



Prepared and distributed by the Vector-Borne Disease Section
Division of Communicable Disease Control
California Department of Public Health
916.552.9730 • www.cdph.ca.gov/programs/vbds



Oropsylla montana, a common flea of ground squirrels in California and the primary vector for plague

California Plague Report, Winter 2010

The California Department of Public Health (CDPH) collaborates with local, state, and federal agencies to conduct a statewide plague surveillance program. The CDPH, Vector-Borne Disease Section (VBDS) collects, collates, and analyzes information on suspect and confirmed plague activity among humans, domestic pets, and wild animals throughout California. This report summarizes 2010 plague activity in California through December.

Human surveillance

No cases of plague in humans were reported in 2010.

Domestic pets

No cases of plague in domestic pets were reported in 2010.

Wild animals

California Plague Report, Summer 2010, reported brief details of plague activity earlier this year in southern California, viz. San Diego, Los Angeles and Inyo counties. Continued surveillance in 2010 by VBDS and its collaborators noted plague activity in several northern California counties.

On August 11, the CDPH Microbial Disease Laboratory reported that culture/DFA of a California ground squirrel (*Otospermophilus beecheyi*) carcass collected in late July from Plumas-Eureka State Park,

Plumas County, detected plague bacteria (*Yersinia pestis*). VBDS initiated additional surveillance to evaluate plague activity at the park and the potential risk of exposure to the visiting public. A total of sixty-one rodents were sampled for *Y. pestis* antibody that included: 41 shadow chipmunks, 11 deermice, 5 Douglas' squirrels, 3 California ground squirrels and one bushy-tailed woodrat. One shadow chipmunk (*Tamias senex*) tested positive for antibodies (1:256) to *Y. pestis*. Evidence of plague activity coupled with a flea index exceeding 9 fleas per ground squirrel indicated increased risk of transmission and prompted state park officials to close the campgrounds until flea control could be implemented. Subsequent to the closures, 11 flea-pools were tested. One pool of fleas (*Oropsylla montana*) from California ground squirrels tested positive for *Y. pestis*.

On August 24, flea suppression measures were initiated using insecticidal dust applied into rodent burrows and via baited feeding stations. Treatment efficacy was assessed by estimating rodent flea-

loads one week after deployment. Flea loads averaged less than one flea (0.13) per ground squirrel, demonstrating acceptable suppression and the campgrounds were reopened September 1. At the conclusion of flea suppression activities, serum specimens were collected from 16 shadow chipmunks, 6 California ground squirrels, 6 Douglas'

squirrels, and 2 bushy-tailed woodrats not previously captured. One shadow chipmunk tested positive for *Y. pestis* antibodies (1:1024).

Through December 2010, VBDS plague surveillance results include the testing of 555 wild rodents and 290 carnivores from 33 California counties (see Table 1).

County Location	No. rodents	No. carnivores	Positive specimens		
			Species	Result	Month
Alpine	2				
Butte		1			
El Dorado	2				
Fresno		9			
Humboldt		7			
Imperial		1			
Inyo	64				
Millpond County Park, Campground			CA G Sq	1:128	July
Kern		55			
Lake		1			
Los Angeles		2			
Mariposa		26			
Mendocino		17			
Modoc		28			
Modoc National Forest, Patterson Campground			Coyote	1:512	July
Mono	43				
Monterey		3			
Nevada	1				
Placer		10			
Plumas	93	28			
Plumas Eureka State Park			Chipmunk, S	1:256	August
Plumas Eureka State Park			Chipmunk, S	1:1024	August
Plumas Eureka State Park			CA G Sq	POS	July
Plumas Eureka State Park			CA G Sq (fleapool)	POS	August
Riverside	78	1			
San Benito		17			
San Bernardino	18				
San Diego	76	4			
San Luis Obispo		5			
San Mateo	67				
Santa Barbara		5			
Santa Clara	1				
Shasta	13	18			
McArthur, 10 miles South			Coyote	1:512	September
McArthur, 10 miles South			Bobcat	1:32	September
Sierra		5			
Siskiyou	34	31			
Sonoma		4			
Trinity		10			
Tulare	45				
Ventura	18	2			
Total	555	290			

CA G Sq: California ground squirrel

Chipmunk, S: Shadow chipmunk

POS: *Yersinia pestis* bacteria

The rodents tested included: 231 California ground squirrels from 9 counties, 22 golden-mantled ground squirrels from 3 counties, 114 chipmunks from 10 counties, 15 Douglas' squirrels from 3 counties, 24 woodrats from 7 counties, and 147 mice (several genera) from 7 counties. A yellow-bellied marmot and a northern flying squirrel were also tested for *Y. pestis* antibodies. Excluding the aforementioned plague activity documented at Plumas-Eureka state park and serological evidence previously noted in the 2010 summer report, no additional evidence of plague activity in rodents was detected.

The carnivores tested included: 186 coyotes from 24 counties, 54 black bears from 8 counties, 8 bobcats

from 4 counties, 14 mountain lions from 9 counties, 4 red foxes from one county, 6 gray foxes from 4 counties, 13 raccoons from 3 counties, and 5 striped skunks from 3 counties. Further evidence of plague activity was found in northern California from a single coyote from Modoc County (*Y. pestis* antibodies: 1:512) and a coyote and bobcat from Shasta county (*Y. pestis* antibodies: 1:512 and 1:32, respectively) (see Table 1). All other carnivores were antibody negative. Additionally, 28 feral pigs from 6 counties also tested negative.

These results do not include data from plague surveillance programs of local agencies that conduct their own testing.

