State of California
Department of Fish and Wildlife

M e m o r a n d u m

Date: September 5, 2024

To: Leslie Alber
Sierra District (Fisheries) Supervisor
Department of Fish and Wildlife

From: Ben Ewing
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Department of Fish and Wildlife

Cc: Region 2 Fish Files

Re: 2024 Highland Springs Reservoir Electrofishing Survey

On April 16, 2024, California Department of Fish and Wildlife (Department), Lake County, Robinson Rancheria, and Big Valley Rancheria staff conducted a general fish survey on Highland Springs Reservoir (Highland Springs) (Lake County). The purpose of the survey was to gather baseline information on the spring season Highland Spring's fishery. A previous general fish survey was completed in 2015, but it was performed in late summer and would not be accurate to use as a comparison (Ewing 2015). The entire shoreline of Highland Springs was sampled using an electrofishing boat, which is located at 38.941670 N, 122.905440 W and 1,462 feet above mean sea level (**Figure 1**).

The shoreline is a mix of tules, rocks, and oak woodland. Highland Springs receives water from Highland Creek. Largemouth Bass (*Micropterus salmoides*) (LMB), Bluegill (*Lepomis macrochirus*) (BG), Black Crappie (*Pomoxis nigromaculatus*) (BCR), Redear Sunfish (*Lepomis microlophus*) (RSF), and Clear Lake Hitch *Lavinia exilicauda chi*) (CLH) have been documented in Highland Springs (Ewing 2015).

The species, number, catch per unit effort, mean length and weight, length ranges, and mean relative weight (Wr) for species collected are presented in **Table 1**.

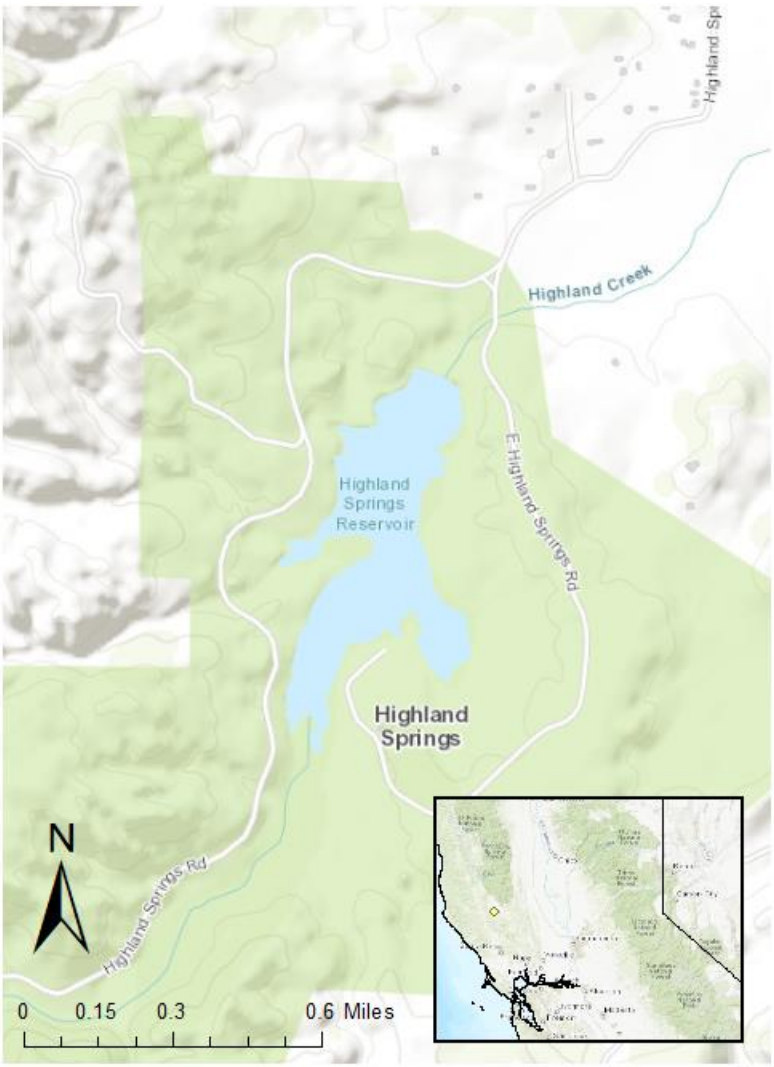

Figure 1. Highland Springs Reservoir (Lake County). Highland Springs Reservoir is also indicated by yellow dot in smaller data frame in relation to Santa Rosa and San Francisco Bay area.

Table 1. Species composition from Highland Springs Reservoir, April 16, 2024.
Catch per Unit Effort was measured in fish per minute. Mean Total Length (TL) was measured in millimeters (mm). Average Weight was in grams (g). Relative weight (Wr).

	Species	Number	Percent	CPUE	(TL)	Weight	Total Length Ranges	Wr
1	Common Carp	45	57.7%	0.41	602.6*	3050.9*	470-813	NA
2	Largemouth Bass	29	37.2%	0.27	427.2	1453.4	186-548	106
3	Brown Bullhead	1	1.3%	0.01	299.0	314.0	NA	NA
4	Bluegill	1	1.3%	0.01	119.0	19.0	NA	NA
5	Black Crappie	1	1.3%	0.01	344.0	729.0	NA	NA
6	Sacramento Sucker	1	1.3%	0.01	521.0	1228	NA	NA
	Total	78						
	Generator minutes:	109						
	CPUE (Fish/ gen. min)	0.72						

* Lengths and Weights were only taken for the first 25 Common Carp collected due to challenges of measuring and weighing non-anesthetize fish.

Department personnel surveyed the entire shoreline at Highland Springs (**Figure 2**). Common Carp (*Cyprinus carpio*) (CC), LMB, BCR, Brown Bullhead (*Ameiurus nebulosus*) (BBH), BG, and Sacramento Sucker (*Catostomus occidentalis*) (SS) were collected during the survey.

Figure 2. Crew electrofishing Highland Springs Reservoir in April, 2024. (Photo Credit A. Balletto)

Average total length and weight for 25 of the 45 CC was 602.6 mm (23.7 in.) and 3050.9 grams (6.7 lbs.) (**Figure 3**).

Figure 3. Common Carp collected at Highland Springs Reservoir in April, 2024. (Photo Credit T. Woodruff)

Average total length and weight for LMB was 427.2 mm (16.8 in.) and 1453.4 grams (3.2 lbs.) (**Figure 4**).

Figure 4. Largemouth Bass collected at Highland Springs Reservoir in April, 2024. (Photo Credit T. Woodruff)

One BBH collected was 299.0 mm (11.8 in.) and weighed 314.0 grams (0.7 lbs.) (**Figure 5**).

Figure 5. Brown Bullhead collected at Highland Springs Reservoir in April, 2024 (Photo Credit T. Woodruff)

One BG collected was 119.0 mm (4.7 in.) and weighed 19.0 grams (0.04 lbs.) (**Figure 6**).

Figure 6. Bluegill collected at Highland Springs Reservoir in April, 2024 (Photo Credit T. Woodruff)

One BCR collected was 344.0 mm (13.5 in.) and weighed 729.0 grams (1.6 lbs.) (**Figure 7**).

Figure 7. Black Crappie collected at Highland Springs Reservoir in April, 2024 (Photo Credit T. Woodruff)

One SS collected was 521.0 mm (20.5 in.) and weighed 1228.0 grams (2.7 lbs.) (**Figure 8**).

Figure 8. Sacramento Sucker collected at Highland Springs Reservoir in April, 2024 (Photo Credit T. Woodruff)

Catch per unit effort for the entire survey was 0.72 fish/minute of actual shock time. Based on the results of the survey, a self-sustaining, non-native warmwater fish population exists as well as a small, native fish population. Although CLH had been documented in the 2015 general fish survey, no CLH were collected in the 2024 survey. This was disappointing since past CLH fish rescues have resulted in translocations to Highland Springs. With the large proportion of CC and LMB collected, it is possible they are negatively impacting the CLH population. To assist in CLH survival, all CC collected in the 2024 survey were removed from Highland Springs. The Department hopes that Highland Springs will become the home to a significant population of CLH. Future monitoring and CC removal efforts will be needed to assist in tracking and improving the CLH population.

Literature Cited

Ewing, B. 2015. Highland Springs Reservoir (Lake County) Electrofishing Survey (2015). California Department of Fish and Wildlife Region 2 Fish Files. 11/16/2015. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=111563