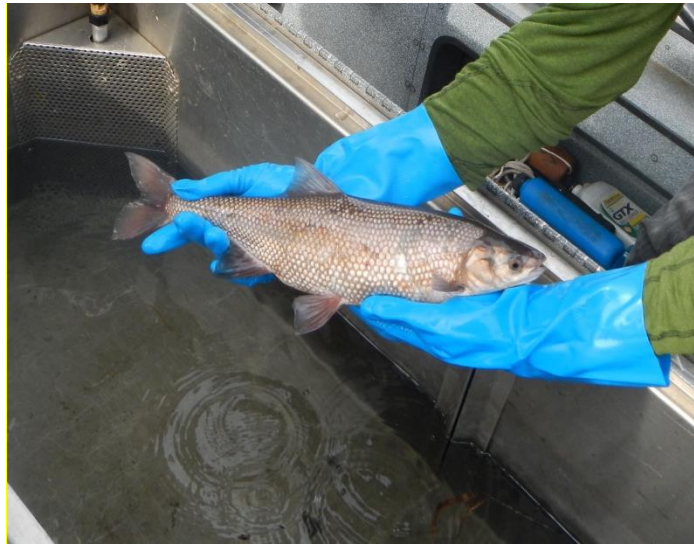


State of California
Department of Fish and Wildlife

2016 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*) (HCH-C) 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). On August 6, 2014, a decision to list the species as threatened under CESA was made by the California Fish and Game Commission. Currently the HCH-C is in the status review process by the USFWS to determine if it warrants being protected by the federal endangered species list.

In late winter - spring of 2016, CDFW conducted visual surveys on seven tributaries to Clear Lake (Lake County) to monitor spawning HCH-C.

During the course of the 2016 visual survey, CDFW staff gathered data from various points along each tributary to help determine the relative number of HCH-C migrating upstream to spawn. This information, combined with previous data from a 2014 survey (Ewing 2014) and future surveys at these exact locations will assist the CDFW with long-term management decisions regarding this threatened species.

Methods

Visual surveys were conducted on McGaugh Slough, Adobe Creek, Hill Creek, Kelsey Creek, Cole Creek, Manning Creek, and Thompson Creek (Table 1 and Figure 1) at a total of 22 sites. At each site, staff would make an upstream and downstream visual count of HCH-C from a bridge crossing (except site 17 which had no bridge) and collect cumulative totals. The time it took to conduct a count at each site depended on the number of HCH-C observed. This sampling method was used to estimate the number of HCH-C seen in that body of water and in that specific location in order to reduce bias from trying to make counts on HCH-C from different points on the waterbody. HCH-C counts were collected once a week from every site. Staff would record a start and stop time to complete the 22 site survey. Surveys would begin when the first sighting of HCH-C were disclosed to CDFW by residents of Lake County and end when HCH-C were no longer seen in the tributaries for a significant amount of time.

Table 1. GPS coordinates of visual survey sites.

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

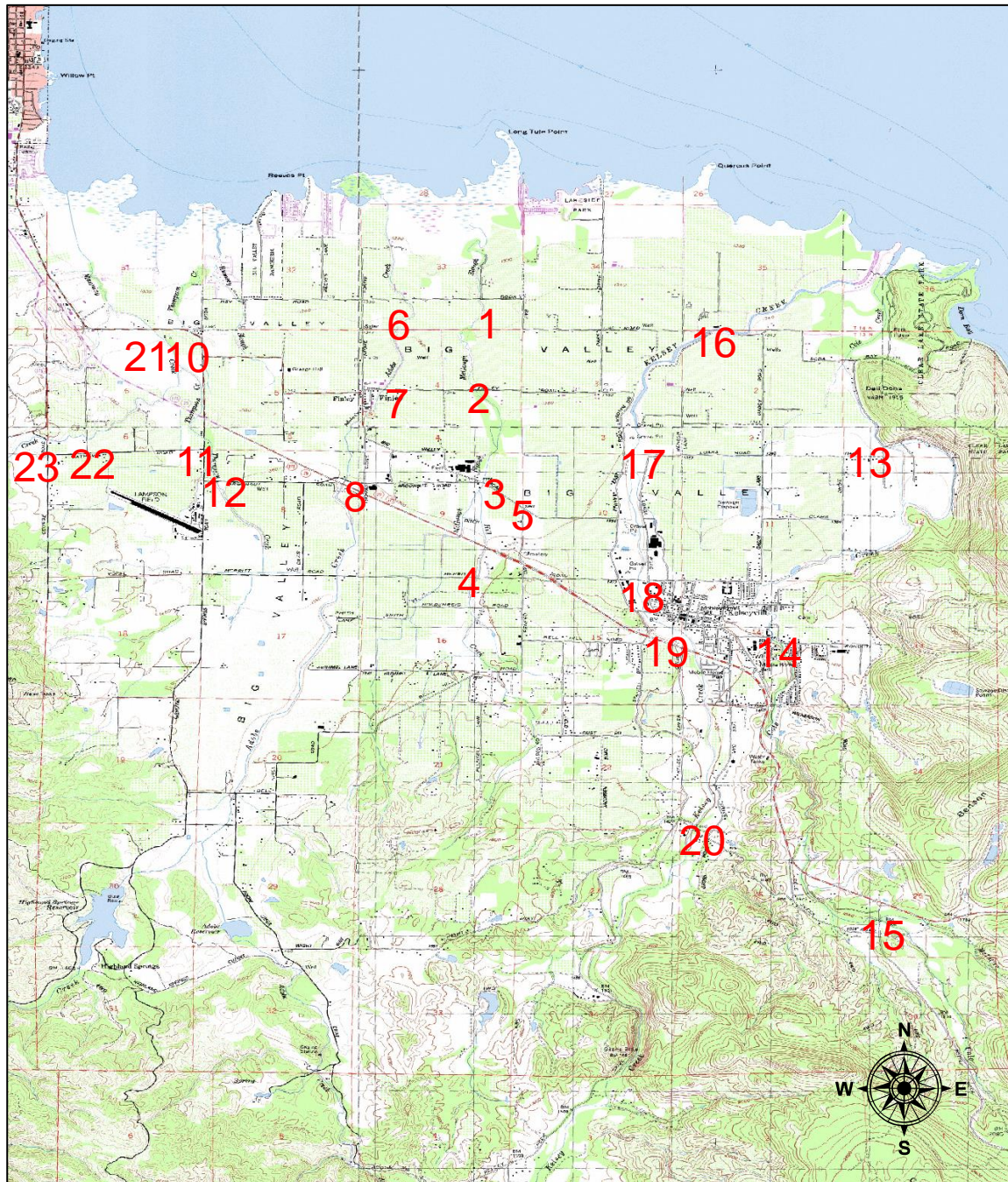
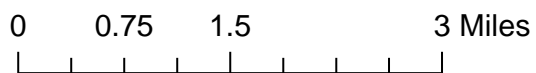


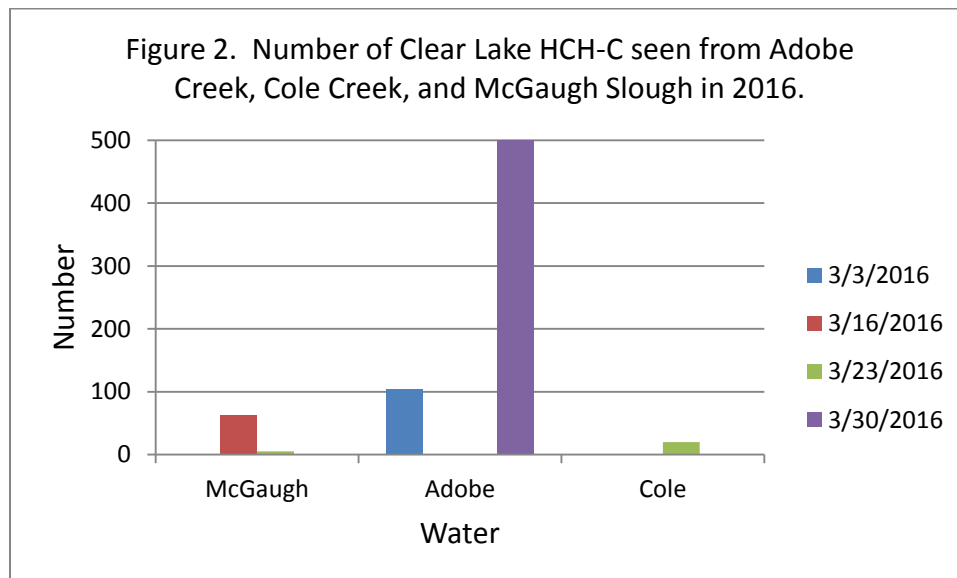
Figure 1. Visual survey sites on Clear Lake tributaries (Lake County, CA)



Results

The HCH-C visual survey began on February 24 and continued through May 10. During this period CDFW staff conducted a total of 11 surveys with start times ranging from 08:00 – 15:00 and end times ranging from 10:20 – 17:04. A total of 693 HCH-C were observed during the 2016 survey which is a significant decrease from the 1,119 HCH-C seen in the 2014 survey. Of the seven waterbodies surveyed, HCH-C were only observed in Cole and Adobe Creeks (Cole and Adobe), as well as McGaugh Slough (McGaugh). In 2014, HCH-C were only seen in Adobe (n=559) and Kelsey (n= 560) Creeks. The number of HCH-C seen in Adobe (n=605) was far greater than what was observed in Cole (n=20) and McGaugh (n=68). Adobe Creek appears to be the most consistent and frequented tributary in both the 2014 and 2016 visual surveys. All of the HCH-C observed in 2016 occurred during the month of March (Figure 2).

All HCH-C seen in Adobe were located at site 6 (Soda Bay Road Crossing). All HCH-C seen in Cole were recorded at site 13 (Clark Road Bridge Crossing). All HCH-C seen in McGaugh Slough were documented at site 3 (Big Valley/Argonaut Road Bridge Crossing).



Discussion

It is possible that the wet winter of 2015/2016 had a significant positive impact on this year's HCH-C spawning run. Although the number of HCH-C seen in 2016 was down from the 2014 survey, HCH-C were seen in more waters than in 2014 (three vs. two). It is possible the significant and/or consistent flows in the numerous tributaries to Clear Lake may have played a

role in the number of HCH-C choosing to move upstream to spawn from the lake. With numerous tributaries holding more water in 2016 compared to 2014, HCH-C could have been more spread out throughout the watershed. CDFW staff witnessed and heard reports of numerous HCH-C sightings on Clear Lake tributaries other than the seven selected waters that haven't had HCH-C sightings for years.

CDFW will continue to sample the same 22 sites next spring for consistency as well as monitor the reports of HCH-C sightings in other areas of the Clear Lake watershed.

Literature Cited

Ewing, B. 2014. 2014 Clear Lake Hitch (*Lavinia exilicauda chi*) Visual Surveys on Clear Lake Tributaries. Region 2 Fish Files. California Department of Fish and Wildlife. Unpublished.