Mapping species of concern with environmental DNA

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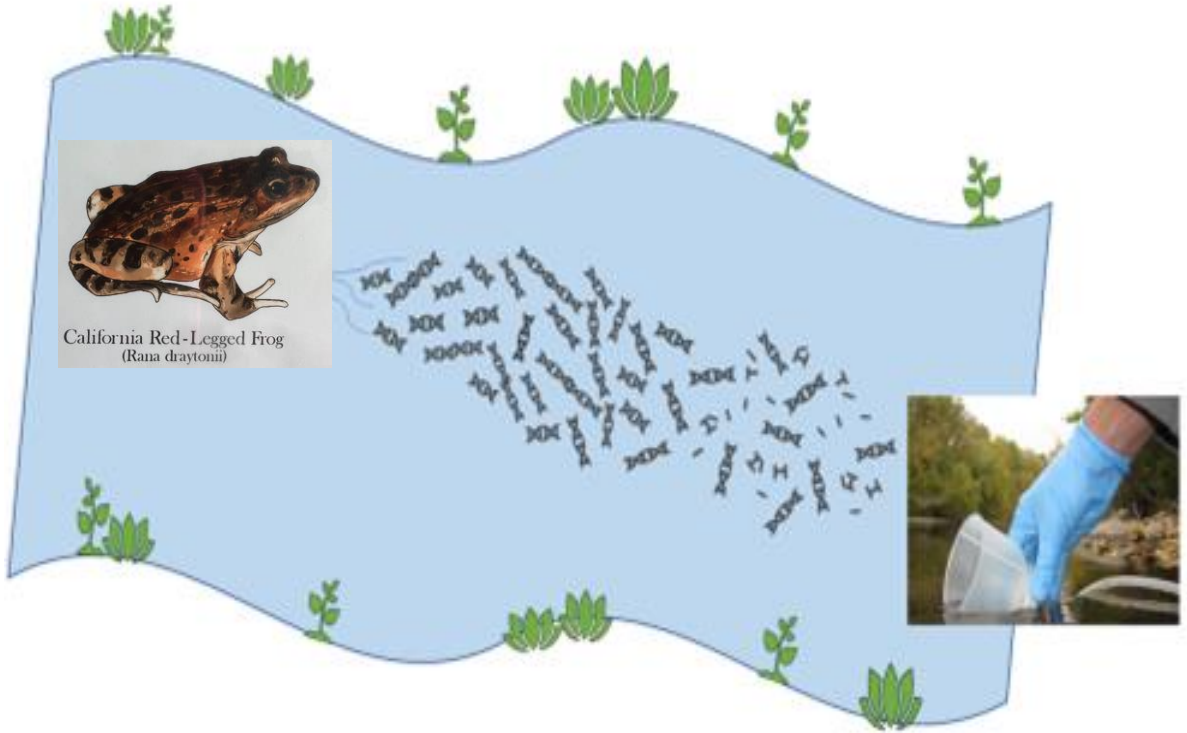
Environmental DNA (eDNA)

eDNA: genetic material releasee from an organism into the environment

- Rivers are ‘conveyor belts’ of eDNA
- Organisms can be detected downstream with just a water sample



Environmental DNA (eDNA)

Two types of eDNA analysis:

1. Single species using qPCR
2. Multi-species using Meta-barcoding

- Cheaper than traditional methods (assay $50-100 per sample)
- Detects over larger area
- Detects cryptic species

Environmental DNA (eDNA)

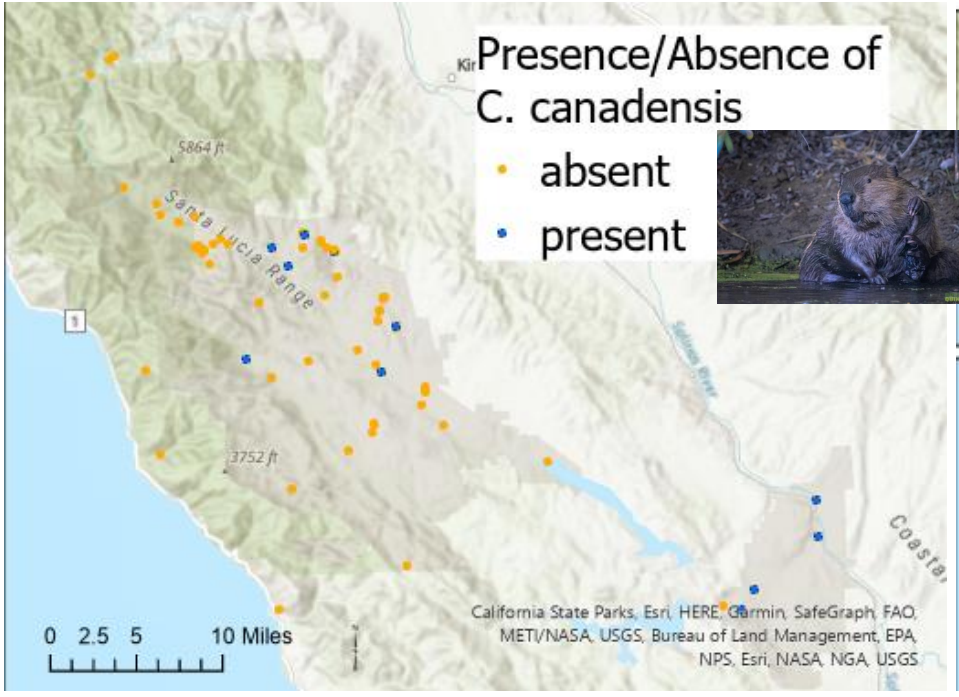
Examples of eDNA in Salinas River:

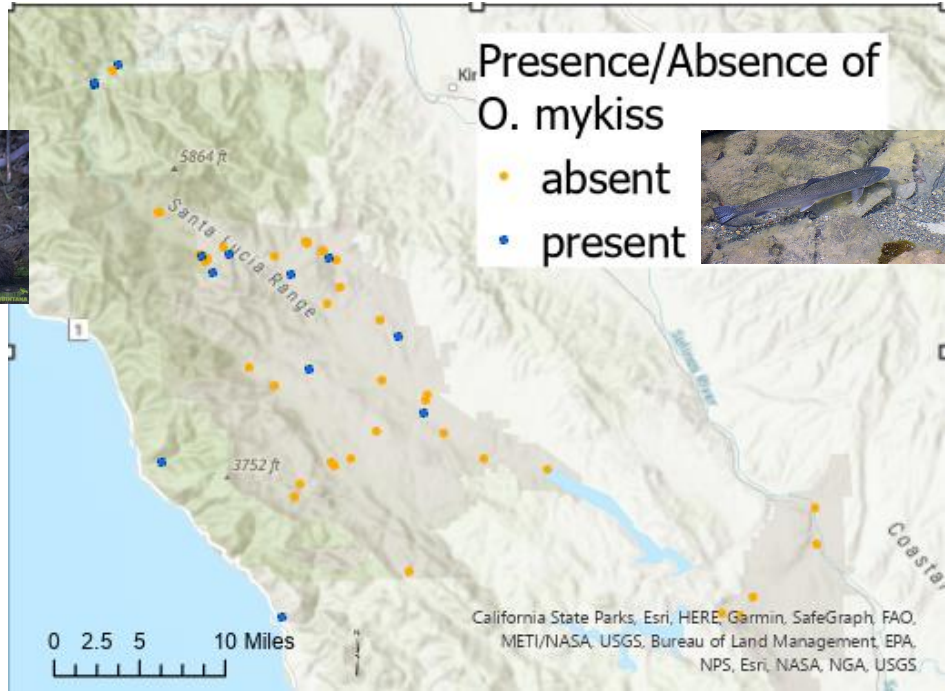
- Lawrence, Matuch, et al.
- Used eDNA to confirm:
  - loss of Anodona in San Antonio R.
  - continued presence in Nacimiento R.

Environmental DNA (eDNA)

Examples of eDNA in Salinas River:

- Meta-Barcoding for fish & mammals





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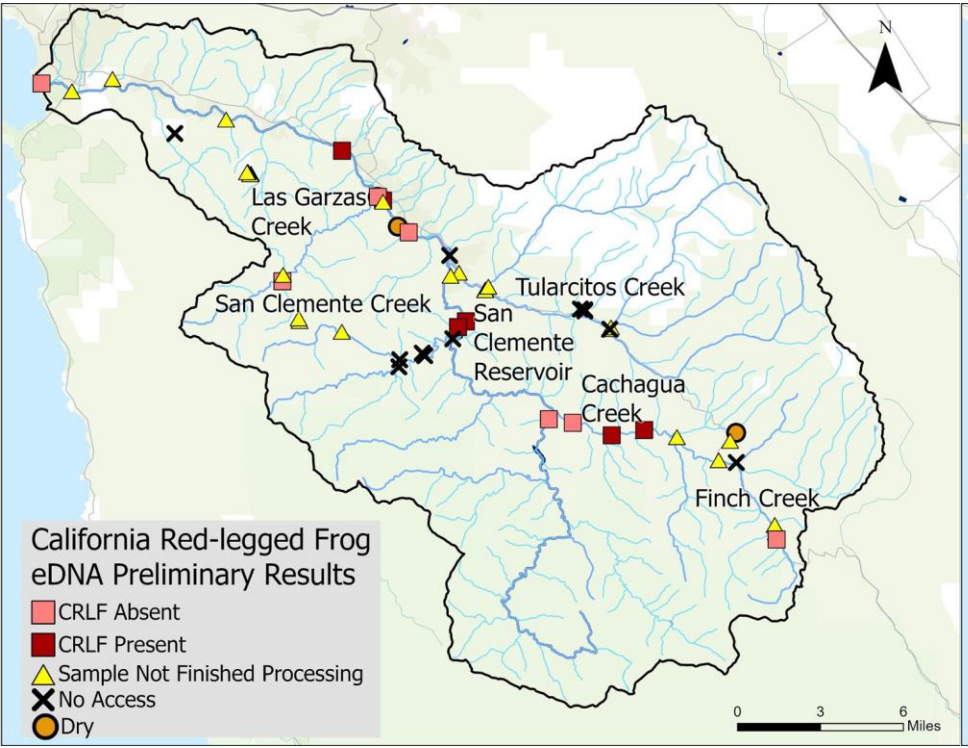

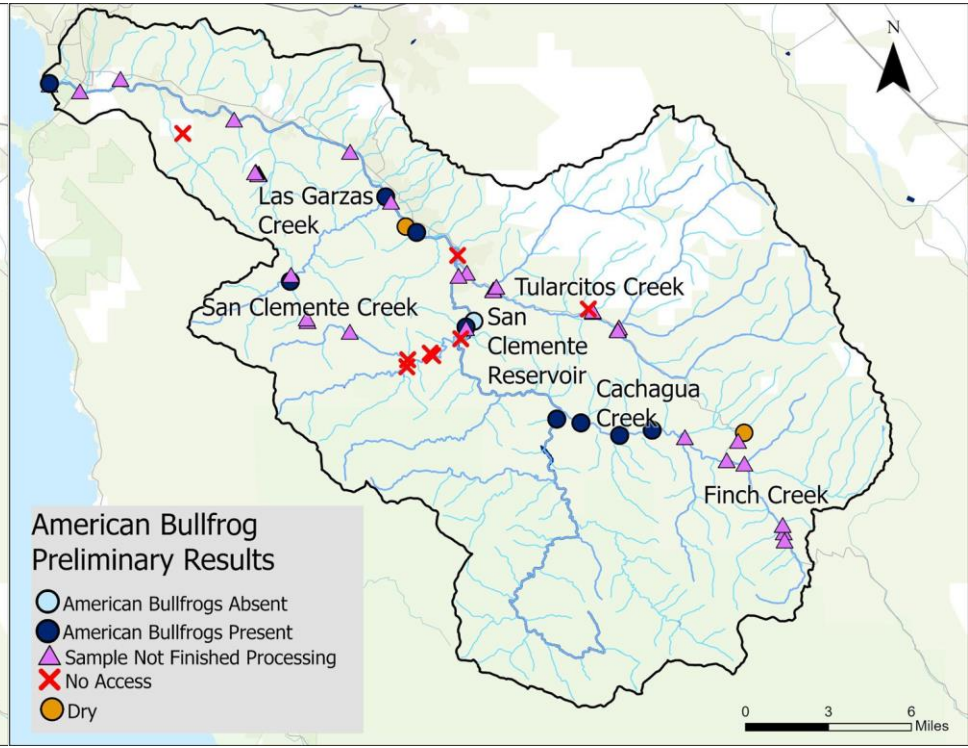

Environmental DNA (eDNA)

Examples of Potential uses of eDNA in Salinas River:

- Mapping/Species Distribution Models
- Early detection of invasives
- Monitoring Threatened & Endangered species

Environmental DNA (eDNA)

Questions/Discussion