



Twin Falls County Pest Abatement District

Annual Report

2011

Mission Statement: To protect the health and socio-economic well being of the citizens of Twin Falls County from harmful vectors and pests, employing environmentally sound abatement practices.

Table of Contents



Black Fly

Year End Report	3-14
Budget Report	15
Goals	16-17

Contact Information:

Mail: PO Box AC
Twin Falls Idaho, 83303-0094

Office location: 507 Grandview Drive South, Suite A
Office 208-733-2338

tfcpad@qwestoffice.net
www.tfcpad.org

2011 Year End Report

Twin Falls County Pest Abatement District

Report Prepared by District Manager Kirk Tubbs

Report to Twin Falls County Pest Abatement District Board of Trustees

Introduction

This was the third season of operation for Twin Falls County Pest Abatement District (TFCPAD). Once again we experienced operational changes as compared to last summer, however we still had primary focus on larval control for Black Flies and mosquitoes. Changes were a result of improved products available for use as well as from insight and information gleaned during the previous two years. The staff consisted of one full time manager, and during the summer our crew was two full time seasonal employees. However to accommodate workers' college schedules and other obligations several employees worked varying amounts of hours and different schedules during the season. Seasonal employees were: Stacy King, Aaron Ursenbach, Adam Darrington and Alisha Moore.

The office was moved this year to a new location (507 Grandview Drive South Suite A) which afforded a better shop, meeting room and a lab space for the same rental cost as the previous location. The lab was furnished and allowed for in house virus testing and additional work projects.

In October of this year, the Environmental Protection Agency (EPA) released its requirements for the new National Pollution Discharge Elimination System (NPDES) permit. This process started several years ago due to lawsuits over the Clean Water Act. Previously following the pesticide label was compliant with the law, now certain activates also require a EPA permit and regulation under the Clean Water Act. During the past year, TFCPAD has spent considerable time submitting public comments, records, reports, and data from our trials, and educating those involved with implementing this permit both at the national and state level. We have also revised operations manuals and recordkeeping in anticipation of new permit requirements. The bulk of our treatments use natural bacterial products, however they are treated the same as any other chemical application under this permit. At this time we believe we will be operating under this permit next year. The main change to us under this permit will be increased time spent in record keeping and reporting requirements.

Geographic Area

The TFCPAD primarily conducts work inside Twin Falls County. The county contains approximately 1,232,000 acres. Twin Falls County has a population of 77,230 (2010 Census up 20% from 64,284 in the 2000 census). Work is targeted to the areas that will produce the best results for the time and money spent.

Surveillance and subsequent treatment areas for Black Fly control consisted of most moving waters in Twin Falls County: The Twin Falls Canal system which contains 110 miles of major canals and over 1,000 miles of laterals, the Salmon Falls Canal System which has over 300 miles of main and lateral canals, and the Roseworth Canal System which contains over 10 miles of main and lateral canals. In addition portions of coulee drainage streams, Rock Creek, Deep Creek, Cedar Draw, Dry Creek, Salmon Falls Creek, and the Snake River received some treatment. The entire Milner Irrigation Canal System was

also treated; this system originates in Twin Falls County, runs through Cassia County, then returns into Twin Falls County and contains over 25 miles of canal.

Mosquito Control work was conducted mainly in the more populous areas of the county. Priority in treatments was given to residential areas, where historically West Nile Virus was found and recreational areas. In general the Snake River, was the dividing line for treatments, but a few areas in adjacent counties were treated when we treated along the Snake River due to their direct impact on Twin Falls County. Clearlake's Homeowners Association and the area near Centennial Park were the main ones.

In addition to our work inside Twin Falls County, some limited surveillance work was conducted in Jerome, Gooding, Cassia, Lincoln and Minidoka County. This was mostly to provide a better understanding of Black Fly numbers and movement. This also provided some mosquito samples which were tested for West Nile Virus (WNV) as well.

1. Collaborative Agreements

We have welcomed partnerships and the sharing of information and resources in order to fulfill our mission. All parties worked with in 2010 continued in provide assistance. Some of the more significant collaborators are noted.

We provided mentorship to five CSI students working on Biology Projects. These student volunteers helped with the collection of field data for TFCPAD, capturing fish and other projects.

Idaho Department of Health and Welfare provided supplies as well as \$2,000 for mosquito surveillance through a grant. The state lab also provided confirmation virus testing.

The Twin Falls Canal Company, Salmon Falls Canal Company, and Milner Irrigation District provided Canal information, water flow rates, and data.

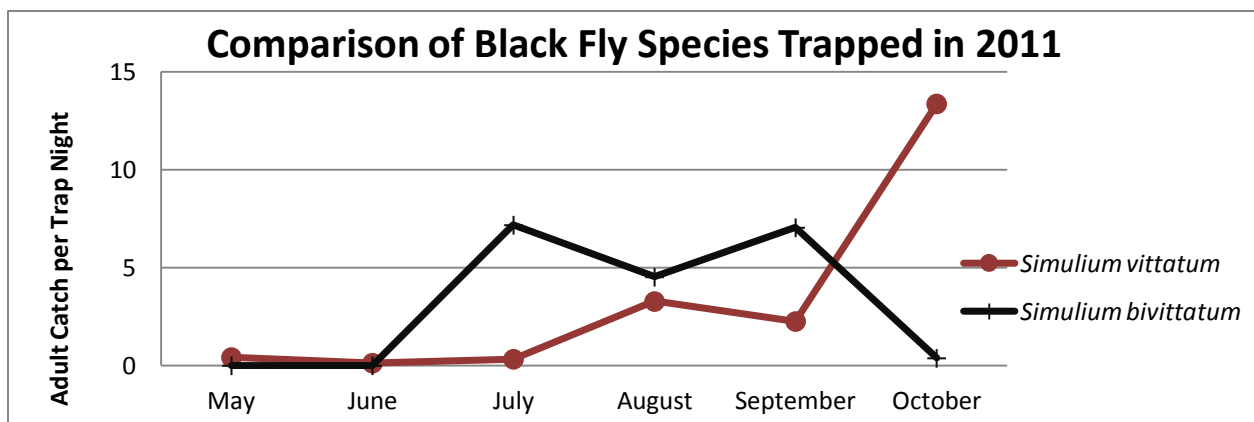
Clearlake's Homeowners Association contracted to have mosquito surveillance and control. This resulted in treatments that benefited Twin Falls County residents in adjacent area as well as the homeowners association. TFCPAD was paid \$2,000 to cover our costs for this treatment.

2. Surveillance

Black Fly (BF) adult surveillance is conducted using the same traps and methods that are used for adult mosquito's surveillance. The traps are not intended to remove or catch all the BF, rather they provide a measurable comparison from year to year. In previous years only the Black Fly species *Simulium vittatum* was looked for in adult traps. They are relatively easy to identify and were noted by a 1970's University of Idaho study as the predominant species in this area. This year with our lab space, and improved microscope and other equipment, everything we caught was put under the microscope in order to look for additional species present. We documented one other species of BF, (*simulium bivittatum*)It has probably been present before in our catches, just not identified.

Simulium vittatum is the predominate species found throughout the county. It generally does not bite humans; it prefers to feeds on livestock and is a concern because of its potential for disease transmission and its negative effect on livestock behavior. The species newly documented was *Simulium bivittatum*. This very small species of BF has a similar lifecycle and habitat preferences to *Simulium vittatum*, but

likes to bite people. It was mostly found on the west end of the county. Abatement treatment for both is the same. Buhl locals suggest that this BF may be the same as what locals have called a noseem and has been troublesome to this area in the past.



Black Fly larval surveillance in canals primarily took place with yellow sample ropes hung in the waterways. A six inch section of the rope was marked off and larvae found on that section were monitored. Other waterways were also monitored by pulling up vegetation and looking at it and rocks for larva presence. In fluctuating water flows the BF Larva move around a great deal in the stream searching out optimum attachment sites, rendering the rope surveys not as effective. Some waterways are surveyed year round. Surveillance was done in order to find BF Larva, to gage larval stage and growth so treatment could be conducted where needed and at optimum larval stage.

Mosquito surveillance for larva was conducted by dipping for larva in standing water sources such as ponds and water retention areas. Work primarily focused around the more populated parts of the county; however any standing water encountered was sampled whenever possible.

Adult mosquito trapping was conducted on a weekly basis during the summer (May 13 to Oct 24). Traps used a light and CO2 produced by dry ice to attract the mosquitoes. Traps were set in the evening and retrieved the following day. 163 trap nights produced a total of 8,618 female mosquitoes that were speciated as a part of this surveillance. This excludes data where traps failed, trapping in adjacent counties or where efforts were being duplicated. This trapping provided mosquitoes for West Nile Virus (WNV) testing as well as feedback on treatment results and needs. No mosquitoes tested positive for WNV, St. Louis encephalitis or Western Equine encephalitis. No people or livestock were reported as having WNV in Twin Falls County. Testing of mosquitoes this year was conducted in house with confirmation testing of results being done by the state health lab.

Surveillance was decreased some as compared to last year due to the loss of grant money that paid for some of this surveillance. Using data from previous years we conducted surveillance in three ways:

Targeted surveillance of high priority areas.

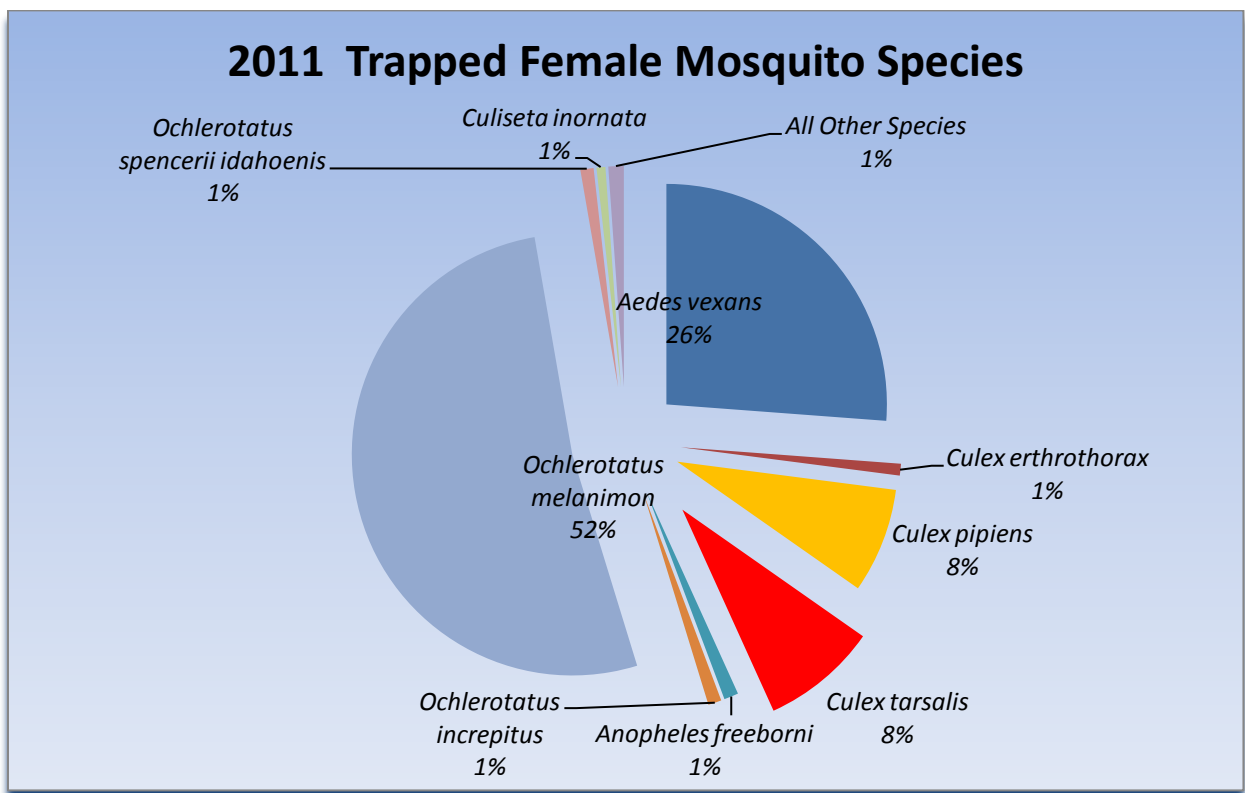
Random sampling to locate new areas in need of treatment.

Abundance trapping to provide a look at populations over time.

Using data from previous years and state guidelines we have established a Twin Falls County specific operations guide and treatment thresholds and procedures. These guidelines were followed regarding trap

counts of certain mosquito species and when a high number were caught, traps were reset to help determine if the population was rising or falling and to evaluate the effectiveness of our treatment efforts. For example, trapping of over 30 *Culex tarsalis* (a main vector of WNV) in one night in one trap would prompt a review of larval surveillance and treatment for that area, and a search for potential breeding locations in the vicinity that were missed during previous treatments. The location would also be re-trapped the following night and the following week. The goal was to find potential problem areas quickly so that we could maintain mosquito numbers below the threshold where disease is easily transmitted. These guidelines are reviewed and updated with the new data as needed.

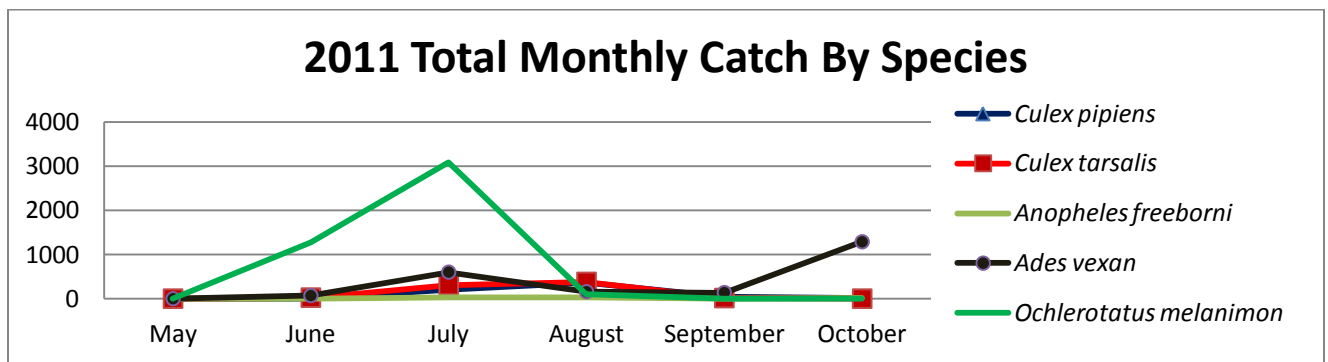
Mosquito speciation also let us know what type of habitat to look for, and if we were dealing with a potential vector of disease or just a nuisance mosquito. Vectors of disease generally bite, lay eggs and then bite again. This feeding then feeding transmits the disease. Nuisance species bite, lay eggs and die and are not likely to spread disease. Most nuisance species are in flood water areas and most disease vectors come from more permanent standing water. Trap results can be used in planning when and where to work to reduce potential disease vectors before they become a problem.



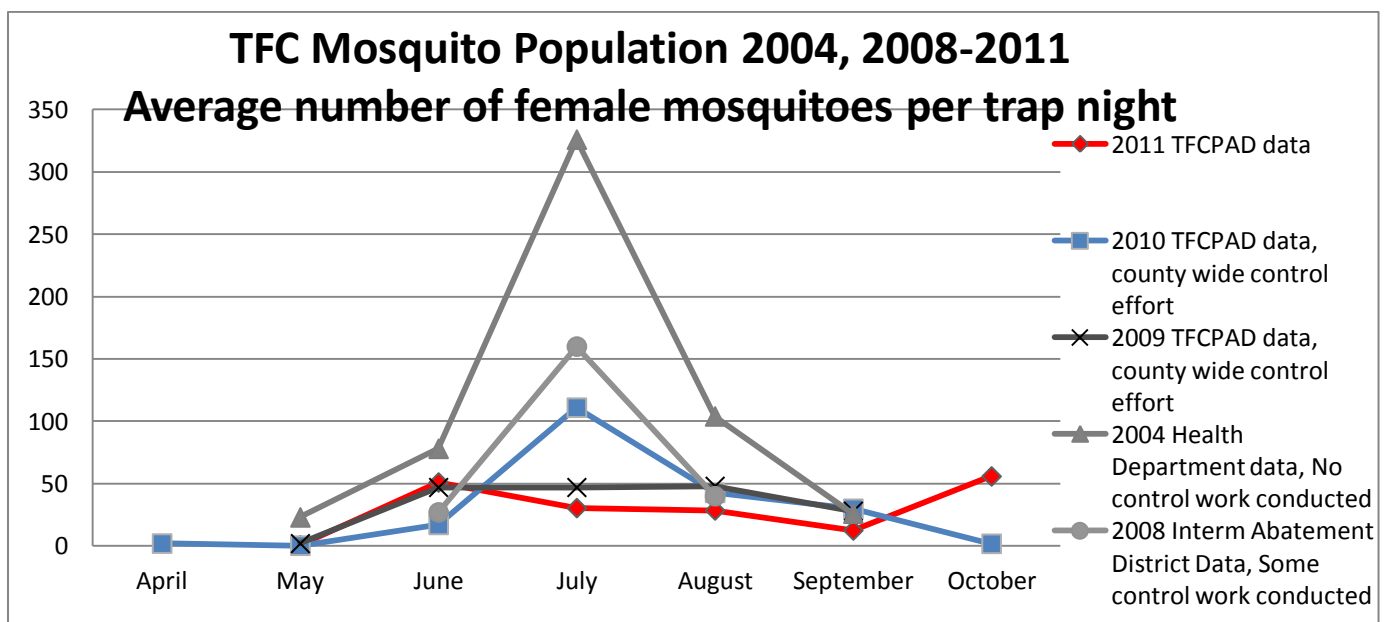
The previous chart shows the population distribution of trapped female mosquitos in TFC. *Culex tarsalis* and *Culex pipians* are the two species likley to carry WNV, all tested negative. Culex are most often found in ponds and varous containers. *Culex pipiens* most often come from storm drains, and small containers of water in areas where people live.

Aedes vexans are usualy the most common mosquito. In all of our previous data, they typically make up 50% of our total catch. They are most often found in floded areas along the river and flooded irrigation areas . They would sometimes generate complaints, but are mostly a nuisance mosquito not generally a

vector of disease. This year they were beat out by *Ochleratatus melanimon* which, based on all our previous data, has always been less than 1% of our total catch. It is interesting to note that the entire catch of these mosquitoes came from a few small areas over a relatively short period of time. This was not an area where we had previously treated for mosquitoes. In fact the larval source was mostly dry cheatgrass and sagebrush. From a distance it appeared dry, but up close the ground was flooded with a few inches of water. This was a result of the canals having extra water this year and according to locals many of these areas had not been watered in over 30 years. At some time in the past this area had received abundant water, produced mosquitoes who laid eggs in the soil, the eggs had been waiting for the right conditions to hatch. One trap in this area set an all time high record for mosquito trapping by TFCPAD. Catching 2,613 mosquitoes (in one night) of which 2,434 were *Ochleratus melanimon*. These do not present a disease issue, but are active both day and night and are vicious biters that can often travel a great distance. It was not pleasant for residents in this area, most had never experienced mosquitoes here before.

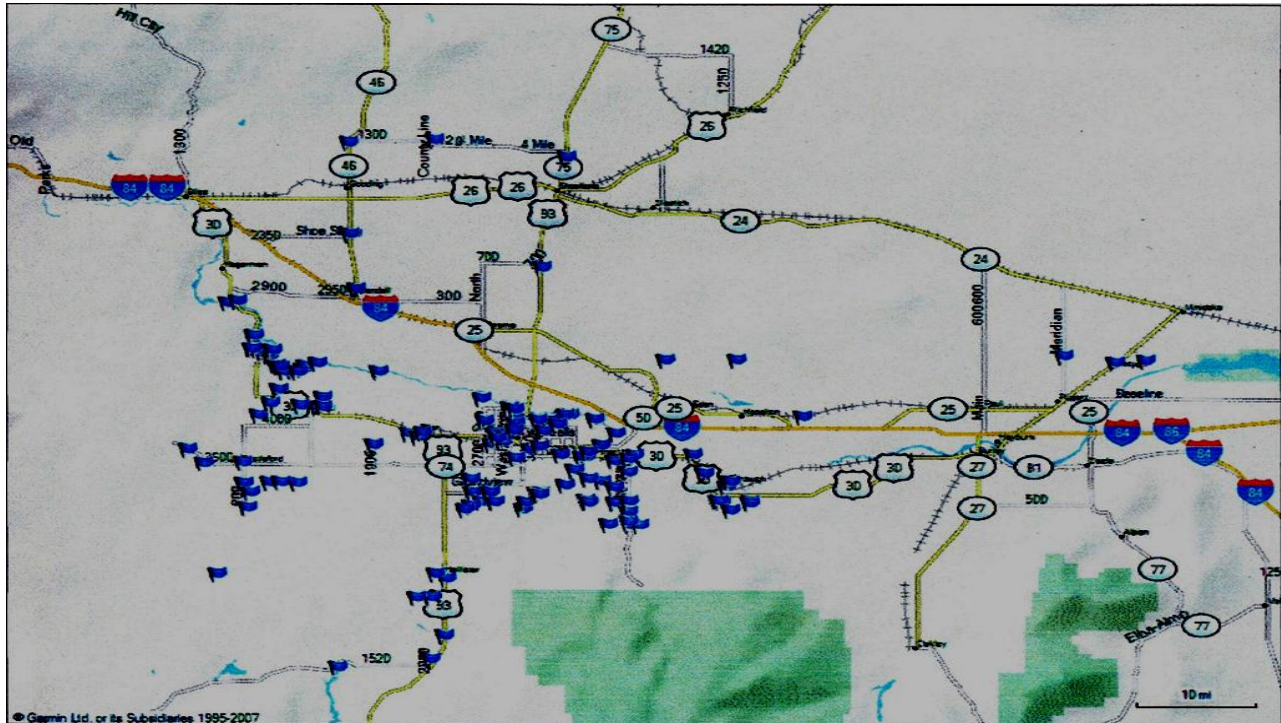


Another unusual occurrence this year was a spike in *Aedes vexans* mosquito numbers in October, a month when populations are typically crashing because of cold weather. This year the high river flows combined with a warm fall allowed larva to hatch along the flooded river. In most years this flooding happens only in the spring. During the later part of our season, the nighttime low temperatures remained higher than normal, allowing mosquito production to remain high.



3. Mapping

GPS units were used to provide accurate records of treatment locations, to measure treatment areas and to record this information for future use. Our GPS data can then be paired with Google Earth to create detailed maps. The following map shows where we sampled for Black Fly and Mosquito Adults.



1011 Trap Locations

4. Source Reduction

Educational efforts in utilizing good landscape design to reduce potential pest habitat has been a part of our public education campaign as well as our meeting with homeowners. The biggest impact we are having in source reduction is through educational effort. We cannot find and treat every potential breeding site, but when landowners know what to look for they help immensely by draining or flushing standing water. The species of concern for WNV are short range flyers which is why preventing mosquito production in backyards is so important.

TFCPAD helped sponsor a Tire Amnesty day and conducted public education as part of this day. Removal of discarded tires greatly reduces container habitat for certain species of mosquitoes.

Educational Public Service Announcements were produced and aired during the summer months on local radio stations to educate people about backyard mosquitoes.

Several public events such as The Twin Falls County Fair, Southern Idaho Home and Garden Show were attended. Educational Displays were also set up at public locations such as Twin Falls City Hall.

Several businesses also allowed us to set up educational displays at events such as D&B's Western store horse days.

5. Larval Control

Almost all control efforts were targeted towards the larval stage of both mosquitoes and black flies. At this stage of the lifecycle they are confined to a smaller nursery and treatment is safe and effective. Studies suggest that larviciding 1,000 Acres is the equivalent of adult control on 72,000 Acres. With Black Flies, there is no efficient way to control adults. A mile of river with good Black Fly habitat can produce over 1 billion black flies per day; hence it is best to treat the source.

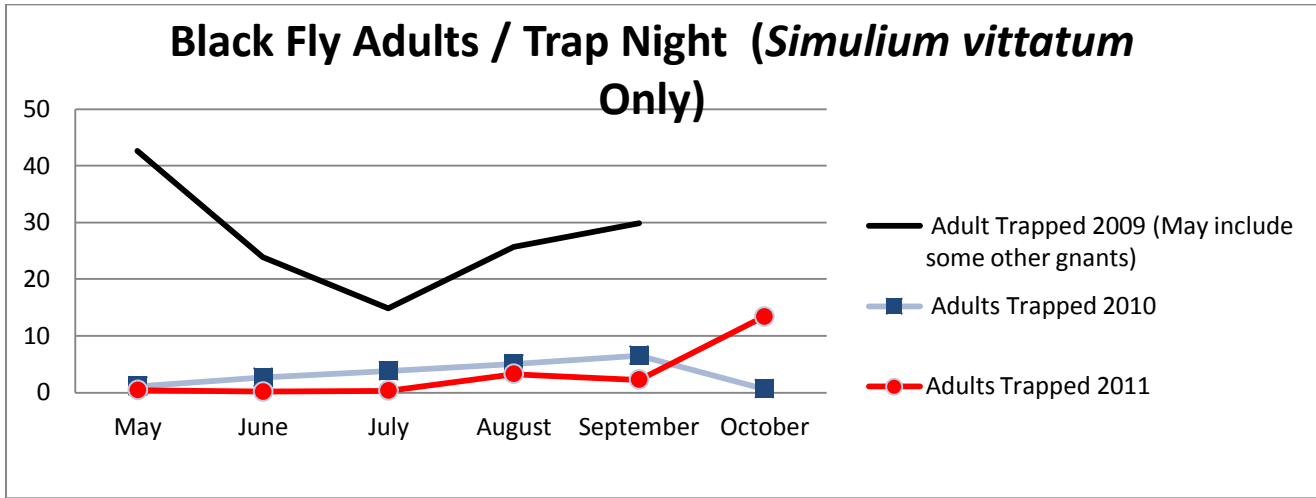
Our primary larvicide is Bti (*Bacillus thuringiensis v. israelensis*) which is a product of a natural soil bacteria, when refined it produces multiple protein crystals that when consumed, react with the alkaline gut of a mosquito or black fly resulting in larval death. There is no secondary toxicity, or recycling of the product. It has little to no effect on non target species and does not persist in the environment. Black Fly Larvae were treated using Bti in a solution applied to moving water. Mosquito larvae were treated with Bti spread over still water. Larval stage, quantity and water temperature were monitored to determine treatment intervals and application rates.

In 2009 Black Fly control work was only conducted in the Canal systems. In 2010 based on our surveillance and increased understanding of the biology of the BF species that is predominant. We tested the use of late season larval treatments directed at larvae that overwinter in some of the year round water sources and then emerge in the spring. With water flow rates low in the late fall and winter, we can treat with a small amount of product versus the large amount that would be required in the spring & summer to treat the same area. Our success from this test was great enough that we expanded this approach to all of TFC.

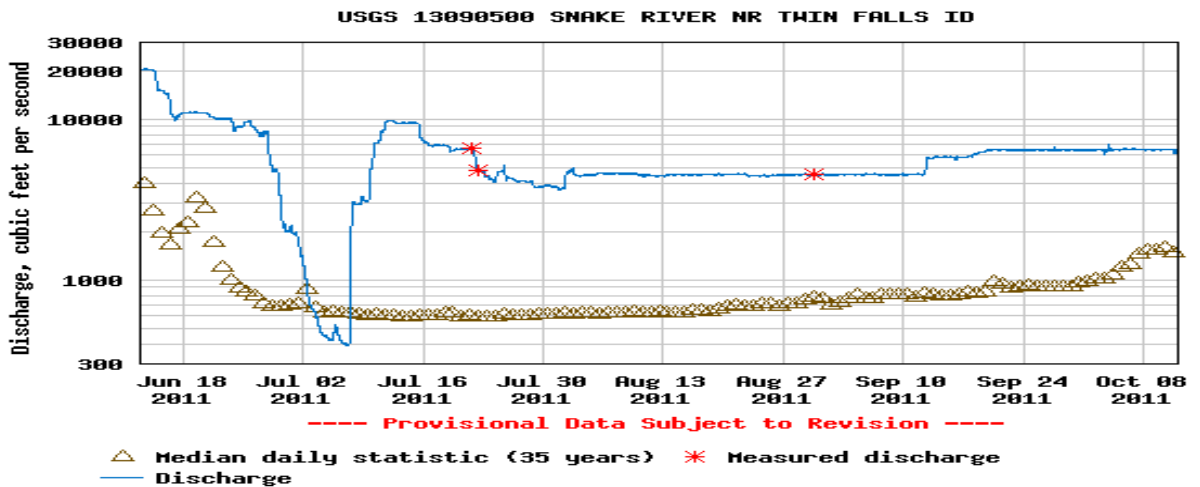
Overwintering BF larva can develop slowly in moving water and emerge in the spring. Many hatch out prior to spring when we have a warm sunny day. These females do not seek a blood meal or mate. They are capable of autogenous reproduction (reproduction without mating). Upon emerging they immediately lay several hundred eggs, allowing the population to increase exponentially prior to spring. As these high numbers hatch in the spring they migrate to nearby flowing water such as the nearby canals to lay eggs. Flight range for Black Flies is 10-20 miles. Targeting these overwintering larvae greatly reduces the overall starting number in the spring and has given us great results. At some point during the summer, BF adult numbers increase despite treatment because of immigration of adults from surrounding areas. Treating BF within a political boundary rather than a geographic boundary will always result in BF numbers increasing in late summer and fall as BF move in from untreated areas. Populations in other areas grow exponentially without treatment and then the natural

migration from these locations outward occurs. Through our surveillance in other counties we could see this happening this year.

Currently treatment of BF has expanded to cover most moving water in the county. Treating overwintering larva produces results that we can see in larval counts in canals located ten miles away. Some parts of the canal system need little to no treatment during the summer as a result of these wintertime treatments. The savings in product use from these locations has been use to expand our treatments through the county. Our surveillance allows us to treat when and where it will do the most good. We now treat a much larger area over a greater period of time than when the program first started, using a similar amount of product.



We had exceptionally good Black Fly abatement results for most of the season. High river flows in late summer and fall, combined with the warm weather, resulted in a lot of BF production in the river starting in August. Due to the unusually high flows it was cost prohibitive to treat the river during this time. The river drop in July allowed for some treatments during this time. The chart below shows 35 year average water and the discharge this year.

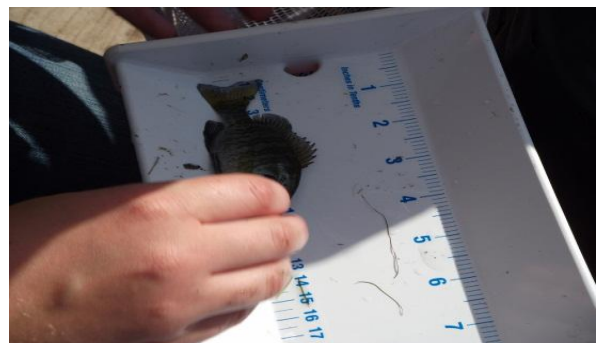


Mosquito larvae were controlled in several ways. Early in the season catch basins, storm drains, and some water retention ponds were treated using one of several slow release products. Altosid, Naturlar, and Four Star products were all used. Products lasted from 45-180 days depending on the type of location treated. The slow release formula allows these early season treatments to last during the summer. These treatments are designed to work so that even when the water dries up, as the product remains ready for the next time the catch basin fills with water. This treatment is ideal for storm drains where we do not have the man power to check and treat each one at intervals during the summer. Nearly 1,000 storm drains were treated in Twin Falls County by TFCPAD. In addition, product is supplied to the local municipalities to use for the retreatment of drains when cleaned during the summer. Filer and Buhl treat their own drains with product supplied by TFCPAD. All other areas of the county are treated by TFCPAD. All products used in treatments are listed on the TFCPAD website.

Additional mosquito larval control was conducted by the use of Bti and a *Bacillus sphaericus* biological larvacide applied to standing water when mosquito larvae were found present. Bs works in much the same way as Bti, it is a natural soil bacteria that is consumed by the larvae. The difference is that it is a live bacterial that when consumed it multiplies inside the mosquito gut eventually killing the mosquito. The mosquito gut ruptures and releases the bacteria for other larva to consume. In areas of high mosquito larva this recycling of the product can make this type of treatments last longer than Bti. The drawback to this is that it costs more than what Bti does and does not work on all species of mosquitoes. A combo product that pairs the two bacteria in order to get 30 days of control has worked well for us; these products come on a loose corn cob granule (CG) or CG inside a water soluble pouch (WSP). Various methods are used to broadcast this over standing water.

In a few areas we use a surface film to treat for mosquitoes. Our surface film is a monomolecular film that coats the surface of the water reducing surface tension, preventing pupa mosquitoes from emerging from the water. It can also plug a mosquito larva's breathing tube and suffocate it. The film is designed to break down rapidly, it is only used where we find pupa.

In addition, stocking of Bluegill for mosquito larval control was continued this year. 584 Bluegill were stocked, coming from the CSI ponds and Dierkes Lake. Many of the locations that received fish are seasonal ponds and will need fish every year. The fish have proven to be a valuable part of our Integrated Pest Management approach. As we stock more waters and have more locations to use as sources for fish this part of our program will expand.



A small john boat was purchased this summer to allow for more efficient mosquito larval treatments along the banks Snake River and Murtaugh Lake. It has provided considerable cost savings in man hours required to access and treat certain areas.

2011 TFPAD PESTICIDE USE TOTALS

Product	EPA Reg. #	Quantity Used
Four Star (45 day)	83362-3	430 each
Four Star (90 day)	83362-3	1,342 each
4 Star (180 day)	83362-3	1,104each
Agnique (surface Film)	53263-28	7.54gallons
Agnique WSP	53263-3	312 pouches
Agnique Granular	53263-3	26 pounds
Altosid Briquet (180 day)	2724-421	575 pieces
Altosid WSP	2724-448	6 pouches
Vectolex CG(BS)	73049-20	62.6 pounds
Vectolex WSP (BS)	73049-20	1,921pouches
Vectobac CG (Bti)	73049-19	128.2 pounds
Vectomax CG(BTi,BS)	73049-429	1,013.53 pounds
Naturlar (180 day)	8329-84	135 pieces
Naturlar Granular (30 Day)	8329-83	32 pounds
Vectobac 12AS(Bti)	73049-38	6,306 gallons

6. Control of Adult Mosquito Populations

Our most effective control of adult mosquitoes is accomplished by controlling the larva.

Control of adult mosquitoes through fogging was not conducted. We have emergency aerial contracts in place in the event Aerial application is needed. We did not meet the action thresholds to justify this type of work.

7. Certification

Professional Applicator Licenses were maintained by all of our applicators. In house training was conducted on defensive driving, water safety, equipment calibration and use, emergency procedures and insect identification. The following is a list of trainings and important meetings attended:

January 11th Twin Falls Canal Company Annual Meeting.

February 9-11 North American Black Fly Association Meeting in Athens Georgia, (*Attendee and presenter)

March 8-9, Idaho Mosquito and Vector Control Association Meeting in Boise, (*Attendee and presenter)

March 18, Tour of Coachella Valley Mosquito and Vector Control District in Indio, Ca

March 20-24, American Mosquito Control Association Meeting in Anaheim, Ca

May 3rd, Mosquito Management Training in Pocatello

May 4th, Idaho County Risk Management Program, Risk Management Training in Boise

May 12th, RAMP Training (How to use Lab Equipment to test for West Nile Virus)

Sep. 8th, 2011 Ada County Mosquito Meeting, Discussion on training, new mosquito species that have showed up in Idaho, dog heart worm and Black Fly. Kirk Spoke about BF control. (*Attendee and presenter)

October 5-6th, North West Mosquito and Vector Control Association Gleneden Or. (*Attendee and presenter)

November 2-3, Idaho Mosquito and Vector Control Association Meeting November Sun Valley (*Attendee and presenter)

* In addition to attendance, Kirk Tubbs, TFCPAD manager presented a program.

8. Public Education and awareness

The following is a list of educational events attended by TFCPAD and significant coverage by the press:

Media coverage of 2010 Annual Report <http://www.kmvt.com/news/local/Keeping-flying-pests-under-control-in-Twin-Falls-114592864.html> and http://www.magicvalley.com/news/local/twin-falls/article_493c5357-d24b-5a5f-a1c4-7e2cf825a44a.html

February 18, 19, 20 Twin Falls Home and Garden Show

May 11th Career on Wheels Day, educational presentation for elementary students.

June 7th, Mosquito Education field day for public at TFCPAD Office.

June 30th Times news article about the success of using bluegills: http://www.magicvalley.com/news/local/twin-falls/article_5f464b0a-fd99-562f-b74a-57855cd251bf.html generated lots of requests for fish stocking.

June 26th <http://www.kmvt.com/news/local/124721469.html> KMVT news story about us, KMVT rise and shine program this morning. <http://www.kmvt.com/features/riseandshine/Get-rid-of-unwanted-pests-124858749.html>

June 26th Times news story http://magicvalley.com/news/local/twin-falls/article_4825cc48-48ba-5775-9f82-da96ff0b7762.html all of this and a press release was a part of the Mosquito control education week.

7-7-11 Media coverage on Fish stocking http://www.magicvalley.com/news/local/twin-falls/article_b179811d-c2a6-51c0-9391-a3026a3cb1d2.html Times news as well as KMVT news.

July, Public Service Announcements played on local radio stations during month.

Aug 31- Sep 6th Booth at Twin Falls County Fair in the Agricultural Building

September 17th, South Central Community Action day at the park.

October 24th http://magicvalley.com/news/local/twin-falls/despite-pest-progress-black-flies-still-hang-around/article_4e2b997d-7e36-50b6-b546-70637505bde0.html. Times News article on BF work.

In addition we have been able to get out information through homeowners associations, contributions to newsletters, our website and even taking hatch out jars of mosquito larvae into schools! Presentations

were given to Master garden clubs, Elementary school classes; College classes and other local organizations.

9. Other Business

All Board meetings were announced and open to the public. The following is a list of Meeting dates,

1/14/2011	5/19/2011	10/17/2011
2/11/2011	7/15/2011	12/1/2011
4/13/2011	8/24/2011	



Left to Right, Clif Amundsen, Ph.D . Kirk Tubbs Manager, John Snelling – President, Greg Garatea (Being recognized for his service on the Board for his term ending this year), Tony Brand Secretary, Theresa Strolberg Treasurer, Erik, J. Wenninger, Ph.D., Univ. of Idaho Extension, and Board Member not pictured, Mary Jensen, Health District

BUDGET FOR TWIN FALLS COUNTY PEST ABATEMENT DISTRICT

Budget was approved at a public hearing Wednesday, August 25, 2010, at 7:30 PM at the Twin Falls County Pest Abatement District office. The following table shows the budgets for 2010, and 2011.

Budget Categories	Budget Items	2011 Total Budget	2011 Actual	2012 Total Budget
Income	1-01 Taxes	467,461	472,010	500,022
Income	1-02 Grants	2,500	2,500	-
Income	1-04 Carryover Money Other	192,000	192,000	268,112
Income	Other Non Tax Income	-	1,705	360
Total Income		661,961	668,215	768,494
"A" Budget(Salaries & Wages)		101,101	78,885	101,501
"B" Budget				
Benefits & Taxes Total		33,090	19,421	27,410
Building Expenses Total		28,316	26,343	24,566
Other Insurance Total		5,816	2,630	3,560
Vehicles Total		20,100	13,270	39,300
Travel Total		5,650	3,601	5,550
Training Total		1,680	1,037	2,120
IT and Communications Total		5,182	3,633	4,300
Emergency & Carry Over	10-01 Emergency Abatement Fund	20,004	20,004	30,004
Emergency & Carry Over	10-02 FY011 Carry Over	192,000	192,000	258,112
Emergency & Carry Over Total		212,004	212,004	288,116
Community Outreach Total		7,900	4,494	7,300
Integrated Pest Management Total		184,222	183,667	212,321
Administration Total		56,900	44,457	52,450
Total "B" Expenses		560,860	514,556	666,993
Total Expenses		661,961	593,441	768,494
Total Income - Total Expenses		\$ 0	\$74,774	\$ 0
2010 Emergency& Carry Over Money	2010 Line Item savings toward emergency Abatement fund	2011 Unspent money	2012 Total Carry Over to 2012	
\$192,000	\$ 20,004	\$74,774	\$ 286,778	

2011 TFPCAD Goals

These are the Goals set by the abatement district to help guide our work in 2011. Below each is a short summary of accomplishments.

1. **Maintain a positive work environment where hard work, innovation and finding better, more efficient solutions to our work are encouraged.**
 - Provided training, safety equipment, proper tools, flexible schedules and merit awards to employees.
 - Set goals as part of a job performance evaluation with each individual worker.
2. **Maintain a good working relationship with other agencies, universities and professional organizations.**
 - Worked with many other agencies as part of the new EPA permitting process.
 - Served as a board member for the Idaho Mosquito and Vector Control Association.
 - See section 1.
3. **Maintain a safe working environment!**
 - Provided the Proper Personal Protective Equipment, training in its use, training in defensive driving, pesticide spill cleanup, forklift operation and water safety training.
 - Record and track all accidents, pesticide spills, and injuries. **(None in 2011)**
 - Policy and operations manuals updated
4. **Be a resource for Black Fly control operations.**
 - Developed a greater understanding of Black Fly biology in TF County; findings are made available on website.
 - Provided information and education to surrounding county requests, presented our findings at conferences.
 - Tested new method for tracking BF adult emergence in winter.
5. **Conduct a public education and awareness campaign.**
 - Maintain a web site. Opportunities to educate the public included morning radio show, morning TV program, and speaker at events. See Section 8.
6. **Develop other methods as part of IPM.**
 - See section 6
 - Purchased boat for more efficient treatment.
7. **Be prepared for Emergency Abatement**
 - Emergency contracts in place
 - Product available for emergency treatment
 - Maintain an emergency fund, See Budget.

8. **Fiscally conservative operation.** .

- Operated within budget ending year with a surplus to carryover for emergency funding.
- Made Annual Repayment to the County for work conducted by interim abatement district



Kirk Tubbs (left) & Aaron Ursenbach (right) capturing small Bluegill at Dierkes Lake for Mosquito Control.