**Genetic analyses of *O.mykiss* in eastern Oregon**

Samples provided by Tim Porter (ODFW)(N = 93)

* Native redband from Paulina Creek (n = 35) sampled on July 2nd 2019
* Unknown origin from SF Crooked River (n = 17) sampled on April 30th and October 10th 2019 and October 7th and 8th 2020
* Unknown origin from Twelvemile Creek (n = 41) sampled on July 3rd 2019 and November 12th 2019.

Genetic data provided by Justin Bohling (USFWS)

* Based on 379 genetic markers (Omy379), the samples sizes are
  + Cape Cod Hatchery n = 10
  + Crane Prairie Reservoir n = 1
  + Oak Springs Hatchery n = 10
  + Round Butte Hatchery n = 11
  + Wizard Fall Hatchery n = 11
* Based on 269 genetic markers (Omy269), the samples sizes are
  + Cape Cod Hatchery (stock 53 or 72?) n = 45
  + Crane Prairie Reservoir n = 0
  + Oak Springs Hatchery (stock 66 or 153?) n = 43
  + Round Butte Hatchery n = 0
  + Wizard Fall Hatchery (stock 127) n = 34

Note: Based on small sample sizes, we will have to use the 269 markers and not all 379 markers.

The objective of this study is to compare the unknown samples from the South Fork Crooked River and Twelvemile Creek to the known Paulina Creek (native redband trout) and the Wizard Falls Hatchery fish (genetic data provided by Abernathy) to determine origin.

The South Fork (SF) Crooked River system, located approximately 45 miles southeast of Prineville, was treated throughout with rotenone in 1981 to remove non-game fish, possibly eliminating all native redband trout. Since 1982, the SF Crooked River system has been stocked only with hatchery-raised (Round Butte Hatchery, Deschutes River stock 66), fin-clipped redband trout and possibly steelhead with origins from the upper Crooked River basin or the lower Deschutes River. Monitoring in the SF Crooked did not find any evidence of natural production. However, monitoring was not conducted in Twelvemile Creek.

In the early 2000’s, ODFW started a program to produce a locally adapted stock by collecting gravid adult redband trout in the Ochoco National Forest, spawned the adults in the hatchery, and then returned the adults to their native stream. The progeny were marked and stocked locally including in the SF Crooked. Due to successful natural production and good population dynamics, we ceased stocking the SF in 2012.

In 2013, there was a water snafu where the river was dewatered for two days and we lost pretty much everything. The locally adapted stock program had since been discontinued so we started stocking with our Cranebows (Wizard Falls Hatchery, Redband Trout stock 127) in 2014. During this same timeframe, the local BLM biologist said he sees trout in Twelvemile Creek that look like native redbands based on parr marks and fin quality. We had not stocked Twelvemile Creek, so we decided to collect genetic samples from Twelvemile Creek and unmarked trout from SF Crooked to see if some native redbands survived the rotenone treatment and are repopulating or if they are just descendants of hatchery trout.

Map

Description automatically generated