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October 22, 2019

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Upper Blue Lake (14670) Amphibian Survey

On August 21, 2019, California Department of Fish and Wildlife (Department) completed an amphibian survey at Upper Blue Lake (Upper Blue), Alpine County. The purpose of the survey was to determine if any special status amphibian taxa were present, and to use these data to determine if stocking Upper Blue would result in impacts to special status species, specifically Sierra Nevada Yellow-Legged Frog (*Rana sierrae*, SNYLF).

Upper Blue is a 344-acre lake located at 38.540500 N, 120.243385 W, situated at 8,139 feet above mean sea level. The shoreline is a mix of bedrock, sand, and conifer forest (Figure 1). The lake bottom appears mostly mud and various sized rock substrate. When Upper Blue spills, water drains into Middle Creek. Upper Blue receives water from rain and snowmelt runoff from the immediate area and multiple small tributaries. Upper Blue historically has received stockings of Rainbow Trout (*Oncorhynchus mykiss*, RT) and Lahontan Cutthroat Trout *(Oncorhynchus clarki henshawi*, LCT*)*, with the last recorded stocking of RT in 2018.

Figure 1. Upper Blue Lake (8/27/2014) (Photo by B. Ewing).

Six Department staff and one volunteer conducted a visual encounter survey (VES) at Upper Blue. Staff divided the lake into three sections and with three separate teams, slowly circumambulated the lake looking for diurnal amphibians and reptiles (Fellers and Freel 1995). The VES began at 13:15 and ended at 14:55 with a total survey duration of 150 minutes. The air temperature was 68°F (20°C) at 16:15 under partly cloudy skies. There was a light breeze during the survey. Water conditions were relatively clear, with visibility to about 10 feet. Water temperature was 64.4°F (18.0°C) at 13:20.

The entire lake's shoreline was surveyed as well as the inlets. The inlet transects are highlighted in red in the attached map (Figure 2). Hundreds of Yosemite Toad (*Anaxyrus canorus*) were observed. Young-of-the-year BK were observed in the inlets, indicating a self-sustaining Brook Trout (*Salvelinus fontinalis*, BK) population in Upper Blue (Figure 3). Lahontan Redsides (*Richardsonius egregious*, LRS) and Speckled Dace (*Rhinichthys osculus*) were also collected in Upper Blue's inlets (Figure 4).

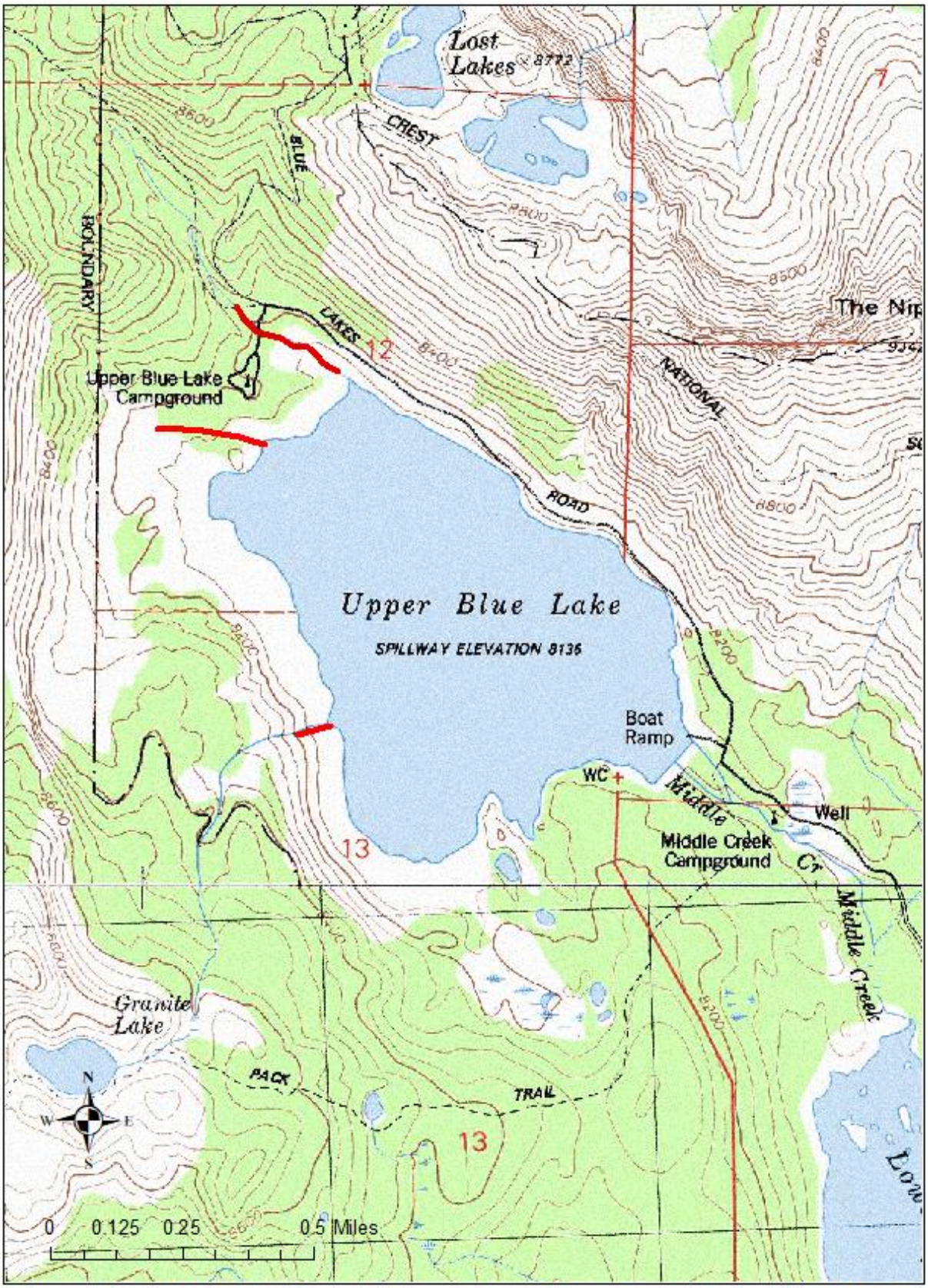

Figure 2. Upper Blue Lake Visual Encounter Survey Transects for Inlets (8/21/2019).

Figure 3. Brook Trout collected by J. Imperato on 8/21/2019. Photo by J. Imperato.

Figure 4. Speckled Dace (above) and Lahontan Redside collected by J. Imperato on 8/21/2019. Photo by J. Imperato.

Since 2001, the Department has surveyed multiple small ponds (14712,14717, 14721, 14722, 14725, and 50100) near Upper Blue (Figure 5). No SNYLF have been observed recently at ponds 14712 and 14717, which are the ponds closest to Upper

Blue (HML Database). However, there are museum records from 1939 for SNYLF at pond 14717 (MVZ 2019) and U.S. Forest Service biologists detected SNYLF at pond 14712 in 2003 (USFS 2017). Department field staff have observed small SNYLF populations at ponds 14721, 14722, 14725, and 50100 (Mussulman 2015), including observations on 8/21/2019 (HML unpubl. data). The cluster of ponds 14721, 14722, and 14725 are approximately 530 meters from Upper Blue, with only an ephemeral hydrologic connection to Upper Blue. Pond 50100 is located on a small bench approximately 80' higher in elevation than Upper Blue and is not hydrologically connected to the reservoir.

Due to the absence of SNYLF observations within Upper Blue, fluctuating reservoir levels, and the presence of a persistent BK population at Upper Blue, Upper Blue is suitable to stock. The Department will stock catchable-size RT and fingerling-size LCT to create a put and take/put and grow fishery for recreational anglers along the heavily used Highway 88 corridor.

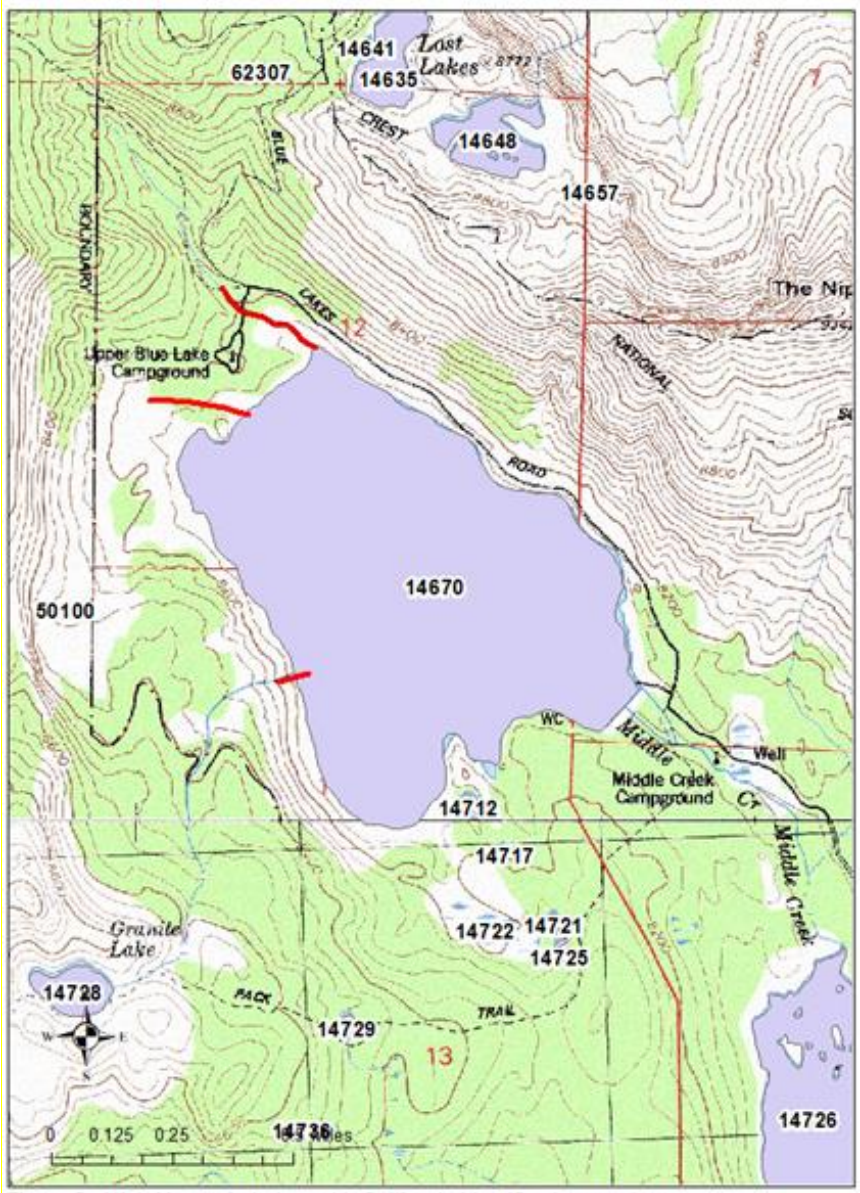

Figure 5. High Mountain Lakes with California identification numbers.

Literature Cited:

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2. California Department of Fish and Wildlife, High Mountain Lakes Database, October 7, 2019 Accessed by B. Ewing, CDFW.

3. Mussulman, S. Sierra Nevada yellow-legged frog monitoring in Alpine County - Updated 2015. CDFW; 12/15/2015. Available from: http://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=113807

4. University of California Berkeley Museum of Vertebrate Zoology (MVZ). 2019. *Rana sierrae* record 32618. Accessed on 21 October 2019. http://arctos.database.museum/guid/MVZ:Herp:32618

5. U.S. Forest Service (USFS). 2017. Wildlife Observations NRIS data in BIOS (ds1059). Biogeographic Information and Observation System (BIOS). Sensitive species locality data not publicly available was provided by BIOS staff via email on 14 December 2017.