

**State of California
Department of Fish and Wildlife**

Memorandum

Date: January 27, 2020

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Cc: CDFW North Central Region Fish Files

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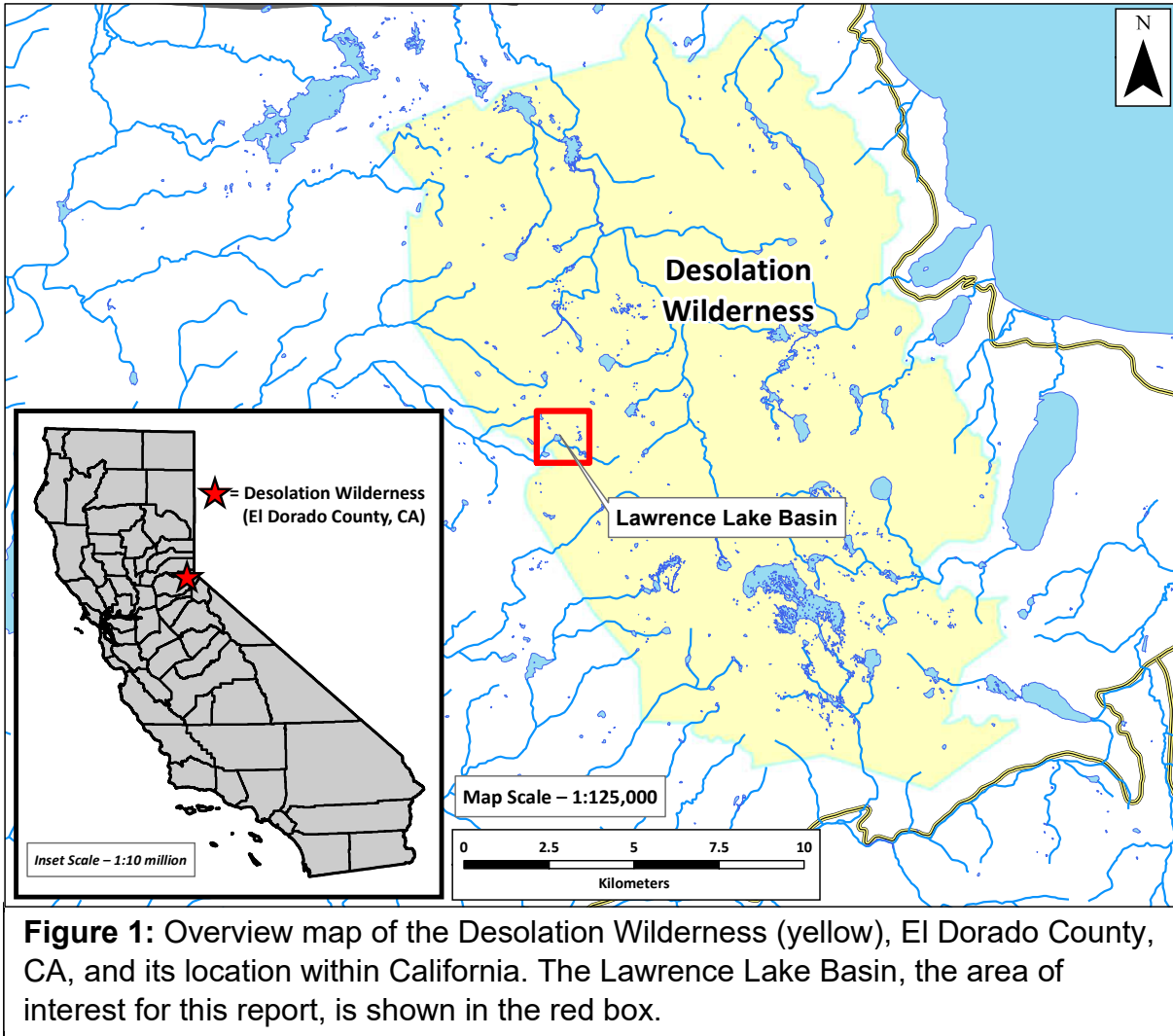
Subject: Fish and Herpetofauna Surveys in the Lawrence Lake Basin, El Dorado County

Environmental Setting

Lawrence Lake Planning Watershed (PWS) is located in the Eldorado National Forest (ENF) on the western edge of Desolation Wilderness and drains through Union Valley Reservoir to the South Fork American River (**Figure 1**). Six named lakes and 21 unnamed waters are known in the watershed. One named lake, Barrett Lake, is outside of the wilderness boundary and is accessible by a 4WD vehicle via a rugged OHV trail. The other named lakes are accessible by foot or horseback via the Red Peak Trail or from Van Vleck Trailhead.

Introduction

A CDFW field crew performed fish and herpetofauna surveys to assess current distributions and relative abundance of aquatic fauna in the Lawrence Lake PWS on July 24-26, 2019. Two waterbodies in the adjacent Bassi Fork Silver Creek PWS were surveyed by the same crew during that time period. These data are used by CDFW to



determine If sports fish and/or native species restoration management actions are warranted in the surveyed area.

Fish and herpetofauna species known to occur in this area include: brook trout (*Salvelinus fontinalis*; BK), golden trout (*Oncorhynchus aquabonita*; GT), long-toed salamander (*Ambystoma macrodactylum*; AMMA), rainbow trout (*Oncorhynchus mykiss*; RT), Sierra chorus frog (*Hyla sierra*; HYSI), Sierra Nevada yellow-legged frog (*Rana sierrae*; SNYLF), valley garter snake (*Thamnophis sirtalis fitchi*; THSI), and western toad (*Bufo boreas*; BUBO).

CDFW aerially planted fish in five lakes in the Lawrence Lake PWS between 1950 and 2000. Lawrence Lake (site ID 14038) received BK from 1950 to 2000 and RT between 1967 and 1985. Top Lake (site ID 14049) received BK from 1951 to 1964 and GT from 1965 to 1999. Lake Number 5 (site ID 14020) received BK from 1950 to 2000, with one plant of RT in 1966. Barrett Lake (site ID 14050) received BK from 1950 to 1965 and RT from 1967 to 1972. Lost Lake (site ID 14043) received BK from 1951 to 2000. Lake

Number 3, in the Bassi Fork Silver Creek PWS, was initially stocked with BK fingerlings in the 1930's. In 1968, CDFW shifted the allotment to GT and it was stocked with GT fingerlings through 2008.

Fisheries Surveys

Fisheries surveys were conducted in four of the six named lakes in the Lawrence Lake PWS and in one named lake in the adjacent Bassi Fork Silver Creek PWS (**Figure 2**). Specifically, Lawrence Lake, Lake Number 3, Lake Number 5, Lake Number 9, and Top Lake were surveyed. Fisheries surveys were conducted using a standardized monofilament gill net set for 8 to 12 hours as per the CDFW High Mountain Lakes protocol.

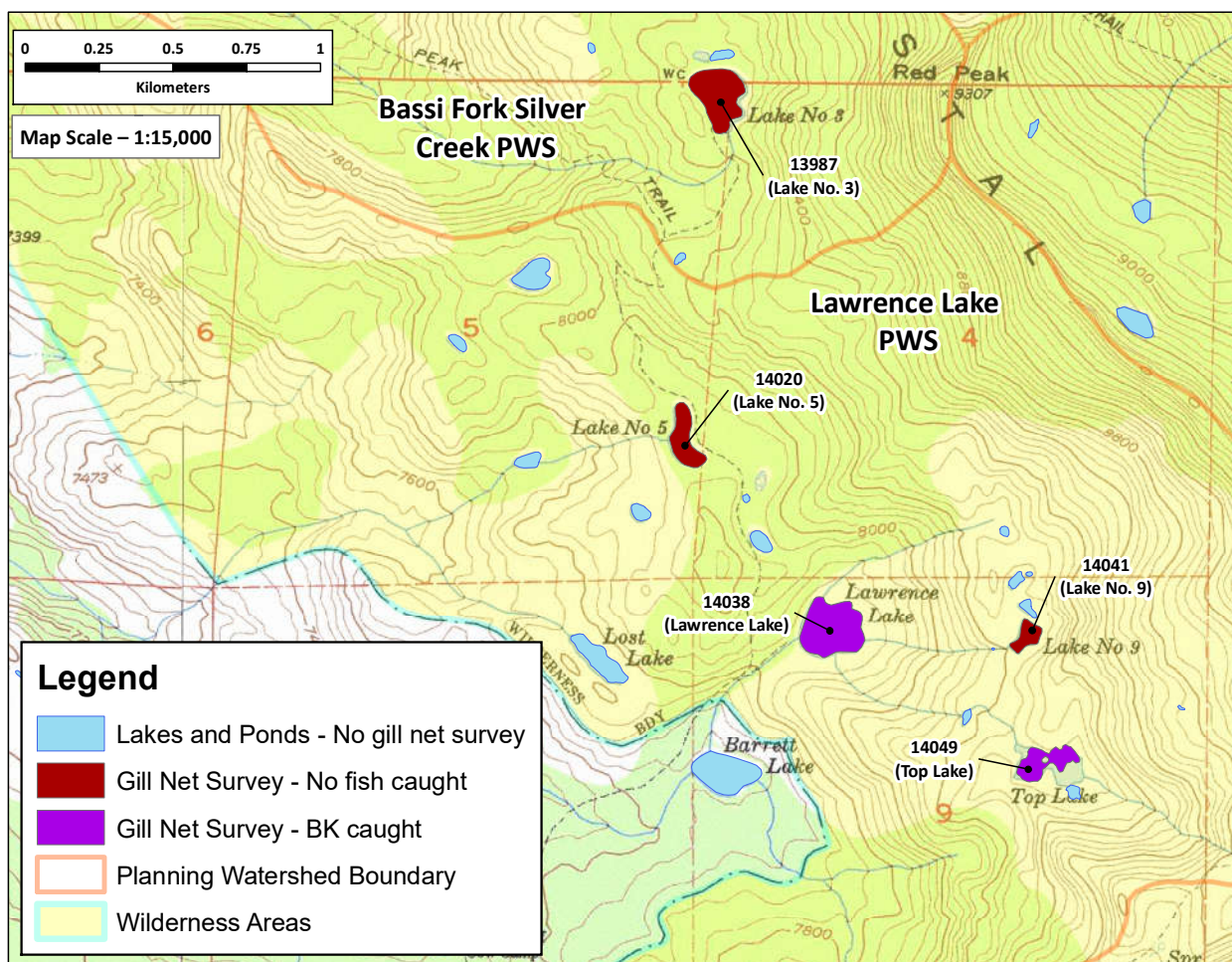


Figure 2: Detail map of the water bodies surveyed and fish species captured by gill net in the Lawrence Lake PWS and the Bassi Fork Silver Creek PWS on July 24 to 26, 2019.

In Lawrence Lake (site ID 14038) (**Figure 3**), a gill net was set at 19:29 on July 24, 2019 and pulled at 06:50 on July 25 for a total survey effort of 11.25 hours. Four BK between 441 mm and 522 mm total length were captured (**Figures 4 & 5; Table 1**). All fish were released alive in good condition. The 2019 gill net survey data is consistent with prior surveys from 2004 and 2014, indicating that Lawrence Lake supports a low density trophy BK fishery.



Figure 3: Overview photo of Lawrence Lake (site ID 14038) taken on July 25, 2019, looking northwest.

The gill net catch suggests access to suitable spawning habitat is limited for the BK population at Lawrence Lake. This conclusion is supported by observations during the 2019 surveys. Inlets 2 and 3 (**Figure 6**) were very shallow (< 1 cm average depth) and featured sheet flow over bare granite bedrock. Sheer cascades, up to approximately 8 meters high, exist on both inlets (**Figures 6 & 7**) forming natural barriers to upstream fish movement. Most likely, the limited natural reproduction of BK in Lawrence Lake occurs in the downstream reach of Inlet 1 or in the lake itself.

In Top Lake (site ID 14049), a gill net was set at at 20:11 on July 23, 2019 and pulled at 07:54 on July 24 for a total survey effort of 11.75 hours. Four BK between 190 mm

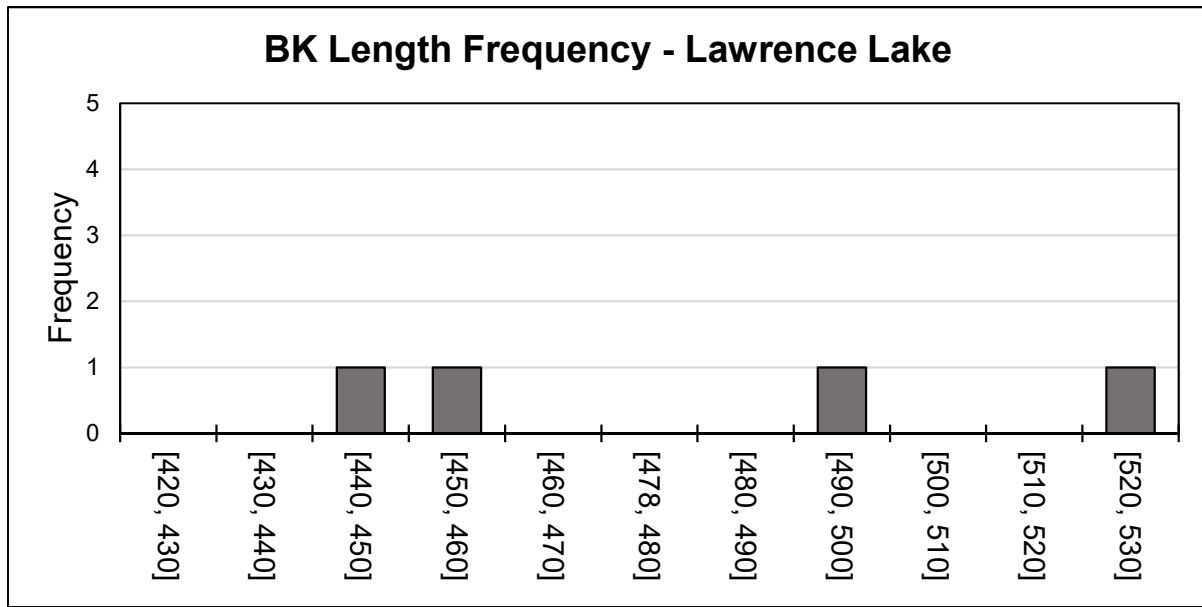


Figure 4: Length Frequency histogram of BK captured during a gill net survey of Lawrence Lake, El Dorado County, on July 24 & 25, 2019. The x-axis displays 10mm (1cm) bins of total length size classes. The y-axis displays the number of fish captured in each size class.

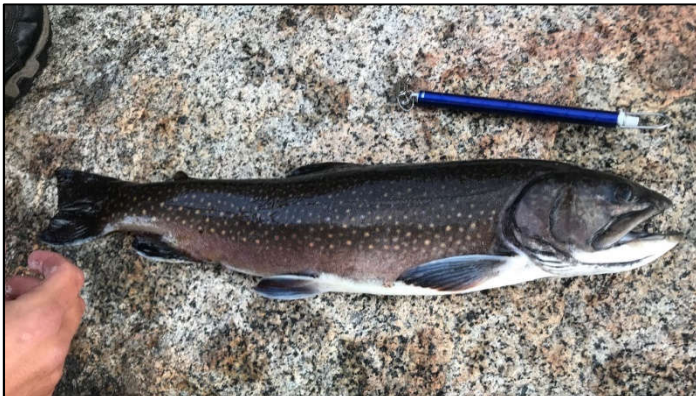


Figure 5: Example of a BK captured by gill net in Lawrence Lake (site ID 14038) and released alive.

Table 1. Total length, weight, and sex of BK captured July 2019 at Lawrence Lake.

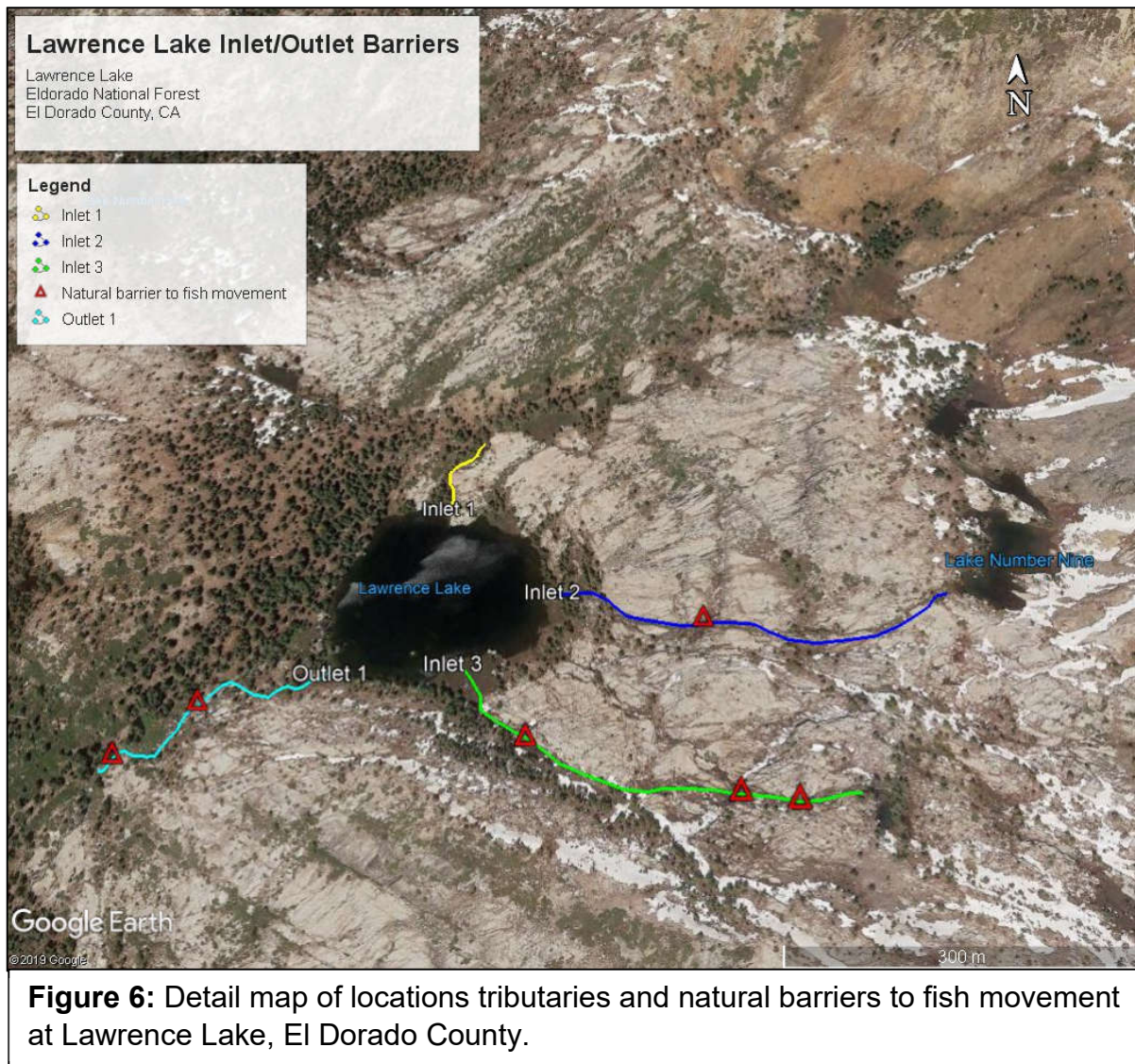
Fish Species	Total Length (mm)	Weight (g)	Sex
BK	441	740	M
BK	450	745	U
BK	491	1000+	U
BK	522	740	M

and 345 mm total length were captured (**Figure 8; Table 2**).

These data are consistent with data from 2004 and 2014, indicating the persistence of a low density BK population in Top Lake.

In Lake Number 9 (site ID 14041) (**Figure 9**), a gill net was set at 19:47 on July 23, 2019 and pulled at 07:17 on July 24 for a total survey effort of 11.5 hours. No fish were captured. CDFW has no record of Lake Number 9 being stocked, and no fish have been captured in gill net surveys. The lake is currently managed as an amphibian breeding resource.

In Lake Number 5 (site ID 14020) (**Figure 10**), a gill net was set at 19:57 on July 24, 2019 and pulled at 07:51 on July 25 for a total



survey effort of 12 hours. No fish were captured. The 2019 monitoring data provide further evidence that Lake Number 5 is fishless. CDFW will no longer actively manage Lake Number 5 in light of this evidence.

Lake Number 3 (site ID 13987) (**Figure 11**), in the Bassi Fork Silver Creek PWS, was surveyed with a gill net over a 7.75 hour period, from 09:30 to 17:20 on July 25, 2019.

Prior year surveys indicate that there is little to no natural GT reproduction occurring within Lake Number 3. A 2002 gill net survey of Lake No. 3 caught 12 GT. To reduce the mortality of captured fish, the net was checked each hour. However, no fish were captured during the survey and the lake is suspected to be fishless at this time.

Herpetofauna Surveys

CDFW conducted herpetofauna surveys at seventeen waterbodies in the Lawrence Lake PWS and two waterbodies in the Bassi Fork Silver Creek PWS on July 24 to 25,

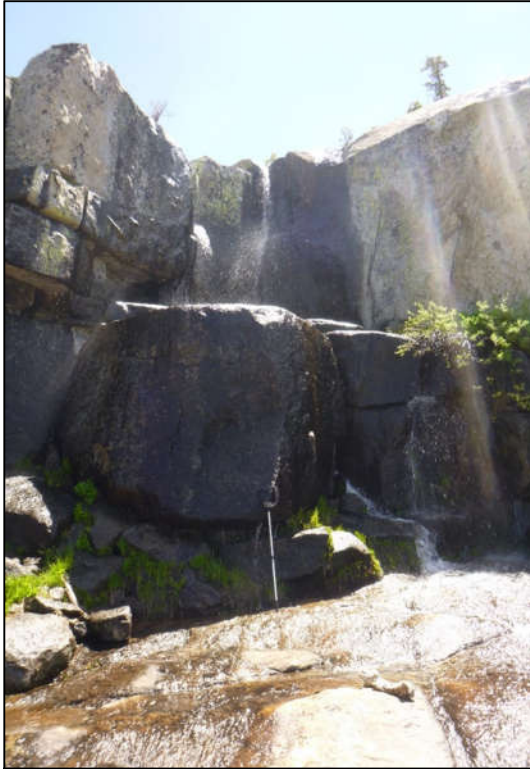


Figure 7: Example of a natural barrier on Lawrence Lake Inlet 3. Pictured in the foreground is a 1.5-meter amphibian dip net for scale.

2019 (**Figure 12**). Surveys were conducted using the High Mountain lakes visual encounter survey (VES) protocol. Survey conditions over the two days were suitable to detect diurnal herpetofauna, with respective average air and water temperatures of 19 ° C and 15 ° C, and clear skies with light wind.

No special status herpetofauna was observed at any survey site. HYSI of various life stages, including eggs, were observed at sites 14016, 14026, 14027, 14037, 14036, 14041, and 14020. Both adult and subadult THSI were observed at sites 62800 and 14020.

SNYLF were observed near Lake Number 9 during CDFW surveys in the 1990's. However, more recent surveys indicate that SNYLF are now locally extinct, corroborated by a lack of SNYLF observations during 2019 VES.

There have been previous observations of adult and larval AMMA in Lake Number 9 (site ID 14041) and pond 14061, but none were observed in 2019.

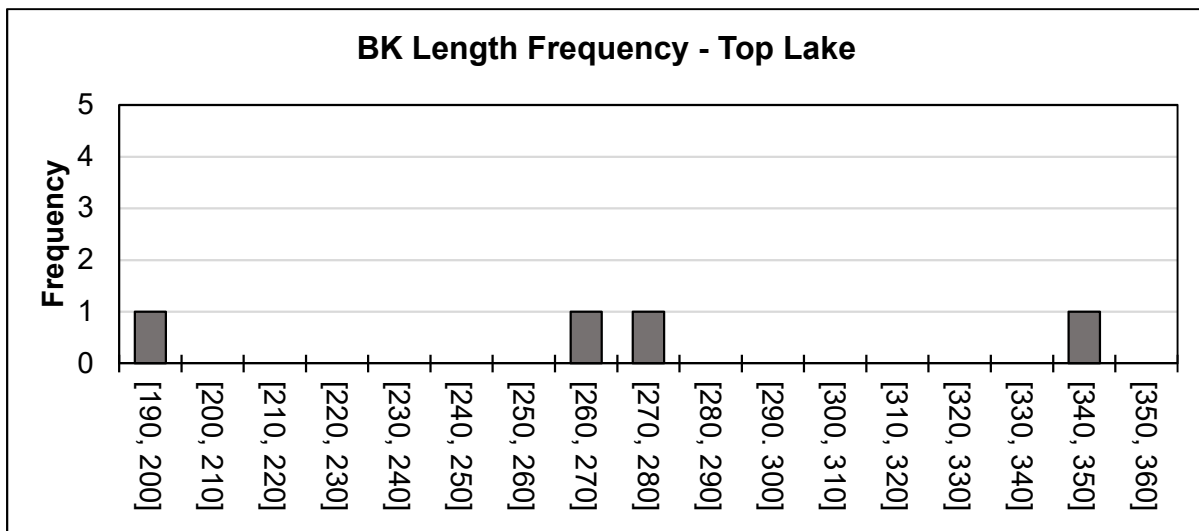


Figure 8: Length frequency histogram of BK captured at Top Lake, El Dorado County, on July 23 to 24, 2019. The x-axis displays 10mm (1cm) bins of total length size classes. The y-axis displays the number of fish captured in each size class.

Table 2. Total length, weight, and sex of fish captured July 2019 at Top Lake.

Fish Species	Total Length (mm)	Weight (g)	Sex
BK	190	70	M
BK	265	199	F
BK	270	219	F
BK	345	450	M

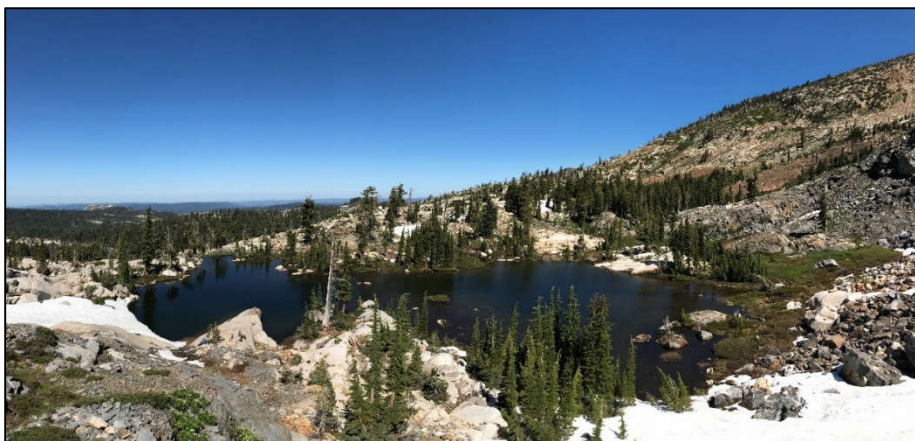


Figure 9: Overview photo of Lake Number 9 (site ID 14041) on July 24, 2019, looking northwest.



Figure 10: Overview photo of Lake Number 5 (site ID 14020) on July 24, 2014, looking north.



Figure 11: Overview photo of Lake Number 3 (site ID 13987) on July 25, 2019, looking west.

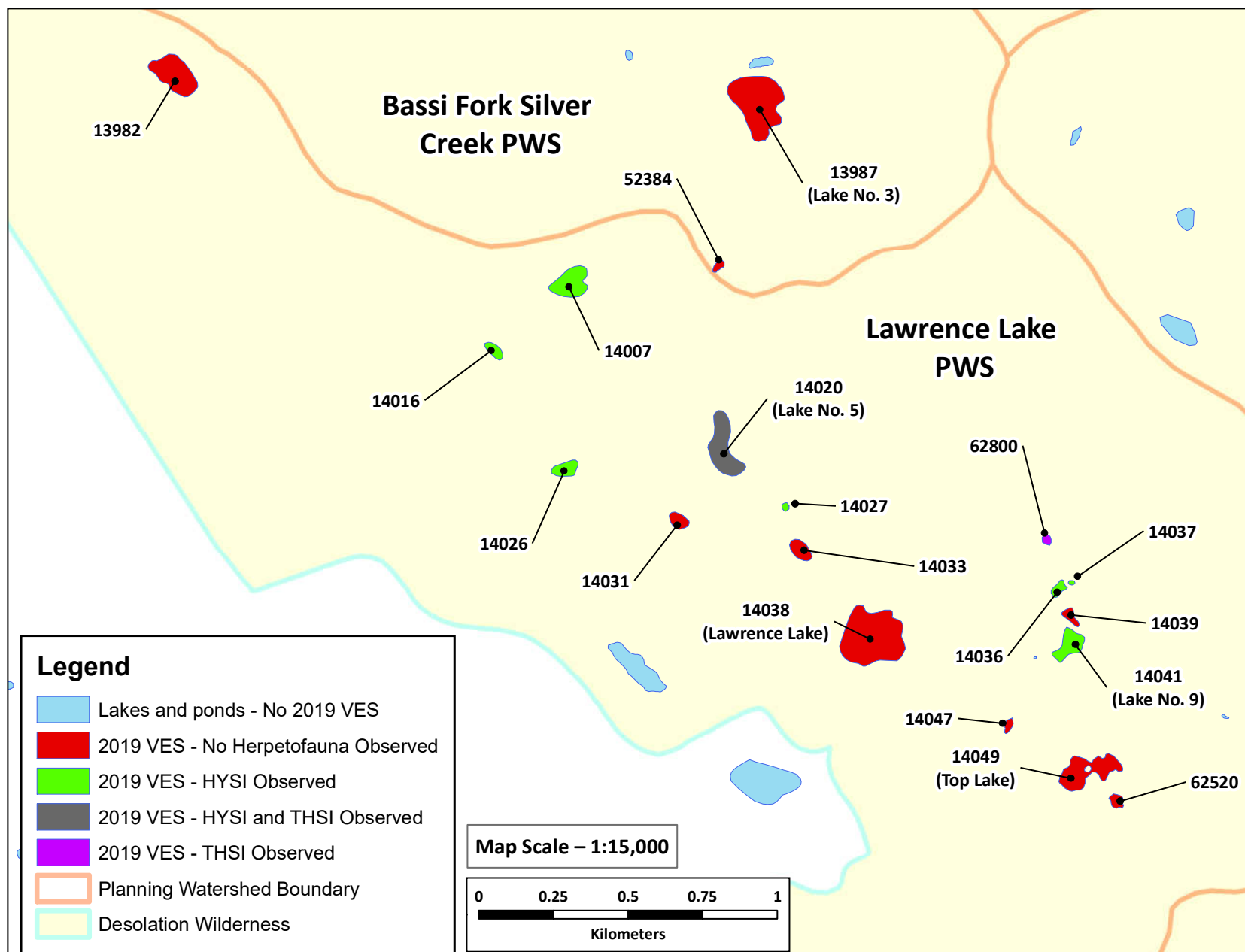


Figure 12: Detail map of the water bodies surveyed an herpetofauna species detected by VES in the Lawrence Lake PWS and the Bassi Fork Silver Creek PWS on July 24 and 25, 2019.