

State of California
The Resources Agency
Department of Fish and Wildlife

2014 Clear Lake Hitch (*Lavinia exilicauda chi*) Visual Surveys on Clear Lake Tributaries



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Introduction

In September of 2012, The Center for Biological Diversity submitted a petition to the United States Fish and Wildlife Service (USFWS) and the California Department of Fish and Wildlife (CDFW) to list the Clear Lake hitch (*Lavinia exilicauda chi*) (CLH) as a threatened and/or endangered species. This is pursuant to the federal Endangered Species Act and the California Endangered Species Act (CESA) (Fish and Game Code, 2050). As of May, 2014, the petition was under review and a decision to list the species would likely be made by the California Fish and Game Commission by the end of August, 2014.

During the 2014 spring season, CDFW conducted visual surveys on seven tributaries in Lake County to monitor spawning CLH.

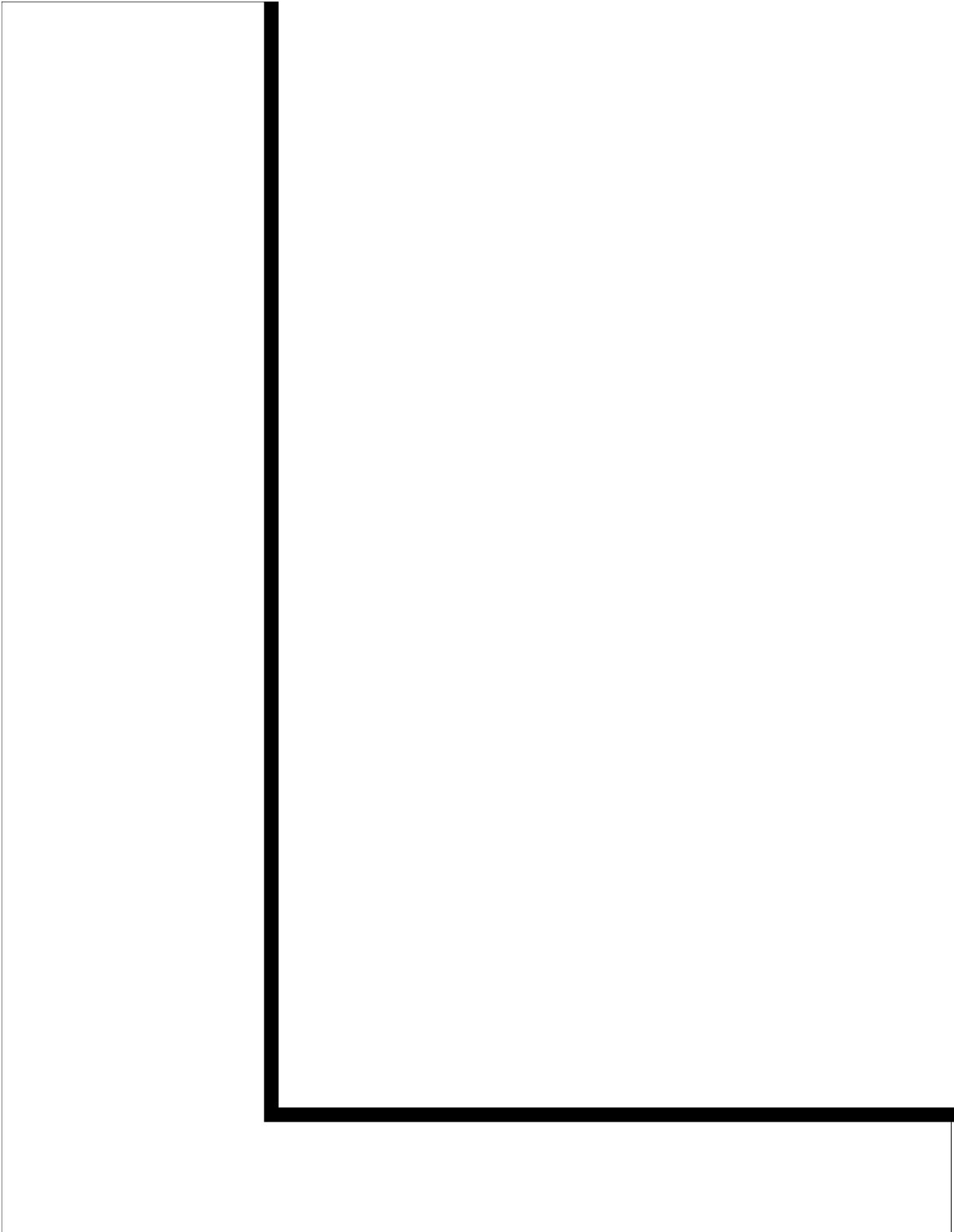
During the course of the 2014 visual survey, CDFW staff gathered data from various points along the seven tributaries to help determine the relative number of CLH migrating upstream to spawn. This information, combined with future surveys at these exact locations will assist the CDFW with future management decisions regarding this candidate specie.

Methods

Visual surveys were conducted on McGaugh Slough, Adobe Creek, Hill Creek, Kelsey Creek, Cole Creek, Manning Creek, and Thompson Creek (Figure 1 and Table 1) at a total of 22 sites. At each site, staff would make an upstream and downstream count of CLH from a bridge (except site 17 which had no bridge) with an overall total. Time to conduct a count at each site depended on the number of CLH seen. This sampling strategy was used to estimate the number of CLH seen in that body of water in that specific spot in order to reduce bias from trying to make counts on CLH from different points on the waterbody. CLH counts were taken twice a week from every site. Staff would record a start and stop time to complete the 22 site survey. The sampling days were random and included both weekdays and weekends. Surveys would begin when the first sighting of CLH were disclosed and end when CLH were no longer seen in the tributaries for a significant amount of time.

Table 1. GPS points of sites used for visual surveys.

Site	GPS Point	
1	39° 00' 53.82 N	122° 51' 42.62 W
2	39° 00' 15.26 N	122° 51' 46.10 W
3	38° 59' 36.44 N	122° 51' 41.64 W
4	38° 58' 57.04 N	122° 51' 44.58 W
5	38° 58' 43.98 N	122° 51' 47.31 W
6	39° 00' 53.69 N	122° 52' 14.55 W
7	39° 00' 15.57 N	122° 52' 23.71 W
8	39° 59' 37.67 N	122° 52' 39.56 W
10	39° 00' 40.42 N	122° 53' 44.99 W
11	38° 59' 51.86 N	122° 53' 38.75 W
12	38° 59' 37.21 N	122° 53' 34.48 W
13	38° 59' 51.50 N	122° 48' 53.75 W
14	38° 58' 31.37 N	122° 49' 40.57 W
15	38° 56' 33.05 N	122° 48' 55.47 W
16	39° 00' 39.15 N	122° 50' 07.38 W
17	38° 59' 49.98 N	122° 50' 38.09 W
18	38° 58' 55.84 N	122° 50' 36.87 W
19	38° 58' 42.59 N	122° 50' 34.07 W
20	38° 57' 15.73 N	122° 50' 19.63 W
21	39° 00' 40.52 N	122° 54' 01.30 W
22	38° 59' 54.97 N	122° 54' 28.49 W
23	38° 59' 54.36 N	122° 54' 45.17 W



Results

The CLH visual survey began on March 11, 2014 and continued through April 28, 2014. During this period CDFW staff conducted a total of 14 surveys with start times ranging from 09:15 – 15:30 and end times ranging from 11:30 – 17:29. A total of 1,119 CLH were seen during the survey period. Out of the seven different water creeks/slough surveyed, CLH were only observed in Kelsey and Adobe Creeks (Kelsey and Adobe). The number of CLH collected in Kelsey and Adobe were almost identical with 560 CLH seen in Kelsey and 559 in Adobe, with most of the CLH seen in March (Figure 2).

The majority of CLH (66.4%)(n = 371) seen in Adobe were at site 7 (Finley East Crossing), while 25% (n = 140) were seen at site 6 (Soda Bay Crossing), and 8.6% (n = 48) seen at site 8 (Argonaut Crossing) (Figure 3).

The majority of CLH (88%)(n = 495) seen in Kelsey were at site 16 (Soda Bay Crossing), while 10% (n = 55) were seen at site 18 (Merritt and Loasa Crossing), and 2% (n = 10) seen at site 19 (Big Valley Crossing) (Figure 4).

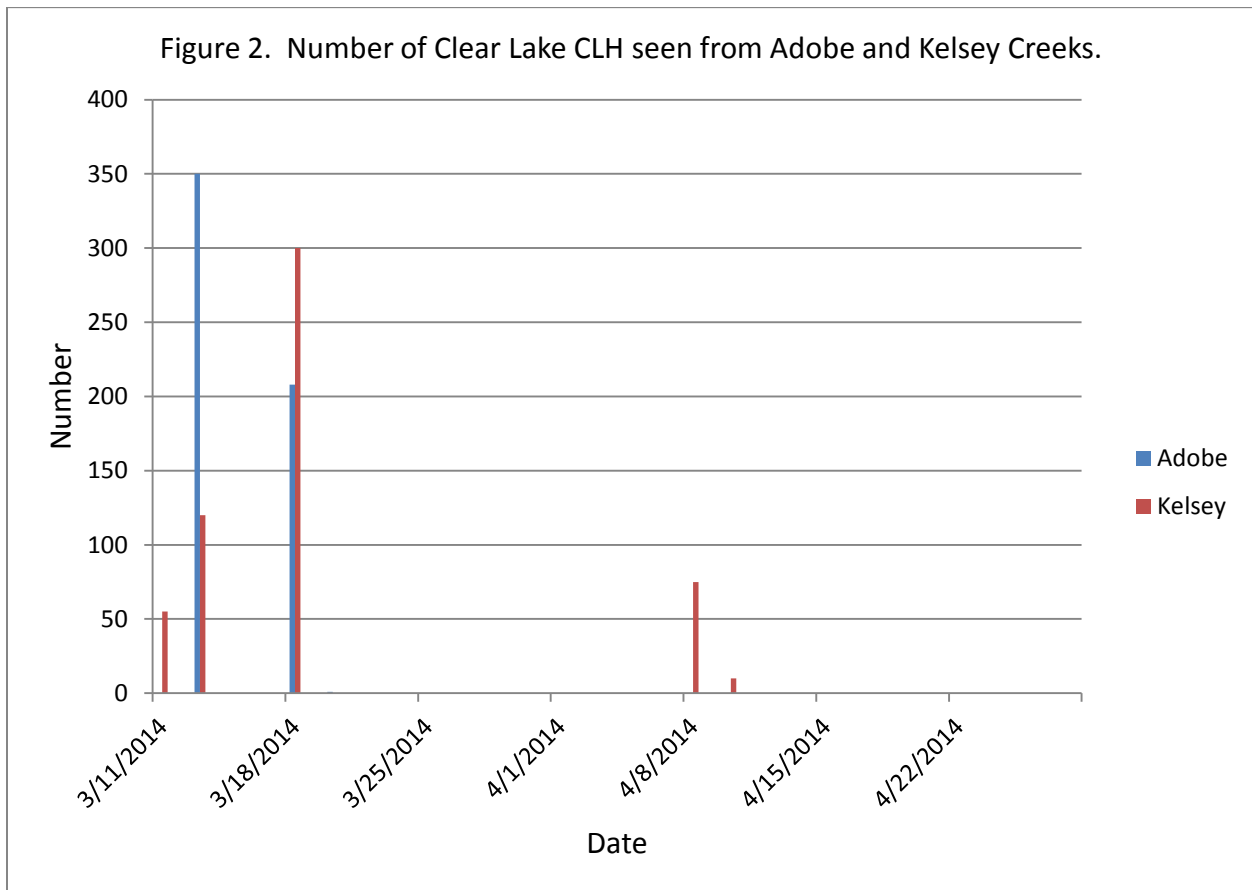


Figure 3. Percentage of CLH seen at 3 different sites on Adobe Creek, Lake County, 2014.

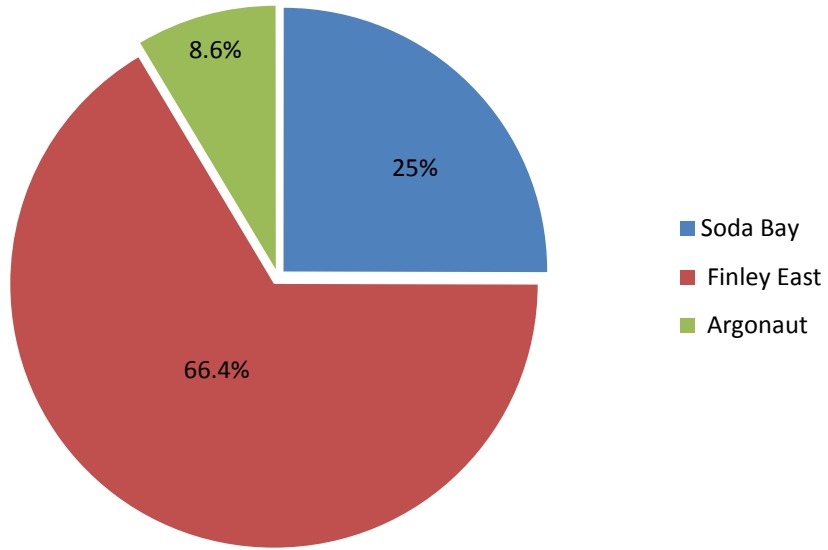
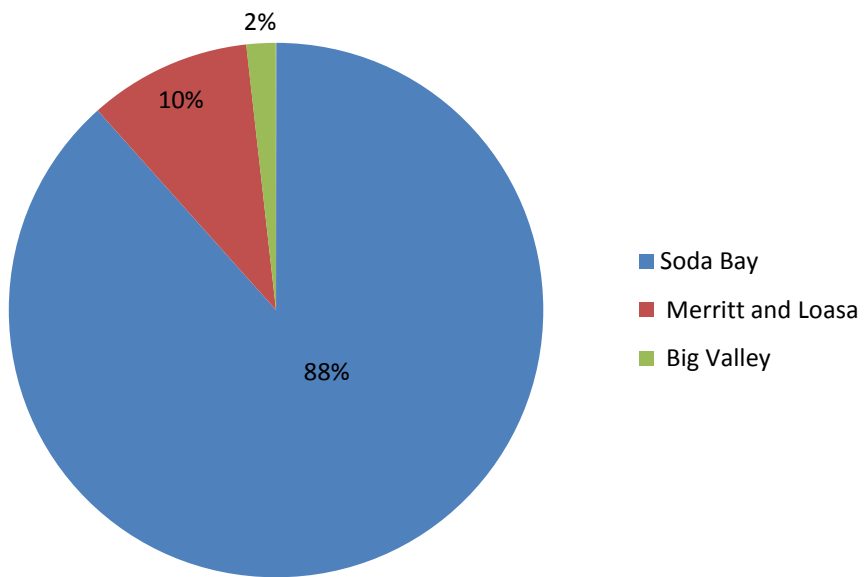


Figure 4. Percentage of CLH seen at 3 different sites on Kelsey Creek, Lake County, 2014.



Discussion

It is possible that the dry winter of 2013/2014 had a significant negative impact on this year's CLH spawning run. Hill and Thompson Creeks as well as McGaugh Slough had little to no water throughout the whole survey period, even immediately after rain. The lack of flows and/or consistent flows in the tributaries to Clear Lake may have played a role in the number of CLH choosing to move upstream to spawn from the lake. It may have also influenced the number of CLH stranded in creeks that were drying up. On one of the surveys, staff reported a mass die-off of approximately 300 CLH that were found dead in a dried up pool at site 7 on Adobe Creek (Figure 5). On March 18 and 19, 2014 CDFW personnel, along with volunteers from the local tribes, conducted a fish rescue at site 6 on Adobe Creek. A total of 197 CLH were rescued and released into Kelsey Creek just upstream of Soda Bay Road.



Figure 5. Site 7 at Adobe Creek (S. Newton 3/25/14).

CDFW will continue to sample the same 22 sites next spring for consistency. The unusually dry winter/spring may be the main factor determining the low numbers of CLH seen in the creeks. With a winter/spring that could bring significant water to the region, it is possible more CLH will be seen using the creeks to spawn.

On May 7, 2014, CDFW conducted a boat-based electrofishing survey on Clear Lake. This survey was done in order to look for CLH that may be spawning in the lake rather than the tributaries to the lake. A total of 36 CLH were collected during that survey with a portion of them implanted with a P.I.T. (Passive Integrated Transponder). These CLH can now be tracked

with any future electrofishing and hoop net surveys conducted in Clear Lake and/or its tributaries. Of the 36 CLH collected during the survey, only one appeared to be in spawning mode, which was a male who ejected milt when handled.