

Memorandum

Date: October 25, 2023

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

From: Ben Ewing
District Fisheries Biologist (Alpine, Amador, Calaveras, and Lake Counties)
Department of Fish and Wildlife

Cc: Region 2 Fish Files

Re: 2022 Putah Creek Backpack Electrofishing Survey and Demonstration for Lake County Elementary Schools

On May 18, 2022, three California Department of Fish and Wildlife (Department) employees conducted a backpack electrofishing demonstration on Putah Creek (Lake County). The purpose of the demonstration was to inform elementary students as to how the Department uses electrofishing to gather information on fisheries. Additionally, the data collected is used to inform the Department on the relative status for the local fishery on Putah Creek. Multiple electrofishing passes were made on a 75-foot stretch of water at 38° 45' 33.37 N 122 36' 42.67 W situated at 1,083 feet above mean sea level (**Figure 1**). These passes were in the same location as the 2013–2018 surveys.

The shoreline is a mix of grass, rocks, and oak woodland. The creek bottom appears mostly rock. The estimated depth of the creek where the survey was conducted was six inches to one foot. The creek receives water from rain and snowmelt runoff from the Mayacamas Mountain range where it then flows into Lake Berryessa. Rainbow Trout (*Oncorhynchus mykiss*) (RT), Sacramento Sucker (*Catostomus occidentalis*), Riffle Sculpin (*Cottus gulosus*), Smallmouth Bass (*Micropterus dolomieu*), California Roach (*Lavinia symmetricus*), Green Sunfish (*Lepomis cyanellus*), Speckled Dace (*Rhinichthys osculus*), and Sacramento Pikeminnow (*Ptychocheilus grandis*) have been documented in the upper part of Putah Creek before it reaches Lake Berryessa (Ewing 2014a, 2014b, 2015, 2016, 2017; Harris 2018).

The species, number, mean length and weight, and length ranges for species collected from the 2013–2022 surveys are presented in Tables 1-5. Due to staffing issues and COVID-19 restrictions, no surveys were done from 2019–2021.

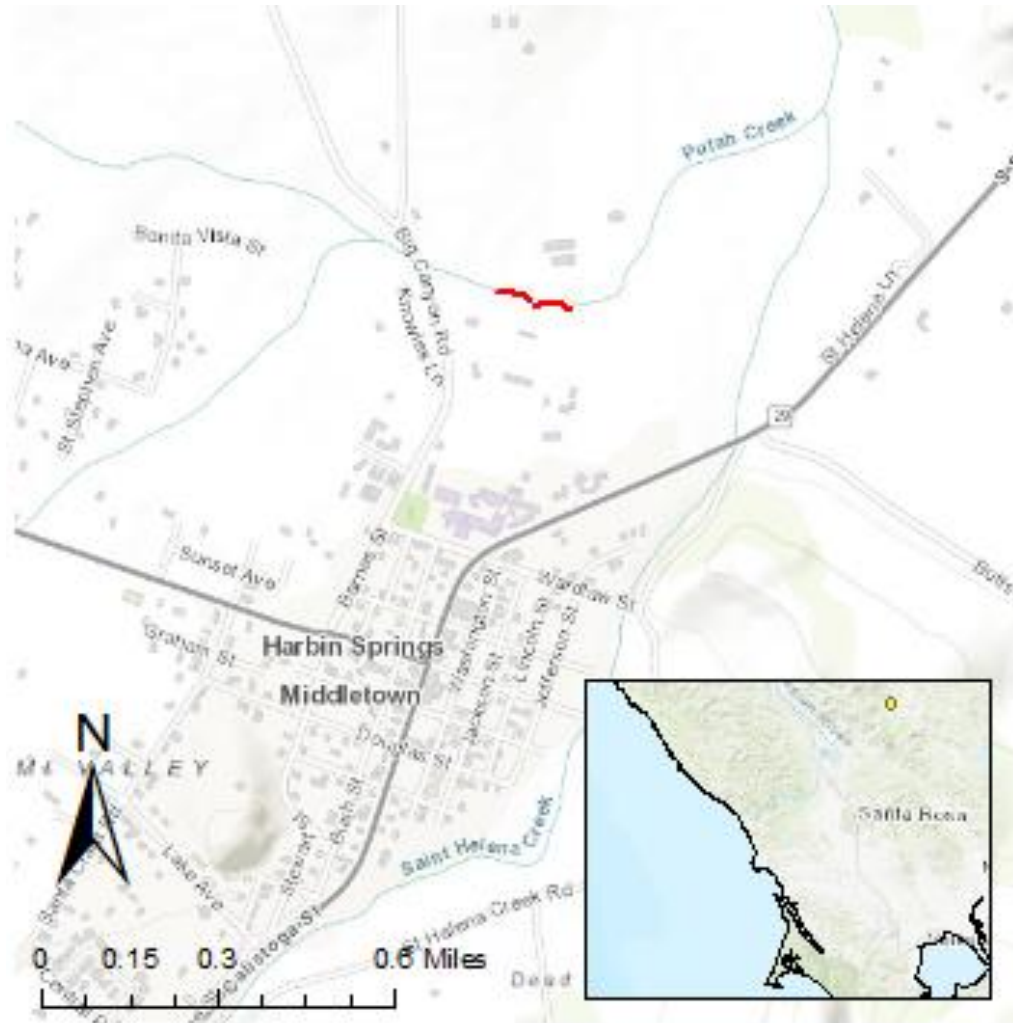


Figure 1. Putah Creek (Lake County) electrofishing location labeled in red. Putah Creek is also indicated by yellow dot in smaller data frame in relation to Santa Rosa and San Francisco Bay Area.

Table 1. Comparison of capture numbers by species from Putah Creek Electrofishing surveys on May 3, 2013, May 20, 2014, May 20, 2015, May 25, 2016, May 24, 2017, May 17, 2018, and May 18, 2022.

Species	Number						
	2022	2018	2017	2016	2015	2014	2013
<i>California Roach</i>	5	4	5	NA	7	NA	NA
<i>Rainbow Trout</i>	20	8	NA	11	18	22	5
<i>Riffle Sculpin</i>	NA	8	8	NA	6	3	NA
<i>American Bullfrog</i>	NA	NA	NA	NA	NA	NA	3
<i>Foothill Yellow Legged Frog</i>	NA	1	NA	NA	NA	NA	NA
<i>Green Sunfish</i>	NA	NA	NA	NA	NA	NA	1
<i>Lamprey</i>	NA	1	NA	NA	NA	NA	NA
<i>Sculpin spp.</i>	10	NA	NA	NA	NA	NA	4
<i>Sacramento Pikeminnow</i>	NA	1	NA	NA	1	NA	NA
<i>Sacramento Sucker</i>	1	NA	12	NA	8	3	NA
<i>Speckled Dace</i>	NA	NA	NA	11	3	NA	NA
Total	36	22	25	22	43	28	13

Table 2. Comparison of mean total length (TL) measured in millimeters (mm) by species from Putah Creek Electrofishing surveys on May 3, 2013, May 20, 2014, May 20, 2015, May 25, 2016, May 24, 2017, May 17, 2018, and May 18, 2022.

Species	Total Length						
	2022	2018	2017	2016	2015	2014	2013
<i>California Roach</i>	62.4	60	57.2	NA	64.9	NA	NA

Rainbow Trout	64.0	54	NA	71.5	62.2	68.7	70.4
Riffle Sculpin	NA	63.8	78	NA	40.5	54.3	NA
American Bullfrog	NA	NA	NA	NA	NA	NA	86.7
Foothill Yellow Legged Frog	NA	NA	NA	NA	NA	NA	NA
Green Sunfish	NA	NA	NA	NA	NA	NA	57.0
Lamprey	NA	NA	NA	NA	NA	NA	NA
Sculpin spp.	37.6	NA	NA	NA	NA	NA	68.5
Sacramento Pikeminnow	NA	90	NA	NA	46.0	NA	NA
Sacramento Sucker	NA	NA	59.5	NA	47.8	35.3	NA
Speckled Dace	NA	NA	NA	45.9	44.0	NA	NA

Table 3. Comparison of average weight in grams (g) by species from Putah Creek Electrofishing surveys on May 3, 2013, May 20, 2014, May 20, 2015, May 25, 2016, May 24, 2017, May 17, 2018, and May 18, 2022.

Species	Weight					
	2022	2018	2016*	2015*	2014	2013
California Roach	3.2	2.3	NA	3.3	NA	NA
Rainbow Trout	2.7	2.7	3.9	3.5	3.8	4.7
Riffle Sculpin	NA	5.4	NA	NA	6.7	NA
American Bullfrog	NA	NA	NA	NA	NA	12.4

Foothill Yellow Legged Frog	NA	NA	NA	NA	NA	NA
Green Sunfish	NA	NA	NA	NA	NA	5.9
Lamprey	NA	NA	NA	NA	NA	NA
Sculpin spp.	1.0	NA	NA	NA	NA	4.7
Sacramento Pikeminnow	NA	6	NA	NA	NA	NA
Sacramento Sucker	NA	NA	NA	2.0	NA	NA
Speckled Dace	NA	NA	2.4	1.0	NA	NA

No weights were taken in 2017 due to scale issues.

*Weights were only taken on Rainbow Trout 50 mm and greater, Sacramento Sucker 55 mm and greater, Speckled Dace 40 mm and greater, and California Roach 60 mm and greater.

Table 4. Comparison of mean total length (TL) ranges measured in millimeters (mm) by species from Putah Creek Electrofishing surveys on May 3, 2013, May 20, 2014, May 20, 2015, May 25, 2016, May 24, 2017, May 17, 2018, and May 18, 2022.

Species	Length Ranges						
	2022	2018	2017	2016	2015	2014	2013
California Roach	55-70	55-75	38-64	NA	60 - 72	NA	NA
Rainbow Trout	55-80	40-82	NA	60-83	38-86	50-84	50-95
Riffle Sculpin	NA	50-87	70-89	NA	35-51	40-83	NA
American Bullfrog	NA	NA	NA	NA	NA	NA	35-115
Foothill Yellow Legged Frog	NA	NA	NA	NA	NA	NA	NA
Green Sunfish	NA	NA	NA	NA	NA	NA	NA

Lamprey	NA	NA	NA	NA	NA	NA	NA
Sculpin spp.	32-42	NA	NA	NA	NA	NA	60-75
Sacramento Pikeminnow	NA	NA	NA	NA	NA	NA	NA
Sacramento Sucker	NA	NA	25- 121	NA	31-55	30-40	NA
Speckled Dace	NA	NA	NA	24-70	40-50	NA	NA

Table 5. Water temperatures, electrofishing time, and catch per unit effort (CPUE) from Putah Creek Electrofishing surveys on May 3, 2013, May 20, 2014, May 20, 2015, May 25, 2016, May 24, 2017, May 17, 2018, and May 18, 2022.

	2022	2018	2017	2016	2015	2014	2013
Water Temperature	NA	NA	NA	NA	NA	64° F	66° F
Electrofishing time	NA	NA	NA	NA	19.2 min.	NA	NA
CPUE**	NA	NA	NA	NA	2.24	NA	NA

** In 2016, more fish were collected but were not identified, measured, or tallied due to time constraints.

The 2022 survey yielded the most fish since 2015 and more than the average of 27 fish found for the seven years the surveys have been conducted. Rainbow Trout appeared to have made a resurgence from the previous three years, including being absent in 2017. The Valley Fire in September 2015 may explain the lower numbers of Rainbow Trout collected from 2016-2018 in which much of the habitat was altered and recovering. Despite the absence of many previously collected species, there were at least four different species collected. The demonstration surveys continue to go well and the feedback from the involved students and teachers is positive. In addition to helping the local community with the study, the continued sampling of this area at the same time of year is an added bonus which gathers further information on the Putah Creek fishery. The information gathered will allow the Department to monitor any possible changes to the fishery due to the 2015 fire and water-year types.

Literature Cited

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