

The California Department of Fish & Game (D.F.G.) files indicate Big Sulphur Creek has historically been a problem area as far as fish are concerned. Before 1931, local people felt large predatory non-game fish were eating large numbers of small steelhead. Temperature records indicate on several occasions Big Sulphur Creek has reached 80°F in the area between the Geysers Resort and the Russian River. The highest recorded temperature in the D.F.G. files indicates 83°F on July 14, 1953, 7/10 of a mile upstream from "the falls."

Warden Groves reported that - "game fishes normally occupy the stream section throughout the entire Geysers area during the winter and spring months. However, as stream flows become lower, water temperatures and possibly chemical contaminations result in most of the fish leaving the area for the first five miles immediately below the Geysers. This means from the Geysers area downstream to the junction of Squaw Creek."

Largely through the efforts of Wardens Harley Groves and Ray Bauer, a partial chemical treatment of Big Sulphur Creek was carried out in October 1952 with the following results.

1 mile downstream from Geysers Resort to Buckman Mine.

Fish present: none.

Buckman Mine to Squaw Creek. (2½ miles)

Fish present: "hundreds" of non-game fish.  
steelhead trout = 1 (near mouth of Squaw Creek)

Squaw Creek to Frazier Creek.

Fish present: non-game fish = "hundreds"  
steelhead Trout = 12  
(3 in channel of stream,  
9 in side pools.)

Little Sulphur Creek to Hale Ranch (1½ miles)

Fish present: non-game fish "large numbers."  
steelhead Trout 9 in stream channel  
(300 in side pools).

Hale Ranch to mouth (not treated) 3½ miles.

Fish present: none game = numerous.  
Trout = few.

Squaw Creek: near the mouth had 1 trout per foot of stream.

Frazier Creek: near the mouth had 1 + trout per foot of stream.

Little Sulphur Creek: from the mouth to 3 miles upstream to Devil's  
Den revealed no living fish.

As can be seen, hundreds of fish existed in Big Sulphur Creek upstream from Squaw Creek prior to the chemical treatment, and trout were present in this area

Following the 1952 chemical treatment, Big Sulphur Creek had thousands of fish per 100 feet of stream at Station #2, 75 yds. downstream from the mouth of Squaw Creek. In excess of 95% of these fish were steelhead trout and reports indicate these fish extended more than one mile upstream from the mouth of Squaw Creek.

Following the peak fish population in 1953, a steady decline set in. By 1957, the number of fish at Station 2 had declined to 1/10 of the former population following chemical treatment. However, the population in 1957 was about twice the population prior to the 1952 treatment and steelhead trout continued to out-number non-game fishes.

Angler success also reflects this trend, and although data is not available for this period, by 1963 it was deemed advisable to again partially chemically treat Big Sulphur Creek.

The 1963 chemical treatment did not result in the spectacular increase in fish following the 1952 chemical treatment.

During the 1963 chemical treatment, the sampling stations were changed. (see attached map). The area treated in 1963 was slightly longer than the 1952 treatment and included Big Sulphur Creek from the Geysers Resort downstream to the mouth, a total of 14.6 miles of stream. As in the 1952 chemical treatment the lower 3 miles of Little Sulphur Creek were also treated.

During the 1963 treatment, Station A was a 100 foot section of stream, located between the Geysers Resort and Squaw Creek, had a total of 180 fish with no steelhead-trout present. Station B, located just upstream from Fraizier Creek, had 2,700 fish including 20 steelhead-trout. The total numbers of fish noted following the treatment are as follows:

From the Geysers to Station A (2.6 miles)

Fish present: non-game fish = 10,119  
steelhead trout = 219

From Station A to Station B (4.1 miles)  
non-game fish = 6,100  
steelhead trout = 74.

From Station B to mouth (7.7 miles)  
non-game fish = 2,700  
steelhead trout = 58

In Summary:

At Station 1, listed on the 1952 map, a short distance upstream from the Geysers and Pacific Gas & Electric (P.G.E.) geothermal power plants, the non-game fishes appear to be decreasing in number and the game fish are increasing in number. At present we do not have any explanation for this phenomenon.

At Station 2, downstream from Squaw Creek, in the two most recent surveys taken in 1965 and again in 1968, there were no fish present. An extensive check as far downstream as Little Sulphur Creek resulted in no fish found alive in Big Sulphur Creek. The tributary streams, including Squaw Creek and Frazier Creek, have fish populations exceeding 1 fish per foot of stream where they enter Big Sulphur Creek.

CONCLUSIONS:

1. Prior to 1958, Big Sulphur Creek, 75 yds. downstream from Squaw Creek contained in excess of 200 fish including steelhead trout per 100 feet of stream.
2. Prior to 1958 fish were able to live throughout the year in the reach of Big Sulphur Creek from slightly over one mile upstream from the mouth of Squaw Creek, downstream to where the stream goes underground.
3. At the present (Aug. 1968) fish are rare to absent in Big Sulphur Creek from The Geysers downstream to the confluence with Little Sulphur Creek. Fish are present in Big Sulphur Creek including steelhead trout from Little Sulphur Creek downstream at least as far as the [MSGS] gaging station.