

State of California

Memorandum

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Cc: Region 2 Fish Files

Subject: Sierra Nevada yellow-legged frog monitoring in El Dorado County – Pyramid Lakes (14311 and 14299).

ENVIRONMENTAL SETTING

The Aquatic Biodiversity Management Plan for the Desolation Wilderness Management Unit (CDFW 2012) identifies the Pyramid Peak Lakes (CDFW 2012) as a native species reserve for Sierra Nevada yellow-legged frogs (*Rana sierrae*, SNYLF) and prescribes continued monitoring of the population. Pyramid Peak Lakes are two small perennial lakes southwest of Pyramid Peak in the Desolation Wilderness in El Dorado County (Figure 1). A small stream connects the lakes, which are located in an isolated granite basin between 8,800' and 9,000' (Figure 2). Outflow from the area drains into Lake Sylvia and Lyons Creek where brook trout are self-sustaining, creating a situation where SNYLF are isolated in fishless habitat near the top of the watershed. Eldorado National Forest manages the land.



Figure 1: Pyramid Peak Lakes looking west (CDFW 2012).

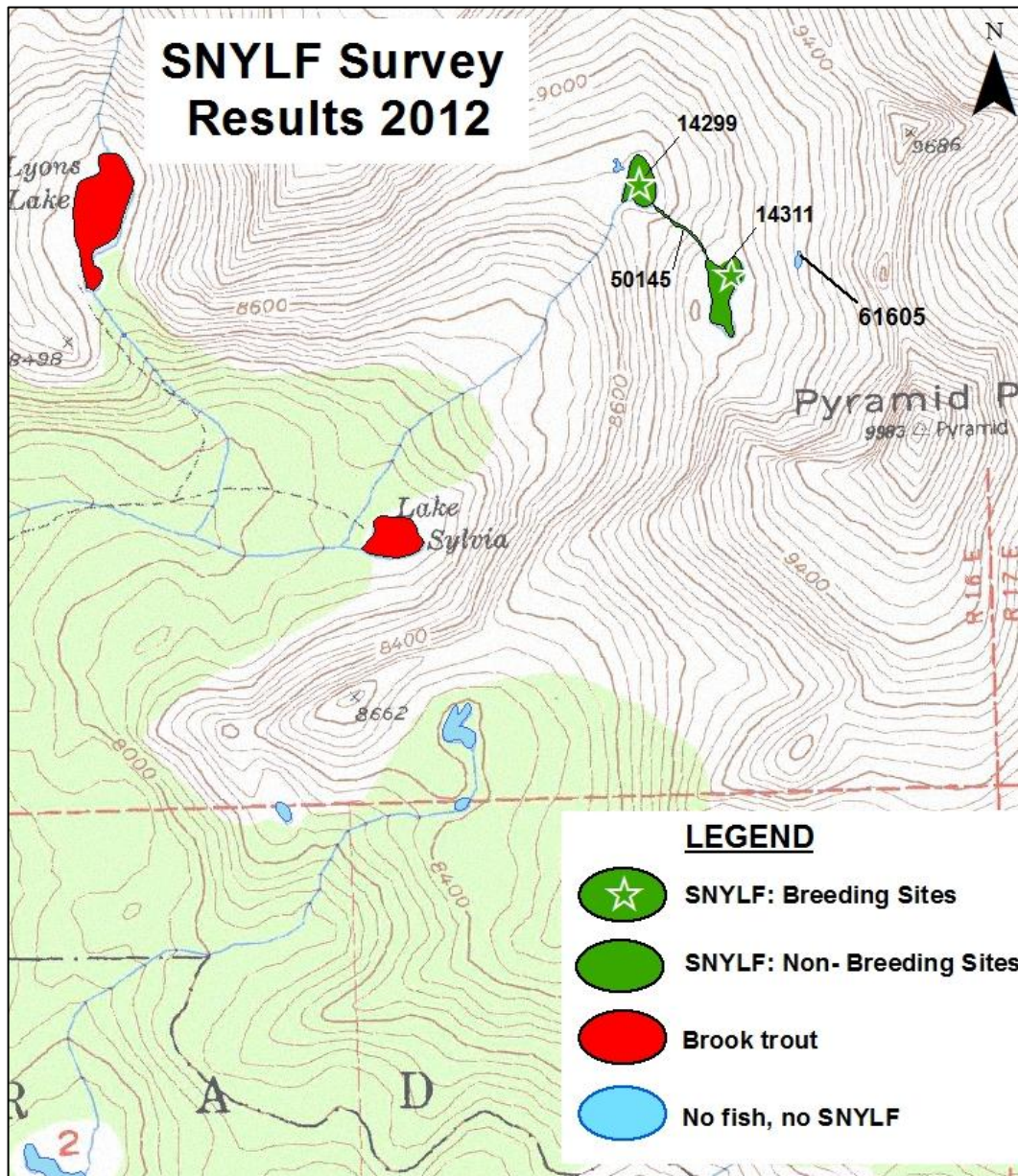


Figure 2: Location of Pyramid Peak Lakes SNYLF population and nearby brook trout in El Dorado County.

THREATS

- Disease – All SNYLF populations in El Dorado County are chytrid fungus, *Batrachochytrium dendrobatidis*, (Bd) positive. Pyramid Peak Lakes were genetically sampled by epithelial swabs for the presence of Bd in 2008 and 2010. Twelve total swabs were collected and results from both years detected very light to light Bd DNA loads.
- Marginal Habitats – This frog population is persisting in two small isolated ponds, neither of which is greater than 4 meters deep. Any disturbance, natural or otherwise, that threatens overwintering habitats presents a potential extirpation risk. Among the risks to the population are habitat disturbance by humans and possible exposure to severe winter conditions or desiccation that could eliminate the population.
- Introduced Fish – Pyramid Peak lakes are fishless and fish cannot migrate into the lakes from Lyons Creek due to the presence of natural fish barriers. However, SNYLF are isolated in their current location and cannot expand downstream due in part to the presence of fish in Lyons Creek and Lake Sylvia. In addition, Lyons Creek may act as a population sink for dispersing adult and juvenile SNYLF.

POPULATION STATUS AND DISCUSSION

Ten years of monitoring data suggest this population is slowly increasing (Figure 3, Figure 4). Small numbers of adults make it difficult to derive trends and CDFW will continue to monitor this population. 2015 UPDATE: The stream connecting the two Pyramid Lakes was dry when surveys were conducted on August 18th and no SNYLF were observed there. However, a single adult SNYLF was observed at a small unnamed pond (CA Lakes ID 61605, Figure 2) east of the Pyramid Lakes. No SNYLF have been observed at this pond during previous surveys and finding one there for the first time is a positive sign. Despite low numbers of observed tadpoles, data from 2015 suggest the population is continuing to increase slightly or remain stable.

Fisheries monitoring surveys were conducted at Silvia and Lyons Lake in 2015. Previous surveys suggested persistent brook trout populations at both lakes but were within a few years of halting fish plants at each lake. 2015 surveys confirmed brook trout populations are still present and likely to remain at each lake indefinitely.

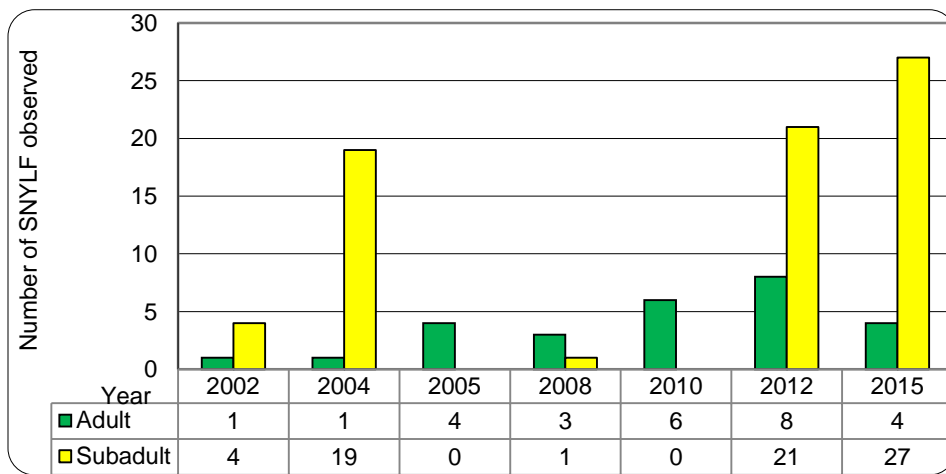


Figure 3: VES data displayed by life stage at Pyramid Peak Lakes from 2002 to 2015. The stream connecting the two lakes was surveyed in 2005, 2012 and 2015; however, it was completely dry in 2015.

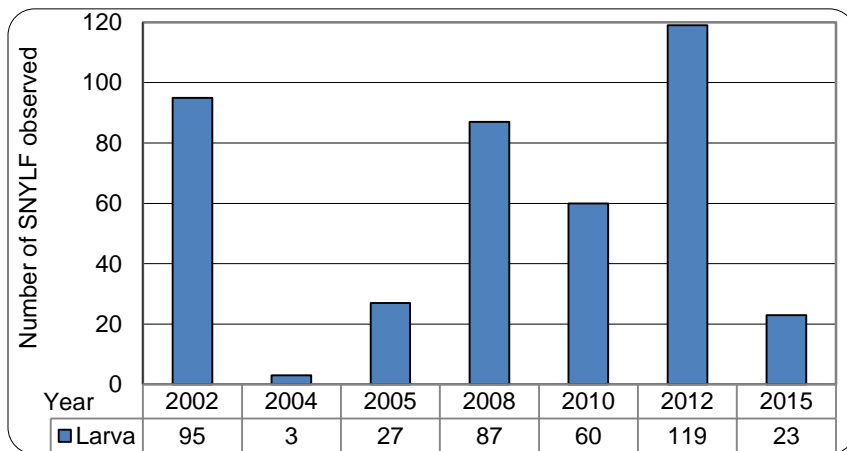


Figure 4: Larval SNYLF counts at the Pyramid Peak Lakes from 2002 to 2015.

LITERATURE CITED

CDFW 2012. *Aquatic Biodiversity Management Plan for the Desolation Wilderness*. California Department of Fish and Wildlife; 12/19/2012. Available from:

<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=59961>