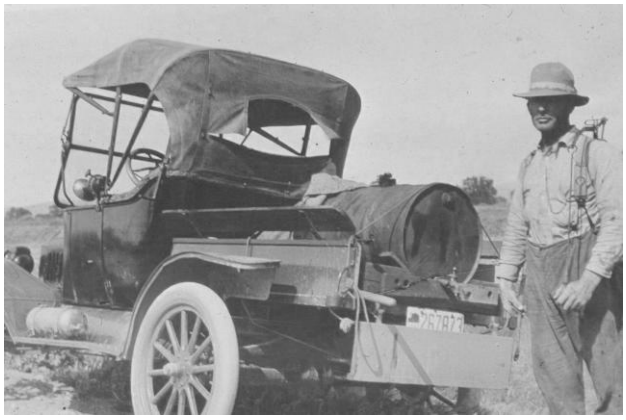
SHASTA MOSQUITO AND VECTOR CONTROL DISTRICT

Web Page: www.snowcrest.net/mosquito/

2000 ANNUAL REPORT

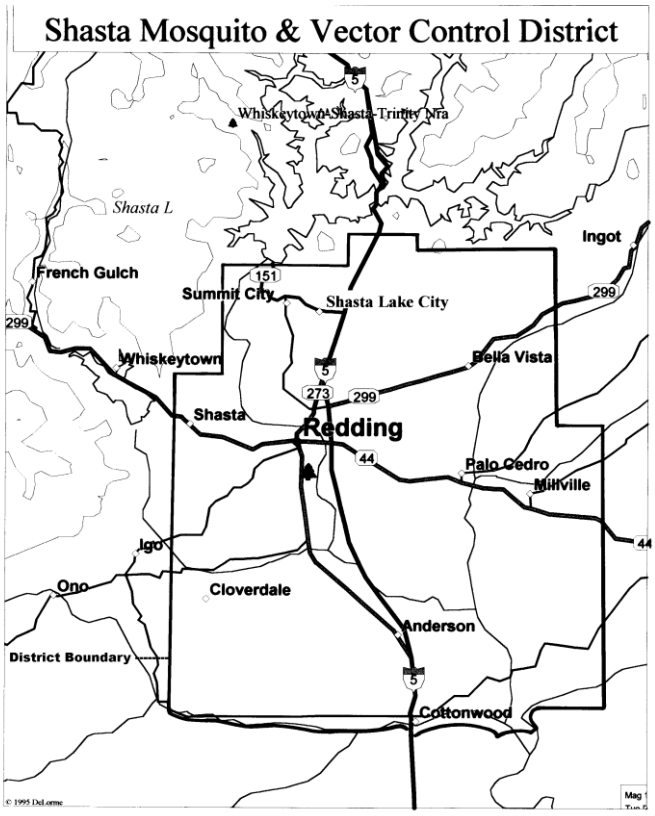
William C. Hazeleur, District Manager

HISTORY



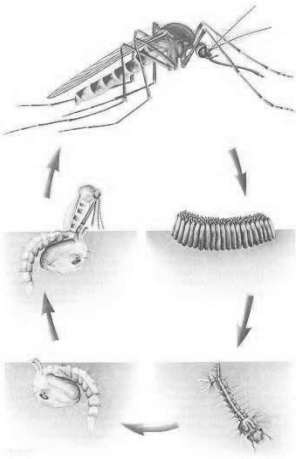
The first local mosquito control district was formed in 1919 in the Redding area and formation of other districts in the Anderson and Cottonwood areas followed in the 1920's. These districts were formed to combat the terrible mosquito problems that plagued the area at that time. Malaria (a disease transmitted by mosquitoes) was widespread when the districts were formed. The Anderson, Cottonwood, and Redding areas had some of the highest malaria rates in the continental United States. Malaria and other mosquito-borne diseases are fairly uncommon in the District today, however the mosquitoes that transmit these diseases are still abundant in this area and the potential for serious human health diseases transmitted by mosquitoes still exists. In the mid 1950's the districts consolidated into one district and annexations to the district occurred over the years as more and more people moved into areas that previously were sparsely populated.

DISTRICT ORGANIZATION



The Shasta Mosquito and Vector Control District is a special district type of government agency operating within the boundaries of Shasta County. The District encompasses approximately three hundred eighty-seven (387) square miles and includes the incorporated cities of Anderson, Redding and Shasta Lake City. The District boundaries extend from Mountain Gate on the north to Cottonwood Creek on the south and extend from Olinda on the west to Millville on the east. The District is governed by a five member Board of Trustees. The Board establishes District policy and is responsible for expenditures of the District. The District is financed by property tax money received from a percentage share of property taxes and from a mosquito and vector surveillance and control benefit assessment charge. The amount of the benefit assessment charges vary and are determined by land use and land size, and are collected on Shasta County property tax bills. Only the people within the

District pay the benefit assessment charges. The District does not receive any share of sales tax, cigarette tax, motel occupancy tax, gasoline tax, state grants, or other allocations. In the 1999-2000 fiscal year, the District=s income was approximately $1.2 million, approximately one half derived from property taxes and one half from the benefit assessment charge.



Mosquito Life Cycle

In the 2000 year, the District employed eleven full time people plus four seasonal or temporary people. The District performs mosquito control and vector control information services to protect the public=s health from diseases and nuisance caused by mosquitoes and other vectors. Vectors are defined as small animals or arthropods which spread disease causing organisms or cause discomfort to the human population and domestic animals. Examples of vectors are mosquitoes, flies, fleas, ticks, spiders and certain stinging insects, such as yellowjackets. Examples of some diseases transmitted by vectors other than mosquitoes are Lyme Disease transmitted by ticks and plague transmitted by fleas.

DISTRICT ACTIVITY

Adult mosquitoes are flying insects that, after taking a blood meal, lay their eggs in water. The mosquito eggs need water to develop into larvae and then into adult mosquitoes. The life cycle of mosquito development repeats itself and, unabated, staggering numbers of mosquitoes are produced and transmission of diseases occurs. Examples of water sources where mosquitoes lay their eggs and develop are: ponds, lakes, river isolations, sewer ponds, buckets, cans, and holes in trees. Anything that holds water can and often does produce or breed adult mosquitoes. Mosquitoes which transmit the human diseases Malaria, Western Equine Encephalitis and St. Louis Encephalitis are abundant mosquitoes within the District. Dog Heartworm is a disease transmitted by mosquitoes that are also abundant within the District. In addition to these diseases, there are new, emerging diseases transmitted by mosquitoes, which can become a serious human health problem within the District. The West Nile Encephalitis Virus which occurred in New York in 1999, and killed several people, is a disease transmitted by mosquitoes which is new to the United States and is an example of the ever present human health risks from new, emerging human diseases transmitted by mosquitoes. The mosquito that transmits the West Nile Encephalitis Virus disease is abundant in the District.

The District=s mosquito control program is a comprehensive control program which uses state of the art equipment, techniques and products to control mosquitoes and protect the public=s health and well-being. District employees are certified in mosquito control and receive on-going training and continuing education to keep certificates current. Aerial photographs of the District are utilized and all known mosquito-breeding sources within the District are mapped. District personnel survey these sources for mosquito breeding on a regular basis and perform control activities when necessary. Control activities to kill mosquito larvae in water sources include the use of mosquito-eating fish, the drainage, reduction, or elimination of mosquito breeding sources and/or chemical control.

The District=s chemical control program focuses on killing mosquito larvae in the water before

they become adult mosquitoes. The District=s larviciding chemical control program includes the use of relatively new types of chemicals that are effective in killing mosquito larvae but are safe for non-target organisms. These chemicals are by-products of bacteria and chemicals that are growth regulators. These chemicals are often very specific to mosquito larvae. To be effective they often must be applied to specific species of mosquitoes and at specific developmental stages of the mosquito=s life cycle. District technicians must be well-trained and knowledgeable in order for these types of chemicals to be effective in killing mosquito larvae. These products are considerably more expensive than more conventional pesticides.

The District performs adult mosquito control when large numbers of adult mosquitoes create severe pest problems or when an increased risk to human health because of diseases carried by mosquitoes is determined to be present. Adulticide chemicals are applied in ultra low volume amounts and the pesticides used in these applications are not harmful to non-target organisms at the rates used for adult mosquito control. The adulticide applications are performed in the early morning or late evening.

Chemicals are also used for weedicide work around the margins of certain water sources, where weeds may provide protection for mosquito larvae and prevent mosquito larvicides from reaching sources. Weedicides are also used to maintain access to mosquito breeding sources.

All pesticide work is done through cooperative agreements with the California Department of Health Services in cooperation with the California Department of Pesticide Regulation. All pesticide use is reported to these agencies on a monthly basis.

The District monitors its mosquito control program by placing traps throughout the District. Contents of these traps are collected weekly and mosquitoes are identified and tabulated as to species and numbers of mosquitoes. (See New Jersey light trap program in this report). The results of this light trap program help determine the effectiveness of the District=s mosquito control program

The District performs physical control to reduce or eliminate mosquito breeding areas by use of a District owned backhoe to maintain and clean certain drainages to reduce mosquito breeding areas, as well as doing trail access work to be able to access mosquito breeding sources. The District utilizes the California Department of Forestry Conservation Crews from Sugar Pine Conservation Camp to perform hand brush cutting activities to maintain access trails to mosquito breeding sources.

The District gives input to the planning departments of Shasta County and the cities of Anderson, Redding and Shasta Lake on proposed developments, etc. to reduce or prevent the creation of new mosquito breeding sources, assure adequate drainage, and assure access to mosquito breeding sources.

Public information and education is an important part of the control process and information on District activities is provided by talking to schools and organizations and distributing literature. The District plans and staffs an exhibit at the Shasta District Fair annually. The District provides information to various media to inform residents about District activities and to promote help in minimizing or eliminating mosquito breeding sources, particularly sources around the home,

such as standing water in buckets, tires, birdbaths, etc.

The District responds to calls for service by having a technician visit, survey and discuss the mosquito problem with the caller. When possible, additional mosquito control is performed to respond to mosquito problems.

In addition to the District=s mosquito control program, the District has a vector control program which involves answering calls and providing information regarding vectors. Information on diseases caused by non-mosquito vectors such as Lyme Disease by ticks and plague by fleas, is also disseminated. The District provides literature, advises people on what they can do themselves and/or recommends help from a non-specific private pest control agency.

The District also conducts an encephalitis surveillance program to monitor the human health risk from mosquito-transmitted diseases. (See Encephalitis Surveillance Program in this report) This program uses sentinel chicken flocks placed throughout the District. District personnel take Blood samples from these chickens throughout the mosquito season. The California Department of Health Services Viral and Rickettsial Disease Lab tests these blood samples for the presence of encephalitis antibodies. Live adult mosquitoes are also collected by the use of special traps. These mosquitoes are collected, sorted, grouped by species, sent to the University of California at Davis and tested for the presence of encephalitis virus. The results of the chicken blood tests and live adult mosquito tests are used by the District to determine the potential for Western Equine Encephalitis and St. Louis Encephalitis to be transmitted to humans. Should the program indicate an increase potential for mosquito transmitted disease, the District=s adult mosquito control program could be increased to protect the public=s health.

Sentinel Chicken Flock

RESULTS OF DISTRICT ACTIVITY

The Shasta Mosquito & Vector Control District provides a high level of mosquito control which protects the public=s health and comfort from diseases and nuisance caused by mosquitoes through the use of state of the art products and techniques which are environmentally compatible. Potential human health problems from diseases caused by mosquitoes such as Malaria, Western Encephalitis, St. Louis Encephalitis and Dog Heartworm in dogs are always present and/or a potential. New emerging diseases, such as West Nile Encephalitis Virus and several other diseases transmitted by mosquitoes cause present on-going challenges for mosquito control. The public=s benefit of the District=s activities may not be readily recognized. The adult mosquito control programs are conducted early in the morning or late in the evening and the District=s level of mosquito control is often very good so the average citizen does not

regularly think about the fact that the lack of mosquito problems and diseases caused by mosquitoes is the result of efficient, effective on-going mosquito control. An on-going challenge for the District is to provide information to the public on the District=s activities and resulting public benefit.

PROFESSIONAL AFFILIATIONS

The Vector Control Joint Powers Agency provides for various insurance needs to the District. The District also belongs to the Mosquito and Vector Control Association of California for benefits such as the continuing education of mosquito control technicians, legislative representation, and the gaining and sharing of information on the effective operation and management of mosquito and vector control districts. The districts within the association recently transferred management of the association to a firm that will be more pro-active in legislative representation. This change will ensure that the benefits of mosquito control in protecting the public=s health are promoted to the legislature and the public. This will assure that support of mosquito and vector control will be a component of regulations affecting public health pest control chemicals and other issues that affect the health of the public

YELLOWJACKET PROGRAM

This was the third year of an experimental program to test whether early season trapping of queens or late baiting of workers can be effective in reducing yellowjacket nuisance in public parks. A total of thirty traps were placed in three parks and at one residence within the Redding city limits. The traps used are commonly available yellowjacket traps baited with turkey ham and a chemical attractant. Trapping of yellowjackets took place from April through October. The trapped yellowjackets were counted throughout the season to assess the effectiveness of the control techniques that were tested. At selected areas toxic bait was used from July through October. Foraging workers theoretically deliver the bait to active nests where it is fed to the queen and larvae, hopefully causing the demise of the whole colony.

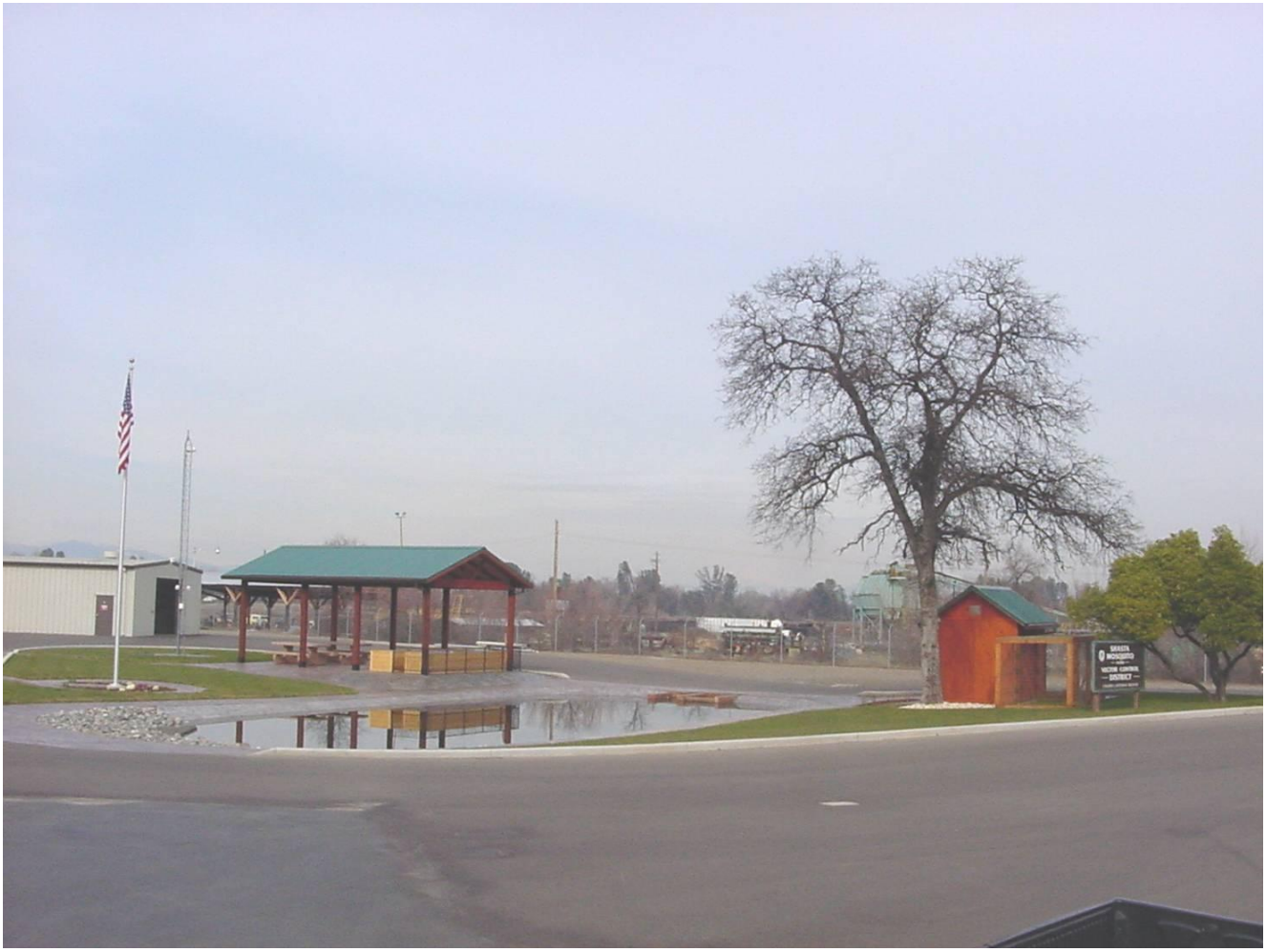
Yellowjacket Trap

Yellowjacket Bait Station

Mild spring weather led to early appearance of queens and establishment of nests. Also the number of queens caught this year was up dramatically. There was a three-fold and four-fold increase in queen numbers compared to the years 1997 and 1998 respectively. Based upon this information we predicted an extremely bad year for yellowjacket pest problems in 2000. However, this prediction did not pan out. Yellowjacket numbers in 2000 were comparable to numbers in 1999. Complaints related to yellowjackets were very rare and only a couple warranted a follow-up visit by the District biologist.

Areas that were treated with pesticide laced baits showed a decrease in the numbers of yellowjackets at the same time that populations were increasing in treated areas. This is the first year that such a trend has been clearly observed. This is probably due to a more aggressive program of rebaiting treated areas to assure that the bait did not become unpalatable to the yellowjackets. As in years past, the feedback from park visitors and employees regarding our yellowjacket work has been very favorable.

PUBLIC INFORMATION ACTIVITIES



Mosquito Control Educational Demonstration Area

Effective public health protection through mosquito and vector control depends largely on the efforts of informed citizens to prevent and control these pests around their homes and properties. Everyone needs to know how to avoid exposure to vector-borne disease in the environment wherever pests of public health importance may be found. Since the beginning of mosquito control efforts in California in the early 1900=s major emphasis has been put on educating the public about protecting themselves against the important health threats posed by mosquitoes and other vectors.

Shasta Mosquito and Vector Control District=s comprehensive pest management strategy includes an active program of public health education. The District provides over twenty-five

brochures on a wide variety of topics related to mosquitoes as well as other vectors and the diseases they spread. In the course of their work, all District personnel answer questions from the public based upon years of training and experience in all phases of disease and vector issues. Biologists on-staff provide answers to questions by phone, email or in person on any topic related to vectors, diseases, insects in general and pest management that may require additional special expertise. The District biologist also give talks to classrooms, civic groups or any club, organization or agency with an interest in the type of work we do, as well as interviews with the press and broadcast media. Topics covered range from mosquito biology and personal protection against vectors to careers in biology and vector control.

The District biologist gave classroom talks at Bella Vista School, Saint Joseph School, Rother School, Buckeye Elementary School, Pioneer High School and Shasta College. Civic groups receiving talks by the District biologist included the Lion=s Club, Rotary Club and We Ski II. The District=s ability to provide high quality presentations to the public was enhanced in 2000 by the acquisition of a laptop P.C. and LCD projector for generating PowerPoint multimedia presentations. Additionally interviews were given with KNVN Channel 24 TV and KQMS Radio as well as the Valley Post and Record Searchlight newspapers.
A booth that deals with the public health importance of vector-borne disease and the nature of the work done by the District is provided every year at the Shasta District Fair in June. This gets our message out to thousands of people who live within the District and allows one-on-one contact between District personnel and a large segment of the public.

The fair booth this year was twenty-feet (two booth spaces) wide. Topics in the display included District activities such as biological, physical and chemical control of mosquitoes as well as information on other vectors such as fleas, ticks, yellowjackets and Africanized honeybees. Live specimens included mosquito eggs, larvae, pupae and adults as well as mosquitofish and large exotic insects to grab the attention of passers-by. Other display items included views of mosquitoes through a microscope, preserved rodents important in disease transmission and a large bald-faced hornet=s nest. All of the Districts brochures, bookmarks, stickers, hand-stamps and activity books were available free-of-charge and District personnel were at the booth to answer questions from the public directly from 11:00 A.M. until the Fair closed at 10:00 or 11:00 P.M.

Substantial work was done to the Shasta Mosquito and Vector Control District web site www.snowcrest.net/mosquito/ in 2000. Adjustments were made to the graphics so that pages would load more quickly. Many links were added and updated to information about mosquitoes and vectors elsewhere. A menu system was added to the pages on the site to make it easier to navigate to all of our pages. Also a great deal of motion and new graphics were added to make the site more enjoyable and interesting to look at. We began to put copies of our brochures in a downloadable format on our site and added a questionnaire for visitors to the site as well as an on-line service request form.
An educational demonstration area is being made on the front of the property where visitors such as classrooms on field trips can be shown such things as mosquitofish rearing, weather observation, sentinel chickens and a light trap together in a relatively small and aesthetically pleasing location. We are planning to have District personnel give tours of our facility and talk about the techniques and importance of mosquito and vector control.

SERVICE REQUESTS

Total Service Requests:	736
Mosquito Complaints	555
Requests for Fish	102
Other	3
Outside District	62
Vector	14

Service Request Time	
Adulticiding	53.37
Biological Time	23.10
Empty Containers	3.40
Larviciding	11.00
Mosquito Information	77.80
Mosquito Surveillance	81.40
Travel to Service Requests	169.25
Vector Surveillance/Treat	6.00

Time Answering Mosquito Calls 425.32 Hours

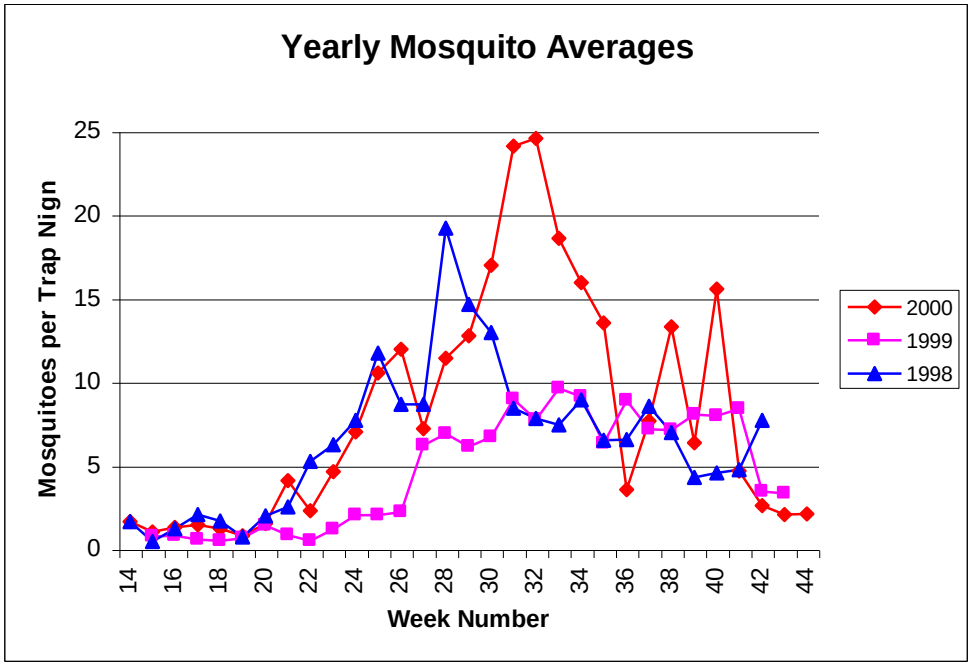
The 2000 season had 736 service requests. Non-mosquito vectors equaled only 2% of all service requests. In comparison, the 1999 season had 474 service requests and non-mosquito vectors equaled 12.87% of all service requests. The 2000 breakdown of the fourteen vector (non-mosquito) related calls is as follows:

Yellowjackets - 10
Other hymenoptera - 2
Conenose bugs - 2

NEW JERSEY LIGHT TRAP PROGRAM

New Jersey light traps are used by the District to monitor adult mosquito population trends. Traps are place strategically throughout the entire district to attract and capture mosquitoes over long periods of time. Mosquitoes from the traps are sorted and counted weekly to provide statistics used by the District to set mosquito control priorities. A total of eighteen traps comprised the adult mosquito surveillance program, which was operated from March 27 through November1, 2000. Per night tallies of mosquito numbers from all operational traps were reported to the California Department of Health Services as part of an integrated statewide surveillance program.

Mosquitoes achieved peak populations of 24.6 mosquitoes per trap night on August 10. The common species observed in the traps throughout the season is *Culex pipiens*, a species that has been implicated in the spread of West Nile virus on the east coast in 1999 and 2000. Mosquito numbers throughout the District were higher in the 2000 season as a whole compared to the previous two years. The average number of mosquitoes per trap night was up 80% and 25% compared to the years 1999 and 1998 respectively. There were difficulties in controlling mosquitoes at a lumber mill that influences mosquito numbers at two of the traps. Logistical difficulties at the mill caused by construction and log deck management may have contributed to higher than usual mosquito numbers. Also research done at the District has raised concern that some mosquitoes may be showing signs of resistance to some of our mosquito control products (see section on research).



ENCEPHALITIS SURVEILLANCE PROGRAM

Mosquito-borne encephalitis is a viral disease transmitted to humans and horses by mosquitoes. The virus is found in birds but causes no symptoms in the birds. No evidence of encephalitis was found in the Shasta Mosquito and Vector Control District in either sentinel chickens or pools of mosquitoes. In fact, all encephalitis activity within California was restricted to a small area in the far southeastern corner of the state. No mosquito-borne encephalitis cases occurred within California in humans or horses in 2000. The California Department of Health Services has modified its surveillance and testing protocols to include procedures for the detection of West Nile Virus antibodies.

Taking Chicken Blood Sample

Sentinel Chicken Flocks ʙ The Shasta Mosquito and Vector Control District maintained chicken flocks to check for the presence of mosquito-borne diseases in the bird population that are transmissible to humans and horses. There were five sites with eleven chickens per flock: SMVCD grounds (zone 2), Simpson River Ranch (zone 6), Olinda (zone 8), Gover Ranch (zone 14), and Millville Vet Clinic (zone 14). Chickens were bled every two weeks from May 3 through September 20, for a total of approximately 600 blood samples, which were submitted to the California Department of Health

Services (DHS) for analysis. A new chicken pen was constructed to replace the one than burned in Olinda in 1999. Another new chicken pen was built as part of the educational center that is being constructed in front of the District office.

Mosquito Pools In eleven areas of high mosquito occurrence samples of live mosquitoes were collected, sorted, grouped by species, placed into vials, sent to the California Viral and Rickettsial Disease Lab (VRDL) and tested for the presence of encephalitis viruses. Due to recent recommendations from the DHS and U.C. researchers Shasta Mosquito and Vector Control District ran a greatly expanded mosquito-testing program in 2000. The number of pools was increased from the normal ten to twenty pools historically done per season to sixty-four pools of approximately fifty mosquitoes each. All mosquitoes tested in 2000 were *Culex tarsalis* mosquitoes, the most common carrier of encephalitis in California.

RESEARCH

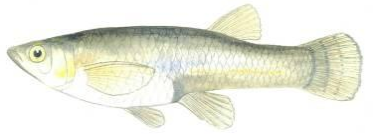
University of California researchers were contacted by District personnel concerned by field observations that indicated that some mosquito larvae seemed to be somewhat resistant to products used by the District for larval mosquito control. In July of 2000 a team of researchers led by Anton Cornel, PhD of the University of California, Davis Mosquito Control Research Laboratory came to the District to investigate these observations. District personnel helped to trap approximately 1000 live adult *Culex pipiens* mosquitoes, which were transported to the University=s lab in Parlier, California. Offspring of these mosquitoes were reared under controlled laboratory condition laboratory conditions and tested for resistance to common mosquito control products. The District sent more mosquitoes to the University later in the year for further testing.

Other researchers have been looking at the genetics of our *Culex pipiens* mosquitoes and certain diseases they carry which only affect mosquitoes of that species. The *Culex pipiens* mosquitoes in the District are apparently a very pure strain of great interest to researchers. The number of studies related to this species has increased dramatically since 1999 when they were implicated in the spread of the sometimes-fatal West Nile Virus (WNV) on the East Coast of the U.S.

Mosquito Control in New York City to control this newly emerging disease is being done under a contract with Clarke Mosquito Control. In Early August Clarke sent researchers to Shasta Mosquito and Vector Control District to test the efficacy of an adult mosquito control product being used in New York for the fight against WNV. Information on the efficacy of the product under our local conditions with our strain of *Culex pipiens* was sought. Several hundred live *Culex pipiens* mosquitoes were caught and exposed to the product in cages under field conditions using the District=s application equipment. Results of the trial were very favorable.

All of the above research has been reported on to professional pest control and health protection associations and some of it is slated for publication in peer-reviewed journals.

BIOLOGICAL CONTROL


Female

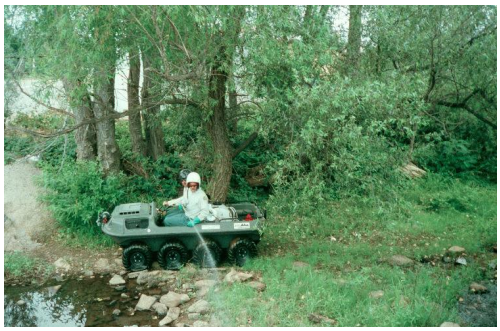

Male

The Shasta Mosquito and Vector Control District uses the mosquito-eating fish (*Gambusia affinis*) to control mosquito larvae in permanent water sources within the district. Mosquito-eating fish are maintained in holding ponds, and transferred to holding tanks at the district office. In addition to stocking natural areas throughout the District by mosquito control technicians, mosquito-eating fish are distributed free-of-charge to residents within the district for use on their properties. There are 1,200 to 1,600 fish per pound. 2000 was a year when mosquito-eating fish were again in relatively short supply much of the year. The District has built a new fish-rearing pond, which should help with the fish supply problem in the spring.

Fish Retrieved:		40.09 Hours Retrieving
Fish Transferred:		4.75 Hours Transferring
Fish Stocked:	150.00 Pounds	57.37 Hours Stocking
Other Biological Control Time:		73.50 Hours
Total Biological Control		175.71 Hours

CHEMICAL CONTROL

The Shasta Mosquito and Vector Control District uses a variety of chemical control techniques in circumstances where other methods are ineffective or impractical. Larvicides are applied to standing water to control mosquito larvae in areas that cannot be controlled by mosquito-eating fish due to their inaccessibility, transient nature, or other factors. Very sophisticated chemicals are used for larvicide work that do not adversely affect the environment due to their highly specific nature and the very low doses which can be used for mosquito control work.


Larviciding with Argo Vehicle


Ultra Low Volume (ULV) Application

The presence of large numbers of adult mosquitoes, or the detection of mosquito-borne diseases within the district triggers application of adulticides in areas of concern. Adulticides are applied at ultra-low volumes (ULV) as aerosols over large areas. Pesticides used in these applications are not harmful to non-target organisms at the rates used for adult mosquito control. The applications are generally made before dawn under very stringent weather guidelines to provide maximum effectiveness while minimizing human exposure.

Weedicides are used by the District to eliminate cover around the edges of water sources that may provide protection to developing mosquito larvae and/or prevent mosquito sprays from getting to the water surface. Weedicides are also used to help keep trails open and maintain access to mosquito sources.

All pesticide work is done through cooperative agreements with the California Department of Health and the California Department of Pesticide Regulation. All pesticide use is reported to these agencies on a monthly basis.

Adulticiding: 173.50 Hours

Adulticiding Materials Used:

Anvil	20.16 Gal.	1,720 Acres Treated
Biomist	219.03 Gal.	18,690 Acres Treated
Fyfanon	.20 Gal.	13 Acres Treated
MGK Pyrocide	52.59 Gal.	8,414 Acres Treated
Total Acres		28,837 Acres Treated

Larviciding:

Agricultural Sources	298.08 Hours	24.55%
Industrial Sources	159.91 "	13.18%
Natural Sources	741.26 "	61.07%
Residential Sources	14.68 "	1.20%
Total Larviciding	1,213.93 Hours	100.00%

Bio-rational Larviciding Materials Used:

Altosid Briquets	59 each	
Altosid Liquid	9.14 Gallons	292.48 Acres Treated
Altosid Pellets	2,023.35 Pounds	404.67 Acres Treated
Vectobac G	6,372.25 Pounds	637.23 Acres Treated
Vectobac-12AS	47.65 Gallons	203.31 Acres Treated
Vectolex CG	4,693.75 Pounds	469.38 Acres Treated
Total Acres		2,007.07 Acres Treated

Oil based Larviciding Materials Used:

Agnique MMF	.63 Gallons	.50 Acres Treated
GB-1111	663.63 Gallons	132.73 Acres Treated
Total Acres		133.23 Acres Treated

Weediciding: 277.16 Hours

Weediciding Materials Used:

Garlon-4	15.51 Gallons	152.71 Acres Treated
Pendulum	240.00 Pounds	48.00 Acres Treated
Predict	40.00 Pounds	80.00 Acres Treated
Reward Herbicide	4.00 Gallons	4.00 Acres Treated
Rodeo	2.65 Gallons	1.30 Acres Treated
Roundup Pro	100.77 Gallons	67.18 Acres Treated
Scythe	3.78 Gallons	.48 Acres Treated
Total Acres		353.67 Acres Treated

PHYSICAL CONTROL:

The Shasta Mosquito and Vector Control District has a program to reduce or eliminate mosquito breeding areas by managing the water sources where mosquitoes breed. Such physical control includes clearing vegetation around pond or stream banks, improving drainage, and providing access for other types of control work. The District works in cooperation with the local California Department of Fish and Game.

By Equipment:

Total Backhoe Time	378.91 Hrs,	21,015 Linear Ft. - Clean Drains
Total Cat Time	147.69 Hrs,	320,500 Square Feet
	56.67 Hrs Helper Time	

By Hand

Beaver Dam Removal	14.18 Hours	
Brushing	546.82 Hours -	62,110 sq. feet
Brushing by Sugar Pine (SP)	329.42 SMVCD Hours,	2,566 SP Hrs, 121.575 square feet
Burning	183.18 Hours	140.00 gallons Diesel Oil
Empty Containers	5.76 Hours	

MILEAGE/GASOLINE/OIL

Total Miles Driven	102,173.00 Miles
Unleaded Gasoline Used:	8,600.90 Gallons Gasoline
	473.80 Gallons Diesel Oil

SOURCE PREVENTION INPUT

With the cooperation of the planning departments of Shasta County and the cities of Anderson, Redding and Shasta Lake, the District reviews proposed development, such as subdivisions and lot splits, in an attempt to reduce the creation of new mosquito breeding sources, to ensure adequate drainage, and District access to mosquito breeding sources.

Total Letters Written - 13
Total Projects Signed Off - 7
Projects reviewed with no Input - 3