



Restoration of Native Species in High Elevation Aquatic Ecosystems Plan and Draft Environmental Impact Statement Sequoia and Kings Canyon National Parks

Description of Map Developed for Public Meetings November 2013

The map shows Sequoia and Kings Canyon National Parks, with the ranges of the three MYLF clades that occur within the parks shaded in different colors (a clade is a group of organisms that share features inherited from a common ancestor). The Kaweah watershed in the southwest corner of the parks is shaded in a fourth color (MYLFs appear to have gone extinct from this area). It is unknown whether the MYLFs that used to occur in the Kaweah watershed were similar to one of the six surviving clades, or formed a seventh unique clade.

The map shows lake areas:

- with completed or in-progress physical treatment (trout eradication), shown in pink;

and lake areas proposed for:

- physical treatment (trout eradication), shown in purple;
- piscicide treatment (trout eradication), shown in yellow;
- conservation of MYLF populations in anticipated fishless areas, shown in orange; and
- continued recreational fishing, shown in dark blue.

Note: Mountain yellow-legged frog (MYLF) clades were determined by Vredenburg and others (2007) on the basis of genetic makeup (mitochondrial DNA), morphology (leg length), and vocalization (mating calls). Two species of MYLFs were identified, including *Rana sierrae* in the north and *Rana muscosa* in the south.

Rana sierrae, also referred to as the Sierra Nevada yellow-legged frog, occurs from north of Lake Tahoe to roughly Mather Pass in these parks. Within this species' range, three clades were identified, including one that extends south from Yosemite National Park to the Mather Pass area within these parks. On the map in this workbook, this clade is referred to as the San Joaquin/Kings Clade.

Rana muscosa, also referred to as the mountain yellow-legged frog, occurs from roughly Mather Pass to the south of these parks, and also in the Transverse Ranges of southern California. Within this species' range, three clades were also identified. One clade extends south from the Mather Pass area to the Upper Kern watershed, referred to as the Kings/Kern Clade on the map in this workbook. Another clade extends south from the Upper Kern to south of the boundary of these parks, referred to as the Southern Kern Clade on the map in this workbook. The third clade occurs within the Transverse Ranges of southern California.

Literature Cited

Vredenburg, V. T., R. Bingham, R. Knapp, J. A. T. Morgan, C. Moritz and D. Wake. 2007. Concordant molecular and phenotypic data delineate new taxonomy and conservation priorities for the endangered mountain yellow-legged frog. *Journal of Zoology* 271:361–374.