**Assessment: 2019-2020 Research Objectives and Key Results, Challenges, and Opportunities.**

In 2019-2020, my objectives focused on embracing leadership of the Mountain Lakes Research Group, with emphasis on our role in recovery of the endangered mountain yellow-legged frogs. In that context, I strove to maintain our budget of >$250,000 per year, initiate new projects, and build relationships with the people and agencies that are critical partners in frog recovery.

**Funding:**

* Obtained grants and gifts exceeding $400,000, from National Park Service (NPS), California Department of Fish and Wildlife (CDFW), United States Fish and Wildlife Service (USFWS), plus non-profits and individual donors.

**New Projects:**

* With Dr. Erica Bree Rosenblum at UC Berkeley, developed, funded, and initiated a cutting-edge conservation genetics project in Yosemite National Park.
* Worked with CDFW, USFS, and Zoo partners to begin the first captive-reared frog reintroduction project on Sierra National Forest.

**Build Relationships:**

* Became point-of-contact for communications with CDFW, USFWS, NPS, and Zoos.
* Coordinated on-the-ground frog recovery actions with CDFW, USFWS, NPS, and Zoos.
* Presented and led discussions at annual Interagency Mountain Yellow-Legged Frog Meetings.
* Worked with CDFW and USFWS to develop a rapid response disease outbreak intervention plan.

**Other key results:**

* Drove publication of Dr. Roland Knapp’s database of >8,000 lake surveys collected from 1995-2002. This included mentoring a data science fellow in cooperation with the Environmental Data Initiative.
* Reached the 15-year milestone (approximately 10,000 hours) of studying Sierra Nevada frogs and lakes.

**Challenges:** The 2020 pandemic created challenges that consumed time and diverted resources from ongoing projects, and outright prevented other activities.

* I invested substantial time crafting contingencies and seeking approvals (from UCSB, ERI, SNARL, and NPS) to ensure that our team could work safely in the field. Because our research employs small teams in remote mountain settings, we safely completed all of our 2020 fieldwork commitments despite COVID-19 concerns.
* In most years, my research group cooperates with San Francisco and Oakland Zoos and other collaborators to immunize captive-reared frogs against a disease they will face after rewilding. This process requires massive collaboration and close teamwork in several facilities. I facilitated the discussions and decision by all stakeholders (the Zoos, CDFW, USFWS, and NPS) to not immunize frogs in 2020, to minimize human risk and adhere to public health policy. This process cost time, and the decision may result in loss of future data and backsliding in frog recovery.

**Opportunities:** Looking forward, I will pursue opportunities to develop a broader independent research program that incorporates interests in Sierra Nevada aquatic ecology, beyond frog conservation. These opportunities include:

* Develop a study to describe ponds in the Sierra Nevada ecosystem, with UC Davis collaborators.
* Complete and publish gartersnake predation project; seek funding for a follow-up study.
* Secure funding for Sierra Nevada Aquatic Research Consortium meetings and collaborations.
* Publish two benthic macroinvertebrate datasets in 2021.