

State of California  
Department of Fish and Wildlife

2024 Clear Lake Hitch (*Lavinia exilicauda chi*) Visual Surveys on Clear Lake  
Tributaries



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Region 2

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## Introduction

In September 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 or endangered species pursuant to the federal Endangered Species Act (ESA) 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. On December 3, 2020, a decision to not list the species as threatened or endangered under the Endangered Species Act of 1973 was made by the USFWS.

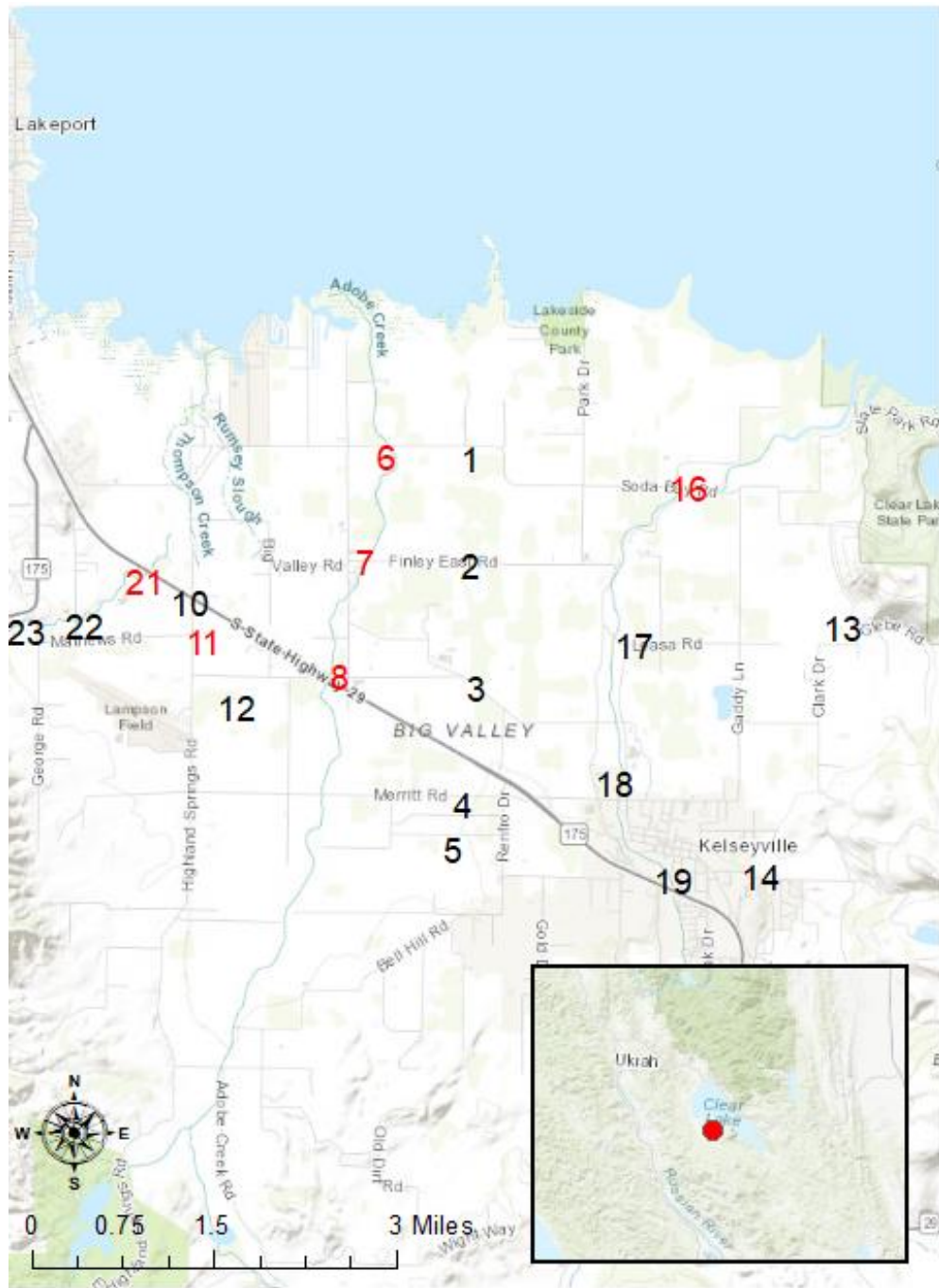
CDFW conducted visual surveys on seven tributaries to Clear Lake (Lake County) to monitor spawning HCH-C in late winter and spring of 2024. During the 2024 visual survey, CDFW sampled specific points along each tributary to help determine the relative number of HCH-C migrating upstream to spawn. This information, combined with previous years' data (Ewing 2014, 2016–2023) and with future surveys at these locations, will assist CDFW with long-term management decisions regarding HCH-C.

## Methods

The HCH-C visual survey began on March 10, 2024, and continued through May 14, 2024. During this period, CDFW staff conducted a total of 10 surveys at 21 sites on McGaugh Slough, Adobe Creek, Hill Creek, Kelsey Creek, Cole Creek, Manning Creek, and Thompson Creek (**Table 1** and **Figure 1**). Site 9 and Site 20 are no longer surveyed and are therefore absent from the report. For each visual survey, except site 17, staff made an upstream and downstream visual count of HCH-C from a bridge crossing as far as they could see in each direction and documented the total HCH-C observed. For site 17, the visual survey was done by walking upstream and downstream approximately 50 yards of Dorn Crossing and collecting counts. The time it took to conduct a count at each site was dependent on the number of HCH-C observed. Staff used fixed observation sites for each visual survey to reduce bias that could result from making HCH-C observations from different points at each given waterbody. HCH-C counts were collected once a week at every site until late in the season when low flow conditions prevent HCH-C migration to a specific site (**Table 2**).

**Table 1.** Global Positioning System (GPS) coordinates in degrees, minutes, seconds, of sites visited for visual surveys.

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



**Figure 1.** Visual survey sites on Clear Lake tributaries (Lake County, CA). Red-colored numbers indicate where HCH-C were observed in 2024. Location of visual survey sites in relation to Clear Lake found in inset map.

**Table 2.** Visual Survey Sites and Dates Visited. X = Site Surveyed; Dry downstream (DD) = Site Not Surveyed.

Location	Site	2024 Survey Dates										
		3/10	3/20	3/27	4/1	4/8	4/16	4/24	5/1	5/8 and 5/9	5/14	
McGaugh Slough	1	X	X	X	X	X	X	X	X	X	X	X
	2	X	X	X	X	X	X	X	X	X	X	X
	3	X	X	X	X	X	X	X	X	X	X	DD
Hill Creek	4	X	X	X	X	X	X	X	X	X	X	DD
	5	X	X	X	X	X	X	X	X	X	X	DD
Adobe Creek	6	X	X	X	X	X	X	X	X	X	X	X
	7	X	X	X	X	X	X	X	X	X	X	X
	8	X	X	X	X	X	X	X	X	X	X	X
Thompson Creek	10	X	X	X	X	X	X	X	X	X	X	X
	11	X	X	X	X	X	X	X	X	X	X	X
	12	X	X	X	X	X	X	X	X	X	X	X
Cole Creek	13	X	X	X	X	X	X	X	X	X	X	X
	14	X	X	X	X	X	X	X	X	X	X	X
	15	X	X	X	X	X	X	X	X	X	X	X
Kelsey Creek	16	X	X	X	X	X	X	X	X	X	X	X
	17	X	X	X	X	X	X	X	X	X	X	X
	18	X	X	X	X	X	X	X	X	X	X	X
	19	X	X	X	X	X	X	X	X	X	X	X
Manning Creek	21	X	X	X	X	X	X	X	X	X	X	X
	22	X	X	X	X	X	X	X	X	X	X	X
	23	X	X	X	X	X	X	X	X	X	X	X

## Results

Staff observed 1,042 HCH-C during the 2024 visual survey season. The 2024 total was a significant drop from 2023 (n = 2,548) and the fifth highest in 10 seasons (2022, n = 306; 2021, n = 120; 2020, n = 1,672; 2019, n = 612; 2018, n = 1,153; 2017, n = 517; 2016, n = 693; 2014, n = 1,119) (**Table 3**). All HCH-C observed in 2024 were in Kelsey, Manning, Thompson, and Adobe Creeks. No fish were observed in McGaugh Slough, Cole Creek, or Hill Creek. Staff observed HCH-C in Adobe Creek at sites 6 (Soda Bay Road Bridge Crossing), 7 (Finley East Road Bridge Crossing), and 8 (Argonaut Road Bridge Crossing) on March 20. Staff also

observed HCH-C at Site 7 on March 27. Staff observed all HCH-C in Kelsey Creek at site 16 (Soda Bay Road) on April 8 and April 24. Staff observed HCH-C in Thompson Creek at site 11 (Highland Springs Road Crossing) on March 20. Staff observed HCH-C in Manning Creek at site 21 (Soda Bay Road Crossing) on March 20. Kelsey Creek was the most frequented tributary by HCH-C in 2024, 2021, 2020, and 2014 (Ewing 2021, 2020, and 2014).

**Table 3.** Clear Lake Hitch Visual Survey Totals from McGaugh Slough, Adobe Creek, Hill Creek, Thompson Creek, Cole Creek, Kelsey Creek, and Manning Creek from 2014, 2016–2024.

Year	Number
<b>2014</b>	1,119
<b>2016</b>	693
<b>2017</b>	517
<b>2018</b>	1,153
<b>2019</b>	612
<b>2020</b>	1,672
<b>2021</b>	120
<b>2022</b>	306
<b>2023</b>	2,548
<b>2024</b>	1,042

## Discussion

In 2023, a record rainfall total during the wet season resulted in high and consistent stream flows, increasing the amount of HCH-C spawning in the tributaries (CDWR 2023). In 2024, the rainfall totals weren't as high as 2023, but still a great contributor to more consistent and high stream flows. Staff observed all HCH-C at six sites on four tributaries. All but three of the tributary sites retained water during the survey period, allowing opportunity for HCH-C upstream migration. Due in part to these conditions, HCH-C that were able to spawn in Adobe, Manning, Kelsey, and Thompson Creeks may have increased chance of recruitment survival this year.

The number of HCH-C observed in 2024 was above the 10-year average of 978, however, more HCH-C were expected given the 2023 results and another wet winter. During years with average numbers of HCH-C, most tributaries were low or dry. It is possible that many HCH-C did not move into the tributaries to spawn due to the high lake level and ideal vegetative cover conditions within the lake. It also may suggest that HCH-C may not need to spawn in the tributaries every year, or a portion of HCH-C may not spawn every year regardless of conditions. It is possible one of these theories is correct since almost the same number of HCH-C were collected in our in-lake relative population electrofishing survey in 2024 (n=969)

as we collected in the record year in 2023 (n=1000). The high number of HCH-C observed in 2024 suggests that at least a limited number of HCH-C spawned in Clear Lake in recent dry water years.

Lake spawning for HCH-C is susceptible to egg predation by Common Carp (*Cyprinus carpio*) (Kimsey 1960). However, when the lake is near capacity and has no water quality issues combined with the continued reduction of Common Carp and Goldfish (*Carassius auratus*) through commercial and CDFW practices, more HCH-C may choose to spawn in Clear Lake.

In spring 2025, CDFW will continue to survey the same 21 sites to monitor the HCH-C population during the spawning season. Additionally, CDFW will continue investigating reports of HCH-C sightings in other areas of the Clear Lake watershed.

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