



State of California

Department of Public Health

Memorandum

To : Ernest Lusk

Date : April 12, 1967

Subject : Summary of 1966 Plague
Survey Results in
Lassen National Park

From : Keith Murray

Plague surveys were conducted in Lassen Park during the period July 26 to September 6, following the discovery of a plague-infected chipmunk.

Chipmunk species were not always reliably identified by trappers and they have been lumped together on the tables. Eutamias townsendi and speciosus appeared to predominate in the Manzanita Lake area; E. speciosus and amoenus at Summit Lake. There were E. amoenus and speciosus at Butte Lake.

Most trapping was in lines of 20 Sherman traps at 25-foot intervals, or multiples thereof. Thus, the catch rate (per cent catch per trap day) gives a rough measure of comparative abundance. Overall, this catch rate indicates that populations of golden-mantled ground squirrels and chipmunks were very dense, a fact repeatedly confirmed by observation. It is noteworthy that golden-mantles were heavily concentrated on the Manzanita Lake dump but apparently low at Manzanita Lake campground and Summit Lake.

Typically, in the early stages of a plague epizootic it is the chipmunks that disappear first. However, chipmunks remained consistently abundant through the summer in all areas trapped. Thus, there is no basis to believe that decimation of populations occurred, despite the evidence that plague infection was present.

Peromyscus maniculatus was taken in relatively low numbers, comparable to its fairly low regional abundance. Chickarees were reported frequently seen but are rarely trapped. Belding ground squirrels were caught at Summit Lake and Butte Lake. Other species occasionally trapped were Citellus beecheyi, Microtus montanus (principally in Summit Lake meadow), Clethrionomys occidentalis, Neotoma cinerea and Sorex vagrans. Apparently Microtus populations were not notably high.

Compared to our experience elsewhere, the density of fleas on chipmunks was normal but the density on C. lateralis and P. maniculatus was high.

The anomalous fact that plague infection was present without causing obvious dieoffs in the chipmunks and ground squirrels could be explained in two ways, (1) plague may have been active primarily in areas or in rodent species that were not covered by field activity (the most obvious possibility is woodrat involvement in lava areas); (2) plague may be enzootic in the area, resulting in a high degree of genetic resistance through repeated exposure to infection. This seems unlikely in light of the known plague history of north-eastern California.

California Dept of
Public Health
(Summary)

1966 TRAPLINES, FOREST AND BRUSH HABITATS, LASSEN NATIONAL PARK

Date	Location	Trap days	Catch Rate	
			<u>Eutamias</u> sp.	<u>Citellus</u> <u>lateralis</u>
<u>Manzanita Lake Area</u>				
July 26-27	Reflection Lake - picnic area	40	.25	.35
Aug. 8-12	Manzanita Lake Campground - picnic area	220	.27	.07
Aug. 13-15	Manzanita Lake dump	(random) 75	.25	.77
Aug. 13-14	Summertown	($\frac{1}{2}$ random) 40	.12	.12
Aug. 15-16	Sunflower Flat	40		.05
<u>Summit Lake Area</u>				
July 26-27	Summit Lake Campground	73	.11	.03
Aug. 5-9	Summit Lake Campground	180	.12	.05
Aug. 5-9	near campground	165	.10	.02
Sept. 3-4	campground	80	.29	.04
<u>Other locations</u>				
Aug. 2-3	Butte Lake	25	.24	
Aug. 2-3	Bidwell Springs	40	.12	.20
Aug. 14-15	Lost Creek Campground	40	.33	.33
Aug. 15-16	Upper Manzanita Chutes	20	.45	.10
Sept. 4-6	Kings Creek Campground	40	.28	.10

1966 FLEA ABUNDANCE, LASSEN NATIONAL PARK

	<u>Eutamias sp.</u>		<u>Citellus lateralis</u>		<u>Peromyscus maniculatus</u>	
	<u>No.</u>	<u>Av. fleas/ host</u>	<u>No.</u>	<u>Av. fleas/ host</u>	<u>No.</u>	<u>Av. fleas/ host</u>
<u>Manzanita Lake Area</u>						
July 26-27	14	1.9	23	4.1		
Aug. 10-16	87	2.0	79	2.8	41	2.4
<u>Summit Lake Area</u>						
Aug. 5-9	34	1.9			17	4.8
Sept. 3-4	22	0.8				

SPECIMENS TESTED FOR PLAGUE, LASSEN PARK 1966

<u>Pools of Fleas</u>	<u>Eutamias sp.</u>	<u>Citellus lateralis</u>	<u>Peromyscus maniculatus</u>	<u>Other Species</u>
No. pools	43	23	26	7
No. hosts	163	92	73	10
No. fleas	439	391	244	36
<u>Suspect Animal Tissues</u>	15	3		4
<u>Blood Sera</u>	115	82	54	16

Positive Findings

1 E. speciosus, Summit Lake campground, coll. July 23, fluorescent antibody test and culture.

1 Citellus lateralis, Manzanita Lake dump, coll. August 13, plague antibodies - hemagglutination test.

1 Tamiasciurus douglasi, same data.