 10 lbs. /acre
Tecknar CG: 8 to 10 lbs. /acre
Aquabac xt: 1 pt. /acre
VectoMax CG: 7 lbs/acre (as recommended by Valent BioScience in trial study)

Adult Mosquito Surveillance and West Nile Virus: CCMAD deployed 10 to 12 CO₂ baited light traps on Deer Flat National Wildlife Refuge. Surveillance commenced on May 26, 2009 and concluded on September 4, 2009 when mosquito activity declined to relatively low measurement levels. Included in this report is a map of trap locations and weekly surveillance data from sites monitored. CCMAD also has the capability to conduct West Nile Virus testing using the Rapid Analyte Measurement Platform, (R.A.M.P.). The R.A.M.P. system can provide immediate testing results which can aid in management decisions in conducting mosquito control operations on and adjacent to refuge property. Testing for Western Equine Encephalitis is conducted by the State of Idaho Bureau of Laboratories. In 2009 there were 5 positive West Nile Virus sites detected as a result of CCMAD surveillance. In 2010, there was no West Nile Virus or Western Equine Encephalitis activity noted.



Map of CCMAD Mosquito Surveillance Sites on or near Deer Flat National Wildlife Refuge.

CCMAD deployed 8 to 9 trap sites per week. There were 16 trap sites on Deer Flat Refuge. Some of these sites revealed no data and were not surveyed after the first few weeks. Traps are deployed in the early evening and collected the next morning. Mosquito species are frozen they processed by species. Vector species are pooled into test pools and tested for West Nile Virus; positive pools as a result of R.A.M.P. testing are sent to the Idaho Dept. of Health and Welfare Bureau of Laboratories (B.O.L.) and further tested for Western Equine Encephalitis and St. Louis Encephalitis.

DEER FLAT NATIOANL WILDLIFE REFUGE SURVEILLANCE DATA 2010

Trapping Date	Species						Total
	Cx t	Cx p	Ae vx	Ochl n.	An free.	Cs in	
25-May	1	5	277	127	0	86	496
1-Jun	9	0	1092	621	10	79	1811
7-Jun	78	1	236	266	19	133	733
15-Jun	203	0	3471	12	12	55	3753
21-Jun	82	1	567	250	79	142	1121
28-Jun	366	3	471	549	21	51	1461
6-Jul	449	1	232	142	35	66	925
12-Jul	331	7	76	34	68	7	523
19-Jul	315	13	114	13	20	3	478
26-Jul	683	20	105	97	55	90	1050
9-Aug	450	25	11	4	142	10	642
16-Aug	252	25	57	44	4	0	382
23-Aug	34	35	4	2	19	0	94
	3253	136	6713	2161	484	722	13469

Legend

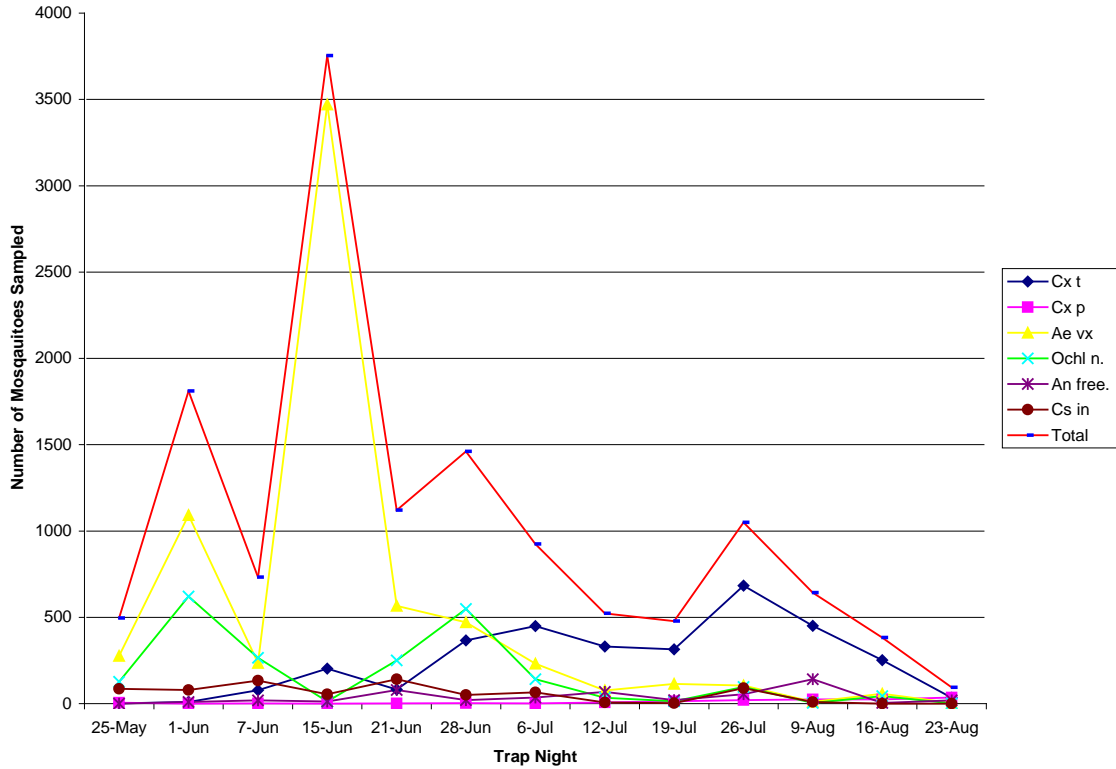
Cx t	Culex tarsalis (Western Encephalitis Mosquito)
Cx p	Culex pipiens (Northern House Mosquito)
Ae vx	Aedes vexans (Inland Floodwater Mosquito)
Ochl n.	Ochlerotatus nigromaculis (Irrigated Pasture Mosquito)
An free	Anopheles freeborni (Western Malaria Mosquito)
Cs in	Culiseta inornata (Winter Marsh Mosquito)

The dominate species of mosquito trapped on DFNWR was Aedes vexans at 49% of all mosquito species trapped. Primary disease vectors trapped (Cx tarsalis and Cx pipiens) accounted for 25% of sample data. A chart of trapping data by trap night is included at the end of this report. There was no positive disease activity on DFNWR.



CDC CO2 Light Baited Traps are deployed at sundown and retrieved in the A.M.

2010 Deer Flat National Wildlife Refuge Mosquito Surveillance Data



Graph of mosquito activity on Deer Flat National Wildlife Refuge

Cxt	Culex tarsalis (Western Equine Encephalitis Mosquito)	Blue
Cxp	Culex pipiens (Northern House Mosquito)	Pink
Ae vx	Aedes vexans (Inland floodwater Mosquito)	Yellow
Ochl n.	Ochlerotatus nigromaculis (Irrigated Pasture Mosquito)	Green
Cs in	Culiseta inornata (Winter Marsh Mosquito)	Maroon
An free	Anopheles freeborni (Western Malaria Mosquito)	Violet
	Total Trapping Samples	Red

Pesticide Use Report (ground activity)

Ground Applications:

Ground applications were conducted near areas of nesting eagles where aircraft could not fly into.

Total number of gallons of diluted Bti used: 1157 diluted gallons of Bti was applied on 387.3 acres. **(ground applications)**Total number of granular Bti applied **(ground operations)** 351 lbs. on 43 acres of shoreline habitat. A total of 430 acres were treated by ground crews between May and July.

Aerial Applications:

**Aerial Bacillus thuringiensis israelensis (Bti)
Application Record
Deer Flat National Wildlife Refuge
2010**

Date	Location	Rate/Acre	Acres treated	Product Used	Amount Used
April 26	Gott's Point to inflow N.Y. Canal	8 lbs.	200	Teknar CG	1600 lbs.
May 3	Access 8 to Access 3	8.5 lbs	110	Teknar CG	935 lbs.
May 10	Gott's Point to Tio Lane Access and East Refuge Marsh	8 lbs.	250	Teknar CG	2000 lbs.
May 24	Gott's Point to Tio Lane Access and East Refuge Marsh	8 lbs.	200	Teknar CG	1600 lbs.
June 2	Access 6 to Access 1	8 lbs.	200	Teknar CG	1600 lbs.
June 14	Access 7 to Access 1	8 lbs.	200	Teknar CG	1600 lbs.
*June 11	East Refuge Marsh off Tio Lane Access	7 lbs.	60	VectoMax CG	420 lbs.
June 28	Access 6 to Access 1	8 lbs.	200	Vectobac CG	1600 lbs.
July 19	Gott's Point to Tio Lane Access	8 lbs.	200	Vectobac CG	1600 lbs.
August 9	Access 4 to N.Y. Canal inflow	8 lbs.	200	Vectobac CG	1600 lbs.
Totals			1820		14555 lbs.

Trial application of VectoMax CG (Bti/Bs) Bacillus thuringiensis/Bacillus sphaericus

Teknar CG (Bti): EPA Reg. No. 73049-43
 Vectobac CG (Bti): EPA Reg. No. 73049-19
 VectoMax CG (Bti): EPA Reg. No. 73049-429

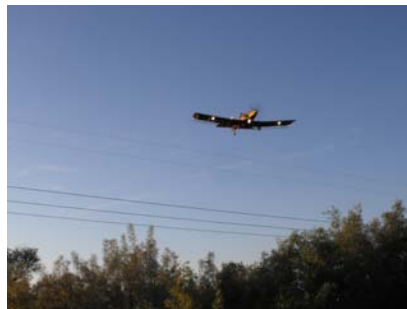
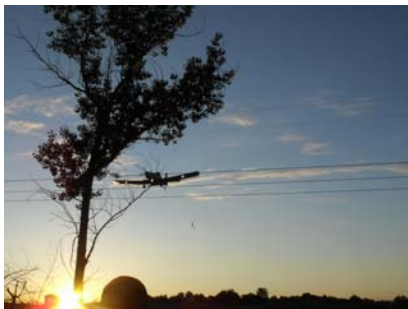
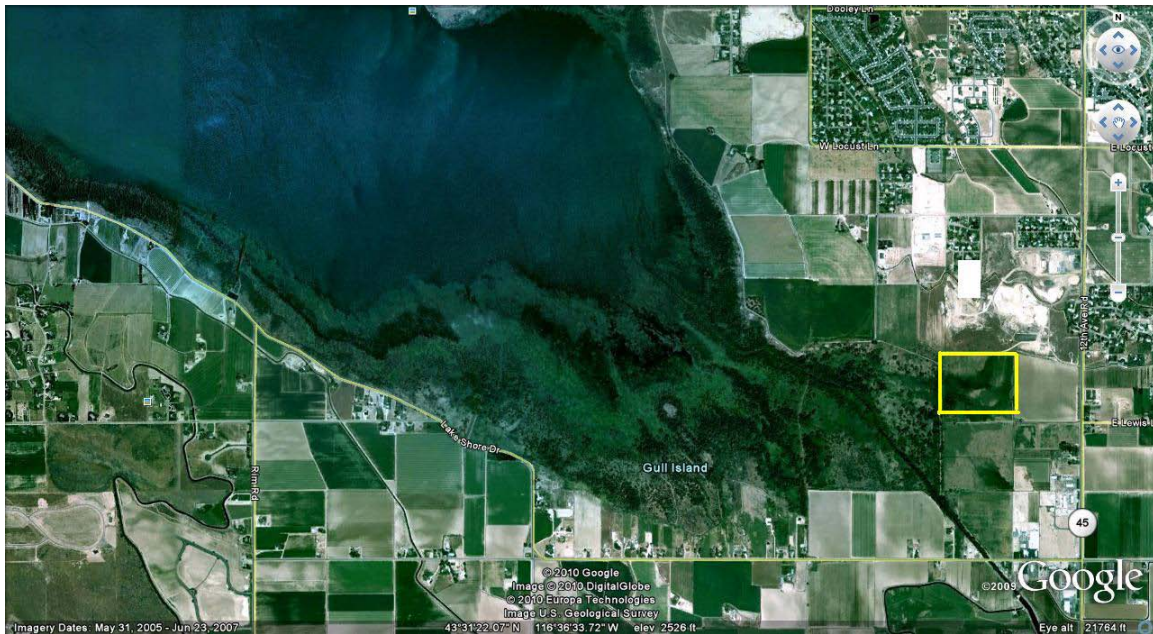
A grand total of 2250.3 acres of mosquito habitat were treated between April 26 and August 9 both by air and ground.



VectoMax Trial Application

CCMAD was approached mid-spring by Valent BioScience to conduct a trial study on DFNWR using the product VectoMax CG. VectoMax CG is a combination of *Bacillus Thuringiensis* and *Bacillus Sphaericus* for added residual in permanent water site with little or no fluctuation. A site was surveyed and the marsh area on the east side of DFNWR was determined to be the trial site.

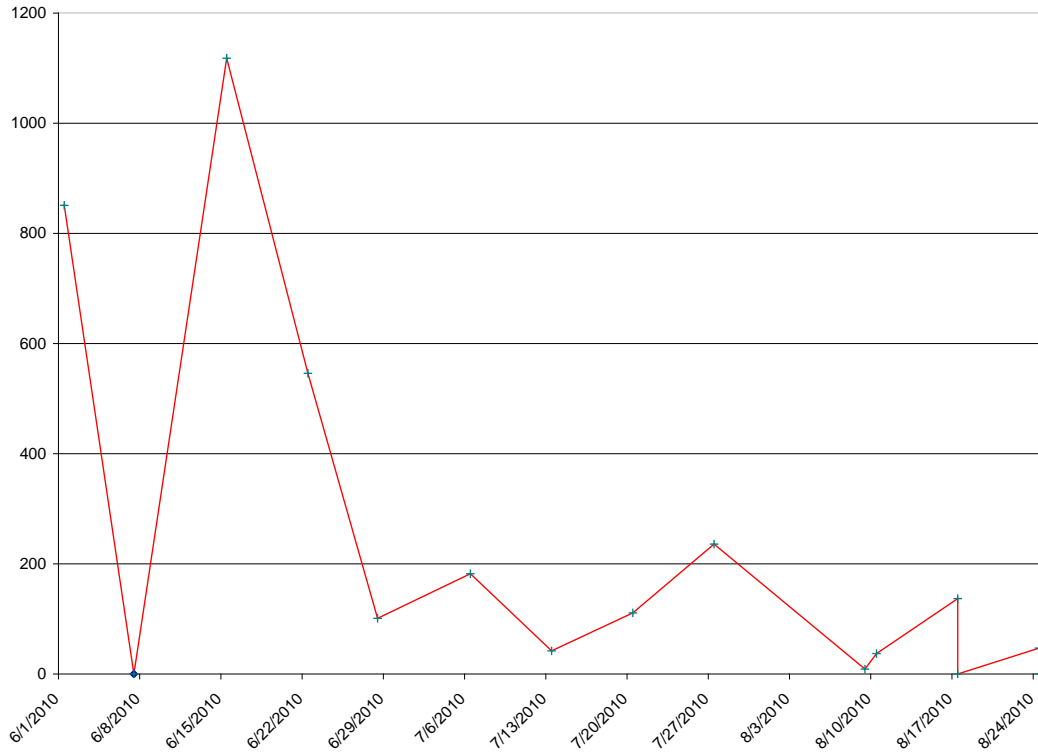
VectoMax trial site outlined in yellow.



60 acres treated at recommended rate of 7 lbs/acre

Efficacy Results of VectoMax trial application on June 11:

**Application
Date: June 11**



Sample Date	Total Trapping Numbers
June 1	851
June 7	(weather)
June 15	1118
June 22	546
June 28	101
July 6	182
July 13	42
July 20	111
July 27	236
Aug 10	37
Aug 17	137
Aug 24	47
Sept 2	0

***VectoMax Application 6/11/10**

Conclusion

There was no positive disease activity noted on DFNWR in 2010. Vector species surveyed did not peak until July 26 (*Culex tarsalis*) and *Culex pipiens* populations stayed relatively flat through out the surveillance collection time period. The dominate species of mosquito trapped was *Aedes vexans* (49.8% of total sample). Even though this is a species of mosquito that is a secondary carrier of WNV and Western Equine Encephalitis, CCMAD tests the species for disease activity. Action thresholds of an average of 4 mosquitoes per dip/ten dip was an affective tool for both disease and secondary disease vector mosquitoes. CCMAD will continue to use 2 man inspection teams to determine larvicide treatment strategies and action. CCMAD will evaluate VectoMax applications and determine areas where an expansion of the use of this product may be warranted.

Included in this report are the following:

- Ground inspection and pesticide use by month report.
- Surveillance data by trap night and location.
- Sample pesticide labels of products used on DFNWR.

Respectfully submitted,

Ed Burnett
District Director

