

State of California
Department of Fish and Wildlife

Memorandum

Date: March 14, 2023

To: Leslie Alber
Senior Environmental Scientist; Supervisor
Department of Fish and Wildlife
North Central Region
1701 Nimbus Road, Suite A
Rancho Cordova, CA 95670

Cc: CDFW North Central Region Fish Files

From: Mitch Lockhart; Environmental Scientist
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Department of Fish and Wildlife
1701 Nimbus Road, Suite A
Rancho Cordova, CA 95670

Subject: Pre-Stocking Evaluation at Island Lake, Nevada County

Island Lake (Lake ID 12782), Nevada County, is a trail-accessible destination located north of Yuba Gap within the Grouse Ridge Non-Motorized Area on the Tahoe National Forest at an elevation of 6,827 feet above sea level (**Figures 1, 2, & 3**). The lake level at Island Lake was enhanced by a stream flow maintenance dam managed by Nevada Irrigation District (NID) and is part of the Yuba-Bear Hydroelectric Project (FERC# 2266). The dam has since fallen into disrepair and no longer controls the water level of Island Lake.

The California Department of Fish and Wildlife (CDFW) has planted Rainbow Trout (*Oncorhynchus mykiss*; RT) at Island Lake since 1934 and most recently in 2018 (**Table 1**).



Figure 1. Overview photograph of Island Lake, Nevada County, facing north (CDFW, June 16, 2020).

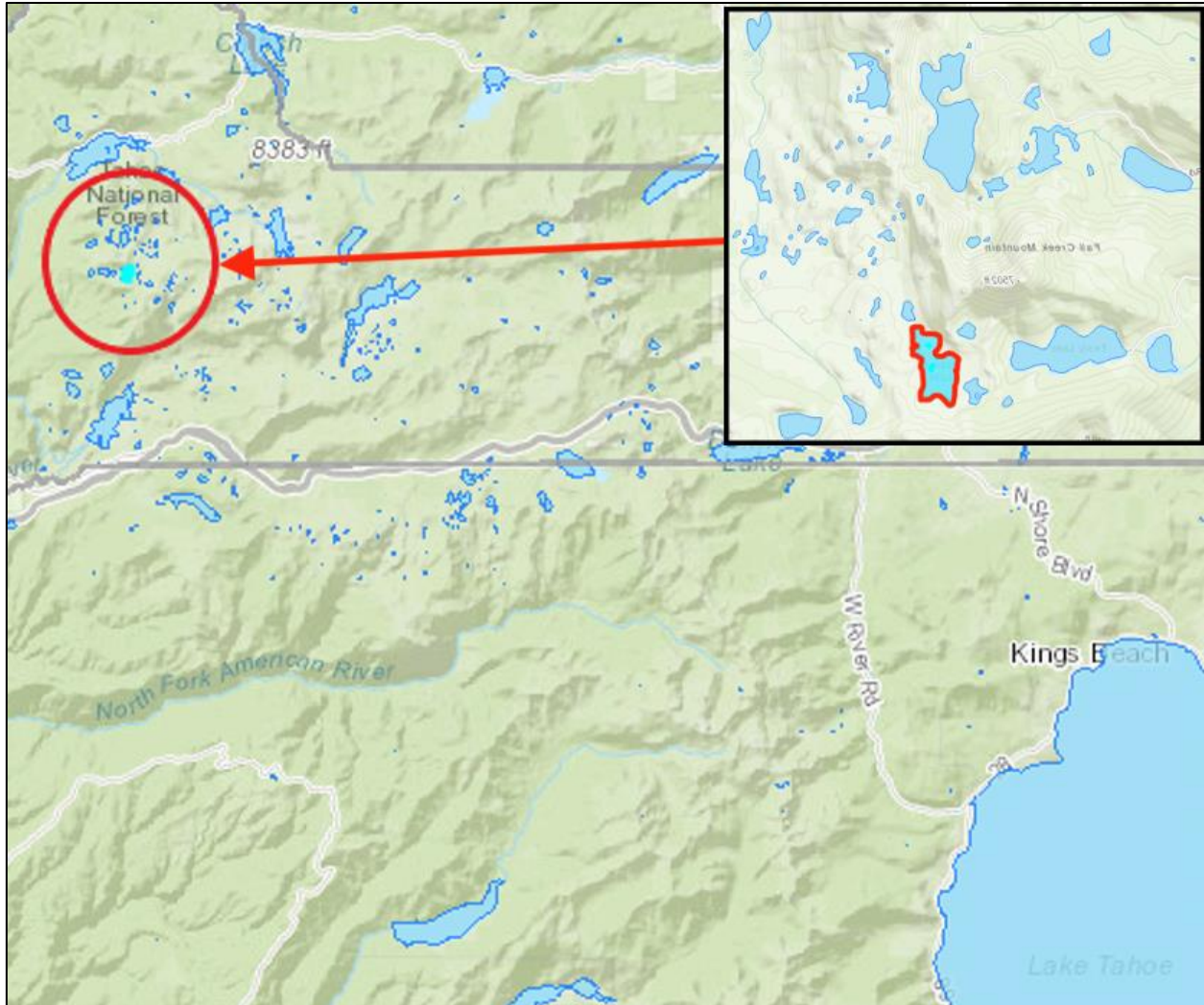


Figure 2. A regional map that displays the Grouse Ridge Non-Motorized Area, Nevada County, denoted by a red circle, in relation to Lake Tahoe in the lower right. The inset map displays Island Lake outlined in red (CDFW BIOS Viewer, retrieved).



Figure 3. Panoramic overview photograph of Island Lake, Nevada County, looking west (CDFW, June 17, 2020).

Table 1. CDFW Stocking History for Island Lake, Nevada County, 2006-2018.

<i>Year</i>	<i>Species</i>	<i>Number of Fish Planted</i>	<i>Size</i>
2006	RT	7,500	Fingerling
2007	RT	7,500	Fingerling
2009	RT	8,000	Fingerling
2010	RT	9,768	Fingerling
2011	RT	11,000	Fingerling
2012	RT	10,000	Fingerling
2013	RT	10,000	Fingerling
2017	RT	7,500	Fingerling
2018	RT	10,000	Fingerling

To assess whether continued plants of RT are justified at Island Lake, three CDFW Scientific Aids surveyed the lake on June 17, 2020, to determine the current status of fish and herpetofauna populations. The assessment included a gill net survey and a visual encounter survey (VES).

Three Scientific Aides set two sinking monofilament gill nets on the morning of June 17, 2020, and pulled them the afternoon of the same day for a total survey effort of 12 ¾ hours. They captured 24 Brook Trout (*Salvelinus fontinalis*; BK) and 48 Brown Bullhead (*Ameiurus nebulosus*; BB) (Table 2; Figures 4 & 5).

A Scientific Aide conducted a VES of Island Lake on the morning of June 17, 2020, to document the presence of diurnal herpetofauna, specifically the federally endangered Sierra Nevada Yellow-legged Frog (*Rana sierrae*; SNYLF). The VES began at 9:37 am

Table 2. Length and Weight of Brook Trout Captured at Island Lake, Nevada County, on June 17, 2020.

<i>Species</i>	<i>Length (mm)</i>	<i>Weight (g)</i>	<i>Species</i>	<i>Length (mm)</i>	<i>Weight (g)</i>
BK	310	250	BK	235	112
BK	298	230	BK	230	128
BK	286	196	BK	184	50
BK	280	190	BK	171	48
BK	271	170	BK	170	42
BK	267	170	BK	169	41
BK	265	164	BK	157	46
BK	255	154	BK	150	31
BK	249	121	BK	147	28
BK	248	140	BK	144	34
BK	240	134	BK	141	26
BK	236	118	BK	140	26

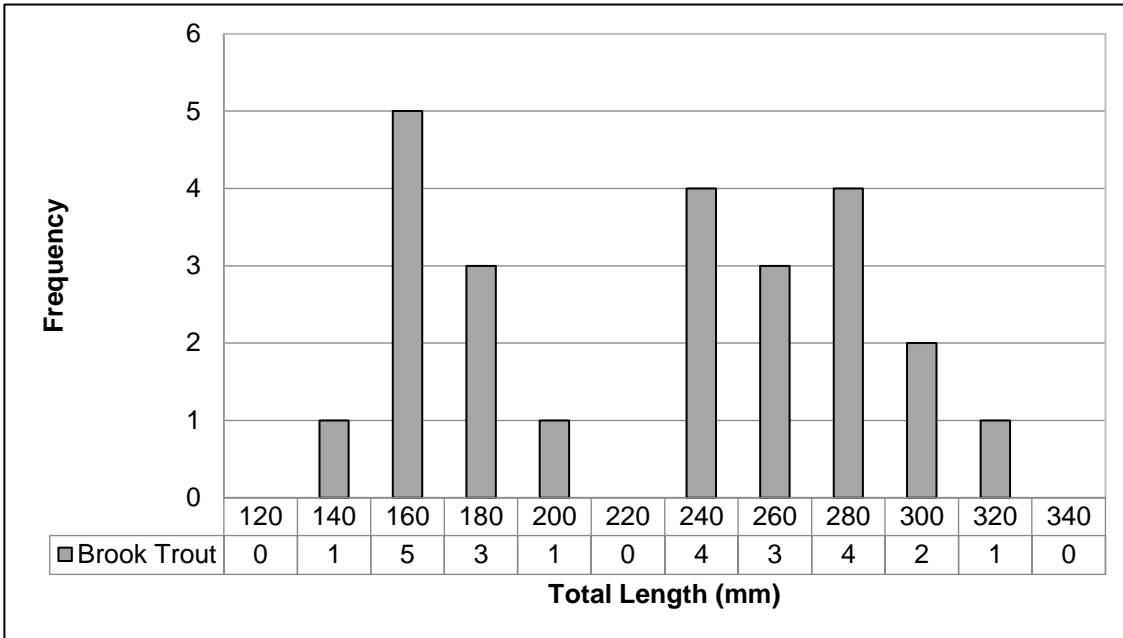


Figure 4. Fish length frequency of Brook Trout captured by gill net at Island Lake, Nevada County, on June 17, 2020. The x-axis displays fish total length divided into 20 mm size intervals and labeled by the upper limit of the interval's range. For example, the largest fish caught was a BK with a total length between 301 and 320 mm. The y-axis displays the number of fish captured within a given length interval.



Figure 5. Photograph of Brook Trout captured by gill net at Island Lake, Nevada County on June 17, 2020. Fish captured in gill net "A" are pictured on the left, and gill net "B" the right (CDFW, June 17, 2020).

and concluded at 10:42 am for a total survey effort of 48 minutes. The surveyor did not observe herpetofauna during the VES.

The results from the gill net survey demonstrate that Island Lake supports a healthy, self-sustaining BK population. Some of the female BK were reabsorbing the previous season's eggs, which may be evidence that spawning opportunities are limited under certain conditions.

CDFW last planted Island Lake in 2018 and 2017 with RT fingerlings. However, we did not capture adult RT during this 2020 survey. This may indicate RT fingerlings do not survive to adulthood at Island Lake. However, we did not sample the deepest portion of the lake and the results are somewhat inconclusive.

We recommend CDFW stop plants of fingerling RT at Island Lake and monitor for RT presence and BK growth and catch rate. We recommend future monitoring efforts include hook-and-line surveys from float tube and shore using bait and lures. We recommend that several years pass between gill net surveys to allow the BK population to recover from sampling events. If future monitoring efforts demonstrate a declining BK population, low BK catch rates, or survival of RT fingerlings to adulthood, we recommend CDFW consider planting Island Lake with fingerling RT again.

FISH SURVEYING

Trout: rainbow trout (RT), golden trout (GT), outthroat trout (CT), brown trout (BN), brook trout (BK), hybrids (GT x RT, CT x RT)										DATE: 6/18/2020
Site Name (if available): Island Lake A					Survey Crew: JTS, LTM, CMH					Net depth (m): 9.2
SITE ID: 12782 A		Fish Survey Method: (circle one) gill net hook and line e-fish			Net Location (UTM NAD 83) E: 0704687 N: 4363668			Fish captured? (circle one) N		
Gill Net near inlet near outlet		General location (circle one) other		Net Set Date: 6/17/2020		Net set time (hhmm): 0735		Net Pull Date: 6/17/2020		Net pull time (hhmm): 1339
Electrofishing		Location: (inlet or outlet #)		Start coord. (downstream)		End coord. (upstream)		Start (hhmm)		End (hhmm)
E-fisher Settings (if needed):		Volts:		Hz:		Duty Cycle:		Pulse:		Other:
Fish #	Species	Tot. Lgth (mm)	Weight (g)	Sex	Egg Stage (F only) Early Ripe Late			Otoliths?	Comments	
1	BK	267	170	UNK						
2	BK	316	250	M						
3	BK	280	190	M						
4	BK	298	230	F	X		X			
5	BK	265	164	M						
6	BK	255	154	M						
7	BK	170	42	F	X					
8	BK	240	134	M						
9	BK	248	140	F	X					
10	BK	230	128	F	X					
11	BK	184	50	F	X					
12	BB								+4 Brown Bullhead	
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PLEASE Return to: Isaac Chelman, California Department of Fish and Wildlife, (916) 358-4038, 1701 Nimbus Rd., Rancho Cordova, CA 95670

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Data Sheet 2, pg. 1 of 2

Figure 6: Data Sheet with gill net data from a survey conducted June 17, 2020, at Island Lake, Nevada County. This net is labeled Island Lake A and was set in the SW stretch of Island Lake.

FISH SURVEYING

Trout: rainbow trout (RT), golden trout (GT), cutthroat trout (CT), brown trout (BN), brook trout (BK), hybrids (GT x RT, CT x RT)										DATE: 6/18/2020
Site Name (if available): Island Lake B					Survey Crew: LTM, CMH, JTS					Net depth (m): 4.9
SITE ID: 12782 B		Fish Survey Method: (circle one) gill net hook and line e-fish			Net Location (UTM NAD 83) E: 0704864 N: 4364019			Fish captured? (circle one) Y (insert data below) N		
Gill Net near inlet		General location (circle one) near outlet other			Net Set Date: 6/17/2020		Net set time (hhmm): 0800		Net Pull Date: 6/17/2020	
Electrofishing		Location: (inlet or outlet #)			Start coord. (downstream) E N		End coord. (upstream) E N		Start (hhmm): End (hhmm): On Time (sec):	
E-fisher Settings (if needed):					Volts:		Hz:		Duty Cycle:	
					Pulse:		Other:			
Fish #	Species	Tot. Lgth (mm)	Weight (g)	Sex	Egg Stage (F only) Early Ripe Late			Otoliths?	Comments	
1	BK	144	34	M						
2	BK	157	46	F	X					
3	BK	140	26	M						
4	BK	147	28	F	X					
5	BK	141	26	UNK						
6	BK	150	31	F	X					
7	BK	169	41	F	X					
8	BK	171	48	M						
9	BK	236	118	F	X		X			
10	BK	249	121	M						
11	BK	235	112	M						
12	BK	271	170	M						
13	BK	286	196	F	X		X			
14	BB								+43 Brown bullhead	
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Data Sheet 2, pg. 1 of 2

Figure 7: Data Sheet with gill net data from a survey conducted June 17, 2020, at Island Lake, Nevada County. This net is labeled Island Lake B and was set in the NW cove of Island Lake.

CDFW High Mountain Lakes - Amphibian and Reptile Visual Encounter Survey Data Sheet

Site ID: 12782	Date: 6/17/2020	SKY: <input checked="" type="radio"/> Clear <input type="radio"/> Partly Cloudy <input type="radio"/> Mostly Cloudy <input type="radio"/> Overcast <input type="radio"/> Rain <input type="radio"/> Snow <input type="radio"/> Smoke	WIND: <input type="radio"/> Calm <input type="radio"/> Light <input type="radio"/> Moderate <input checked="" type="radio"/> Strong
Topo Name: (1:24,000)	County: Nevada	Elevation: m ft	if not surveyed, provide reason: Private Property <input type="checkbox"/> Frozen <input type="checkbox"/> Not Found <input type="checkbox"/> No Access <input type="checkbox"/>
Surveyors: LTM, JTS, CMH	Water Type: <input checked="" type="radio"/> Lake <input type="radio"/> Unmapped pond <input type="radio"/> Marsh/ meadow <input type="radio"/> Spring seep	Stream (Skip to "STREAMS" on pg. 2)	
Lake Name: (from map) Island Lake	East UTM: 0705007	North UTM: 4363819	UTM Zone: 10S
Color: <input checked="" type="radio"/> Clear <input type="radio"/> Stained	Water (5 m from shore, 10cm deep): 14 @ 0934	Air (1 m above water): 10 @ 0931	Seasonality: <input checked="" type="radio"/> Perennial <input type="radio"/> Ephemeral
Turbidity: <input checked="" type="radio"/> Clear <input type="radio"/> Cloudy	Temp: 10cm deep: 14	Temp: 10cm deep: 10	Currently Dry? <input type="radio"/> Yes <input checked="" type="radio"/> No
Survey START time: 0937	Survey END time: 1042	Total survey duration (min): 48	HERPS SEEN? <input checked="" type="radio"/> YES <input type="radio"/> NO
		FISH SEEN? <input checked="" type="radio"/> YES <input type="radio"/> NO	

***FOR LAKES/PONDS/MEADOWS: ALSO SURVEY FIRST 200 m OF INLETS AND OUTLETS. RECORD DATA SEPARATELY IN THE "STREAMS" SECTION ON PG. 2**

HERP SPECIES	# adults	# subadults	# metamorphs	# larvae	# egg m.	# swabs	Survey Method
Calling? Y N							Visual Trapped Aural Hand Collected Amp Net Incidental
Calling? Y N							Visual Trapped Aural Hand Collected Amp Net Incidental
Calling? Y N							Visual Trapped Aural Hand Collected Amp Net Incidental
Calling? Y N							Visual Trapped Aural Hand Collected Amp Net Incidental
Calling? Y N							Visual Trapped Aural Hand Collected Amp Net Incidental
Calling? Y N							Visual Trapped Aural Hand Collected Amp Net Incidental
Calling? Y N							Visual Trapped Aural Hand Collected Amp Net Incidental

FISH SPECIES (circle species seen, if known): BK (brook trout), BN (brown trout), CT (cutthroat trout), GT (golden trout), RT (rainbow trout) HYBRID (e.g., GT x RT), OTHER (e.g., minnows)

Amphibians: S. Long-toed Salamander (AMMA); Yosemite Toad (ANCA, family BUCA); Sierran Treefrog (HYSI, family PSRE or HYRE); Sierra Nevada Yellow-legged Frog (RASI)

Amph. less common in HML: CA Toad (ANBO, family BUFO); Bullfrog (RACT); Cascades Frog (RACA); CA Red-legged Frog (RADR); Sierra Newt (TASI, family TATO)

Reptiles: Sierra Gartersnake (THCO); Mountain Gartersnake (THEL); Valley Gartersnake (THSI); Western Pond Turtle (EMMA, family CLMA)

PHOTOS	Photo Number	Camera	Time	Date (yyyy-mm-dd)	UTM E	UTM N	Comments
Overview	1159	LTM-P	1159	2020 Jun 16			overview from peak
	1026	CMH-P	1026	2020 Jun 17	0705007	4363819	
Herps							
Other							

<p>SITE SKETCH:</p>	<p>NOTES:</p> <p>Inlet 1: 20m → trail. stays on trail. Can't on for Amphibs.</p> <p>Inlet 2: Wet dry. No clear path. Barely flowing.</p> <p>Inlet 3: Thicket. Coagulated flow. Brown Bullhead + Brook Trout in Gill Nets.</p>
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Herp Data Sheet, pg. 1 of 2

Figure 8: Data Sheet with Visual Encounter Survey data from a survey conducted June 17, 2020, at Island Lake, Nevada County. No herpetofauna were seen.