

State of California
Department of Fish and Wildlife

Memorandum

Date: March 13, 2023

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Cc: CDFW North Central Region Fish Files

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Subject: Pre-Stocking Evaluation at Carr Lake, Nevada County.

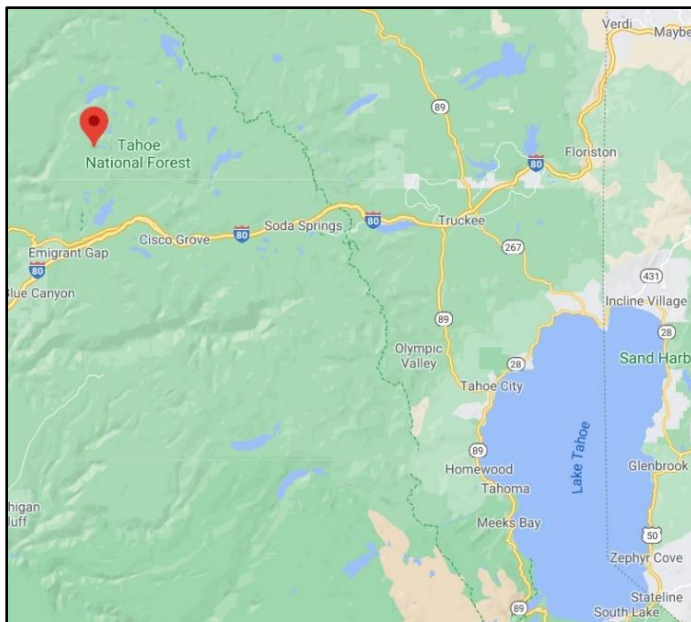


Figure 1: Google Map image displaying Carr Lake (red pin) in relation to Truckee, CA, and Lake Tahoe.

Carr Lake (Lake ID 12786), Nevada County, is a vehicle accessible destination located north of Yuba Gap on the Tahoe National Forest (TNF) at an elevation of 6,664 feet above sea level (**Figures 1 & 2**). The lake is part of the headwaters of Lake Creek and is fed by the outlet of Feeley Lake. The lake level is enhanced and controlled by an earthen dam owned and operated by Pacific Gas & Electric Company (PG&E) for hydropower generation as part of the Drum-Spaulding Hydroelectric Project (FERC# 2310).

From 1935 to 2000 the California Department of Fish and Wildlife (CDFW) stocked Carr Lake with Brook Trout (*Salvelinus fontinalis*; BK). CDFW planted Rainbow Trout



Figure 2: Overview photo of Carr Lake looking north (June 16, 2020). The earthen dam is visible to the left.

(*Oncorhynchus mykiss*; RT) between 1968 and 1972 and planted Brown Trout (*Salmo trutta*; BN) once in 1939. Currently, CDFW plants the lake with RT fingerlings. The most recent fish plant in Carr Lake was 4,000 RT fingerlings in 2018 (**Table 1**).

Table 1: CDFW stocking history of Carr Lake from 2009 to 2020.

Date	Species	Size	Number
2009	RT	Fingerling	3,200
2010	RT	Fingerling	3,848
2011	RT	Fingerling	4,000
2012	RT	Fingerling	4,000
2013	RT	Fingerling	4,000
2016	RT	Catchable	1,210
2017	RT	Fingerling	4,000
2018	RT	Fingerling	4,000

To assess whether continued plants of RT are justified at Carr Lake, three CDFW Scientific Aids surveyed the lake on June 15, 2020, to determine the current status of fish and herpetofauna populations. The assessment included a gill net survey, hook-and-line survey, and a visual encounter survey (VES).

A Scientific Aide conducted a VES for a total of 12 minutes on the afternoon of June 16th, 2020, to document the presence of diurnal herpetofauna, specifically the federally

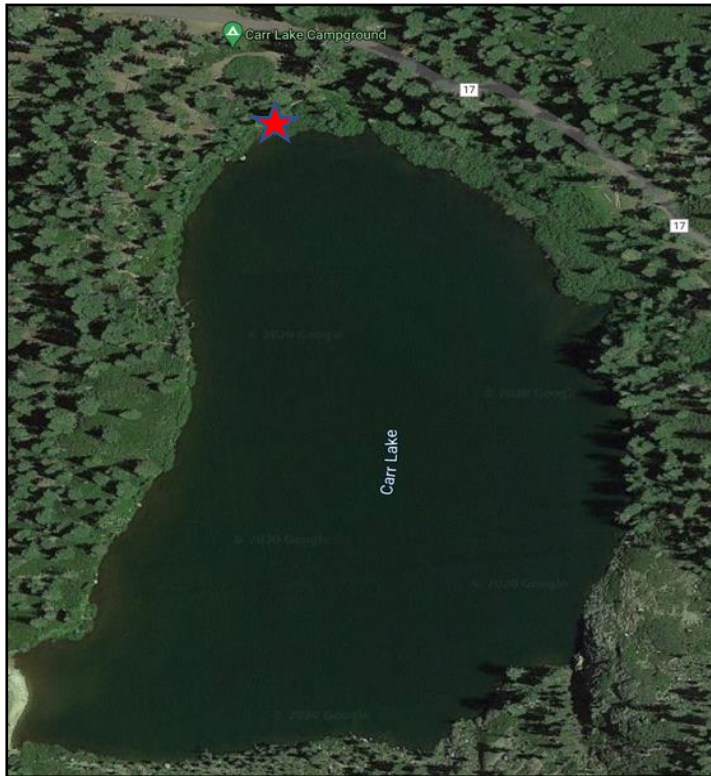


Figure 3: Google Earth satellite image of Carr Lake. The location of the gill net is displayed by a red star.

endangered Sierra Nevada Yellow-legged Frog (*Rana sierrae*; SNYLF). The VES began at 2:20 p.m. and concluded at 3:05 p.m. for a total survey effort of 12 minutes. The shoreline of Carr Lake was particularly difficult to survey because of thick Grey Alder (*Alnus incana*) bushes (**Figures 2 & 3**). The surveyors did not observe herpetofauna during the VES, however, they did hear Sierran Chorus Frogs (*Pseudacris sierra*; PSRE) calling on June 15, 2020, the night before the survey.

Three Scientific Aids performed a hook-and-line survey to assess if resident trout were catchable using lures. They fished from the dam and north-east shoreline between 4:45 pm and 7:00 pm on June 15, 2020, for a total effort of 125 minutes. The surveyors did not capture any fish during the survey.

The Scientific Aides set a sinking monofilament gill net on June 15, 2020, and pulled it the following morning, for a total survey effort of 11.25 hours (**Figure 3**). They captured seventy-two fish in the gill net, including: 10 Brown Bullhead (*Ameiurus nebulosus*; BB), 61 Golden Shiners (*Notemigonus crysoleucas*; GS), and one BK. The single BK was a female 338 mm (13.3 in.) in length and 451 grams (1 lb.) in weight. In addition, they observed trout young-of-year (YoY) in the outlet stream.

The results from the gill net and hook-and-line fish survey at Carr Lake are inconclusive. We did not capture RT two years after the most recent fingerling plant. This result suggests hatchery RT fingerlings may not survive to adulthood at Carr Lake. However, the large catch of GS and BB may have skewed the results and diminished the gill net's ability to capture trout. Schooling fish can quickly swamp a gill net and reduce its catch rate for remainder of the survey.

We captured one adult BK and observed YoY trout in the outlet stream. Given that the most recent known plant of BK in Carr Lake was in 2000, BK may be self-sustaining at Carr Lake. Alternatively, BK may be self-sustaining in the outlet stream and move upstream past the dam and into the lake under certain conditions.

We recommend CDFW continue to plant triploid hatchery RT fingerlings at Carr Lake and monitor for RT growth and catch rate. Future monitoring efforts should include the inlet and outlet streams to identify the YoY trout we observed. Future hook-and-line surveys should be more robust and cover more times of day and types of gear. Float tubes, bait, and lures that mimic GSH may be useful. Future gill net samples at Carr Lake should be set offshore and with both ends of the net set in deep water to avoid shallow, littoral zones favored by GSH aggregates and BB. If future surveys demonstrate low survival and growth of fingerling RT, we recommend CDFW consider a 'put-and-take' strategy and plant catchable-sized hatchery RT during the summer months when recreational use is highest.