

Big Bear Falls: Should they stay or should they go?



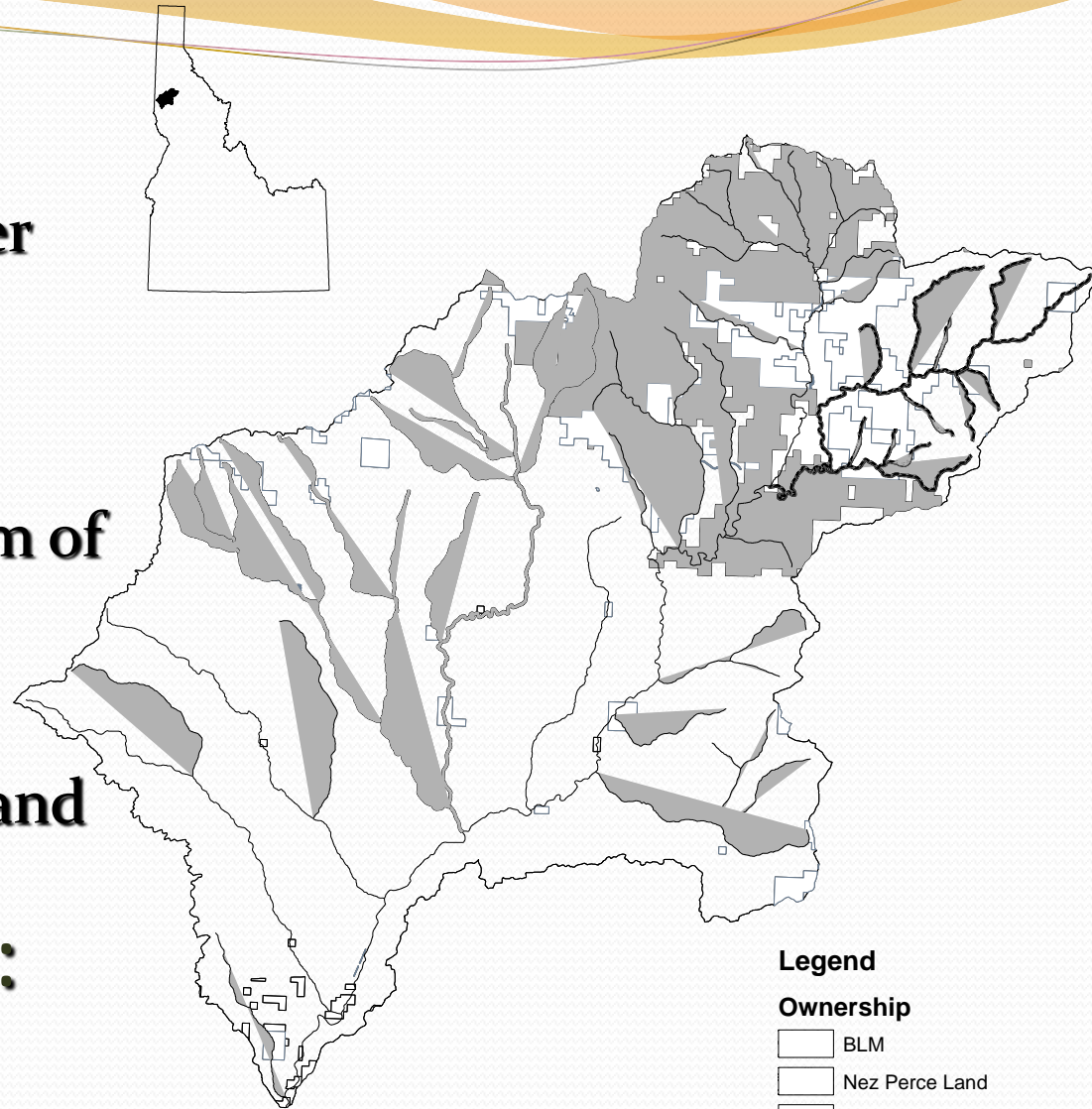
Potlatch River

Drainage:

- Largest lower Clearwater River tributary
- Area = 1500 km²
- Mouth ~ 13 km upstream of Snake/Clearwater confluence
- Dominated by private land

Salmonid Presence:

- Steelhead, brook trout, coho salmon, and spring/fall Chinook



Legend

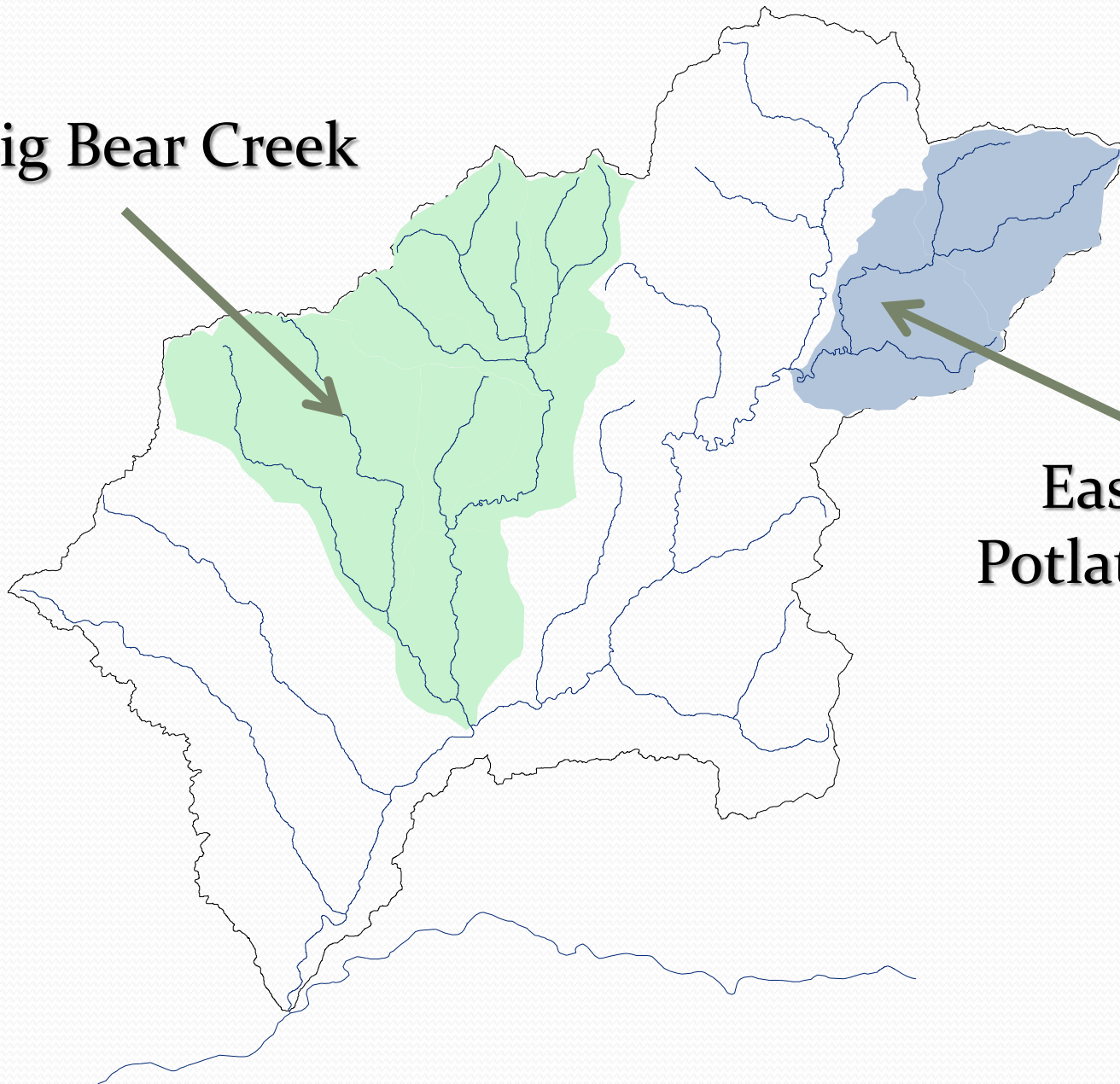
Ownership

- BLM
- Nez Perce Land
- Private
- State
- USFS

0 2,250 4,500 9,000 13,500 18,000 Meters

Potlatch River Restoration

Big Bear Creek



East Fork
Potlatch River

Potlatch River Restoration

Lower Basin

- Limiting Factor
 - Flow Related

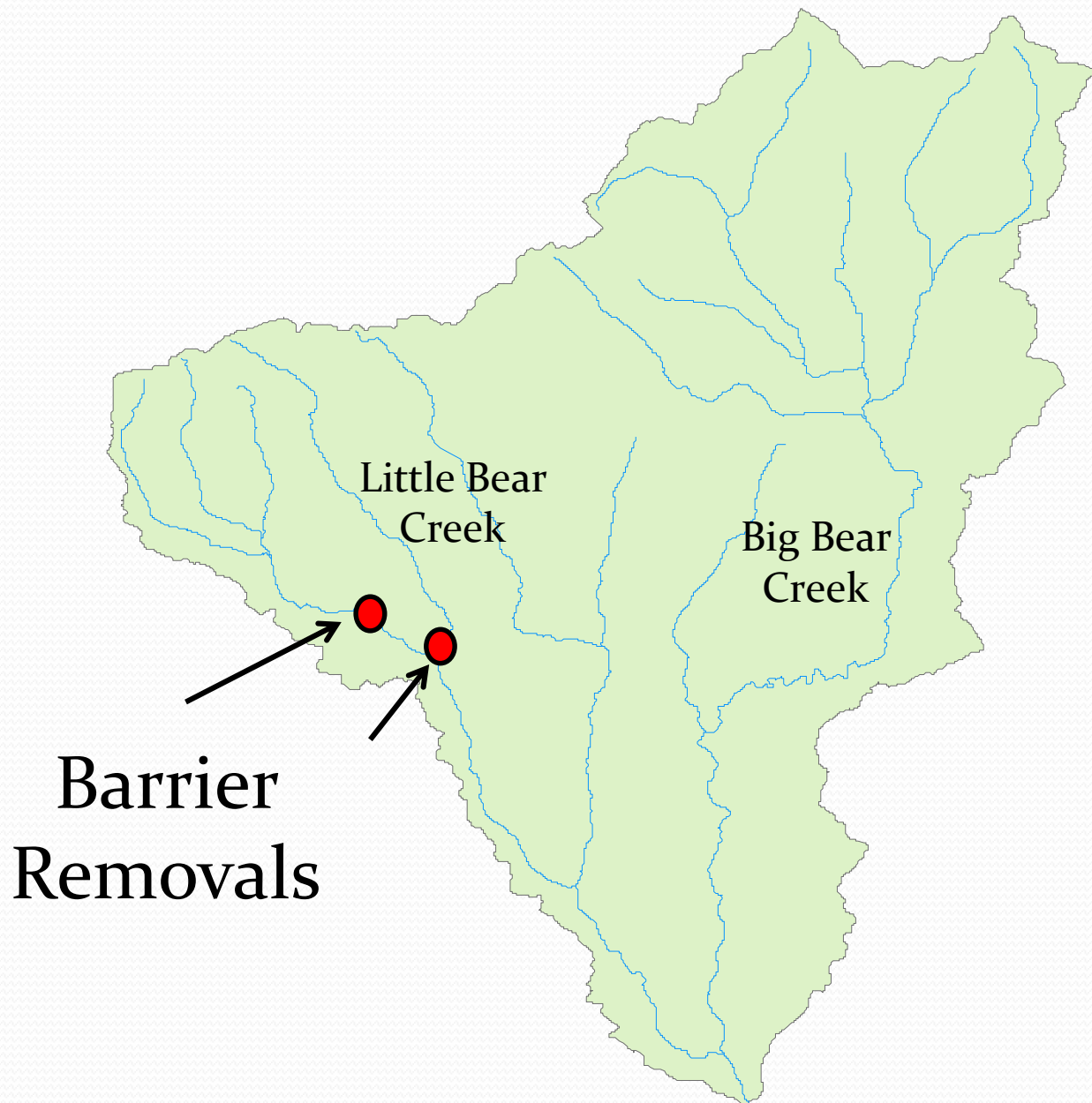


Lower Basin Strategy

- Increase rearing habitat
 - Restore passage
- Increase instream flow
 - Late-Summer!!
 - Developing/exploring water release strategies in Big Bear Drainage



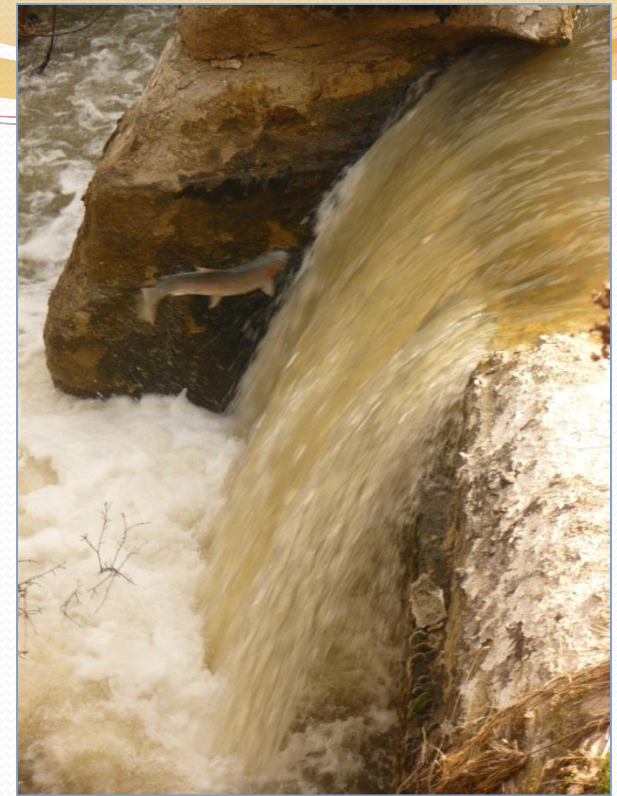
Big Bear Drainage Projects



Restoring Access

Dutch Flat Dam:

- ~ 2-3 km of good steelhead habitat above dam site



Big Meadow Creek Culvert:

- ~10 km of good steelhead habitat upstream



Big Bear Drainage Projects

Water Release Strategy



Late Summer Flow Releases

Water releases monitored
in summer 2012

- >0.1 cfs released
detected 10 km
downstream



Big

ects

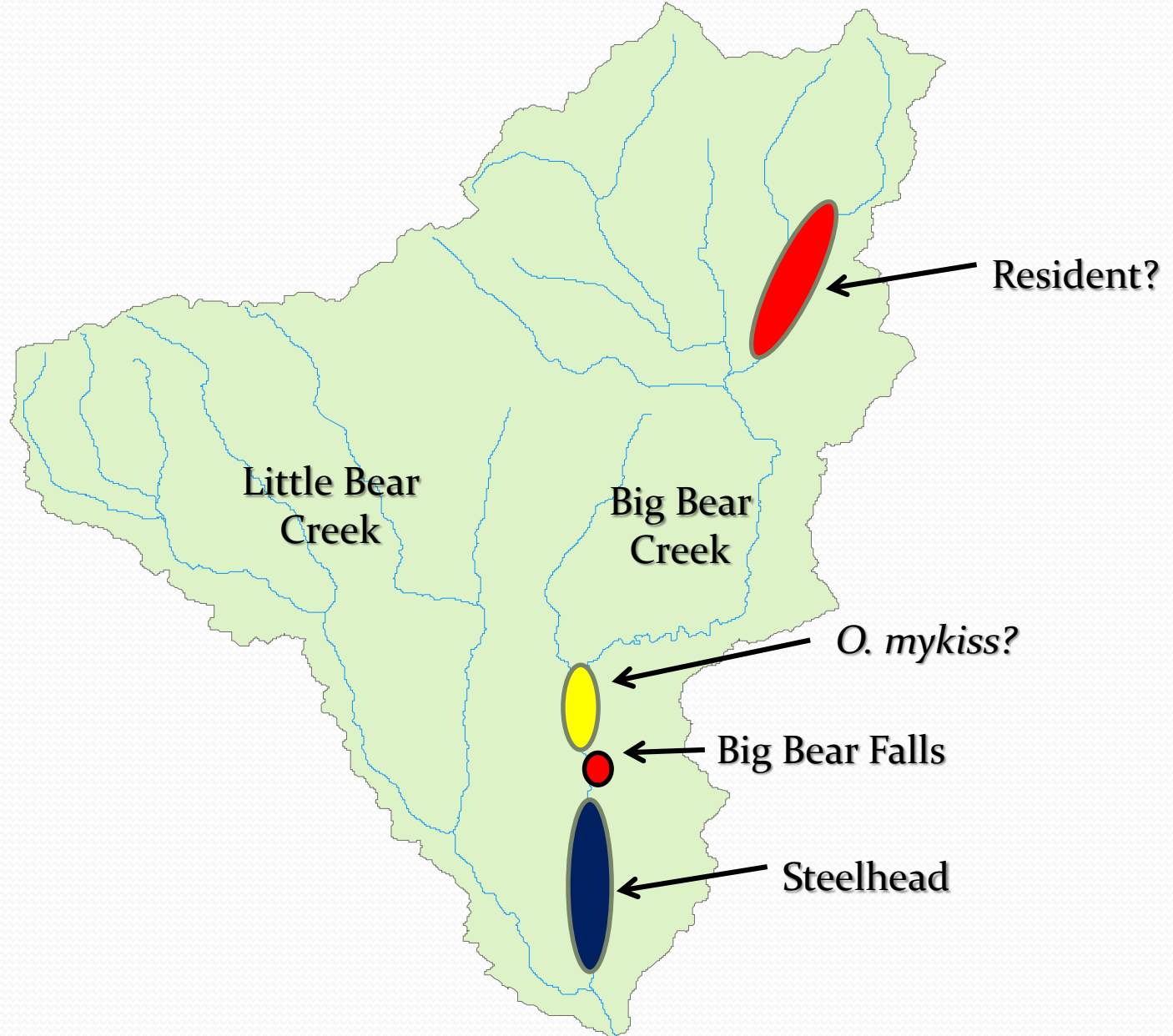
Water
Stra

Dutch Flat
Dam



r Falls???

What we know about Big Bear *O. mykiss*



Is there good steelhead habitat?



What should we do at the falls?

- What is the status of the falls?
 - Barrier
 - Impediment
 - Non-issue
- If upper population is isolated, should it be protected?
- Why haven't *O. mykiss* colonized above falls reach if habitat is suitable?
- Are the falls human caused?
 - Extreme changes to hydrograph

Big Bear Falls Assessment

- How related are *O. mykiss* in Big Bear Creek?
- Is middle group resident or anadromous?
- How will this affect our restoration approach?



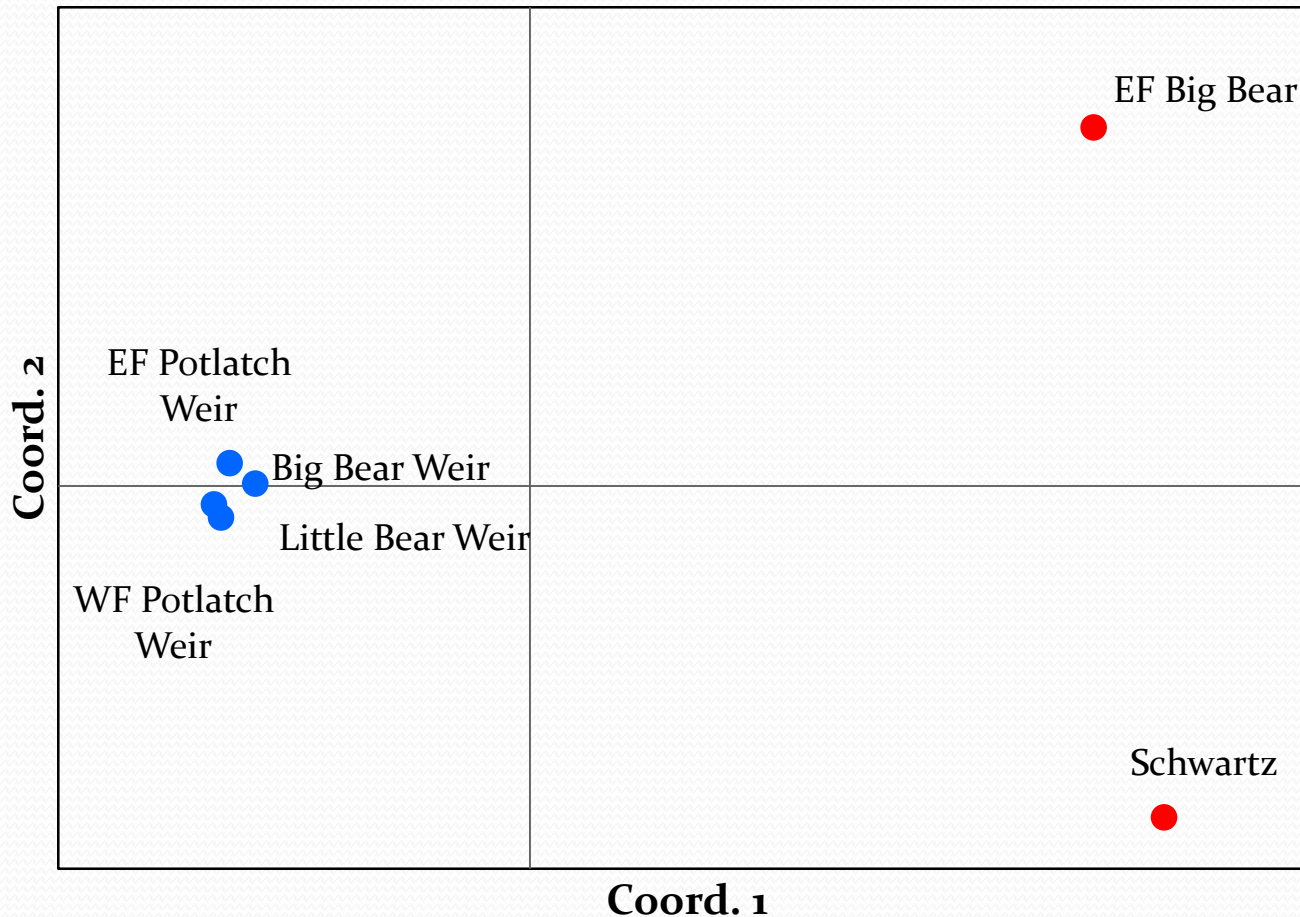
Sample Locations



Results:

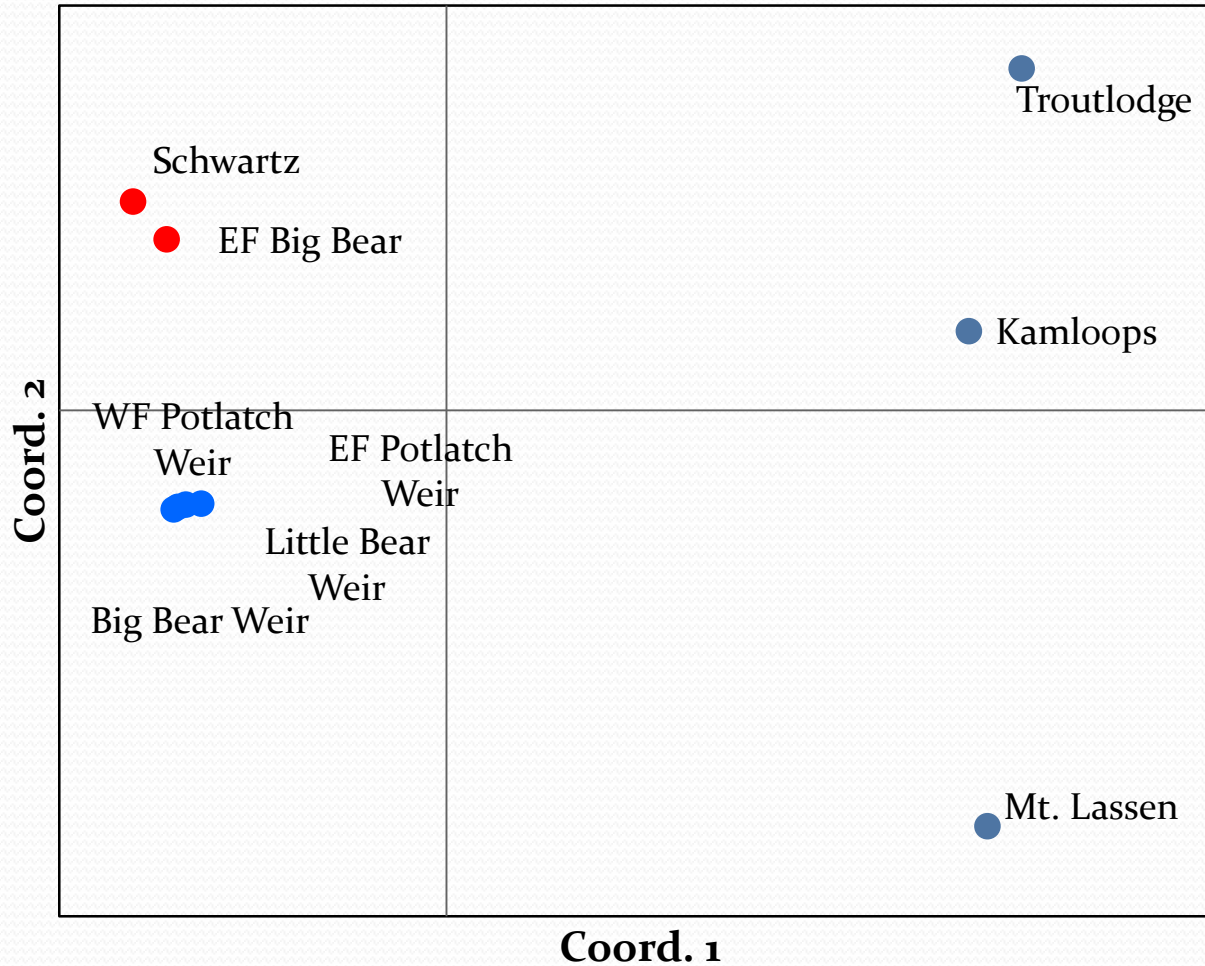
- Step 1: Are adult steelhead collections and resident collections from upper Big Bear genetically differentiated? **YES**

Principal Coordinates



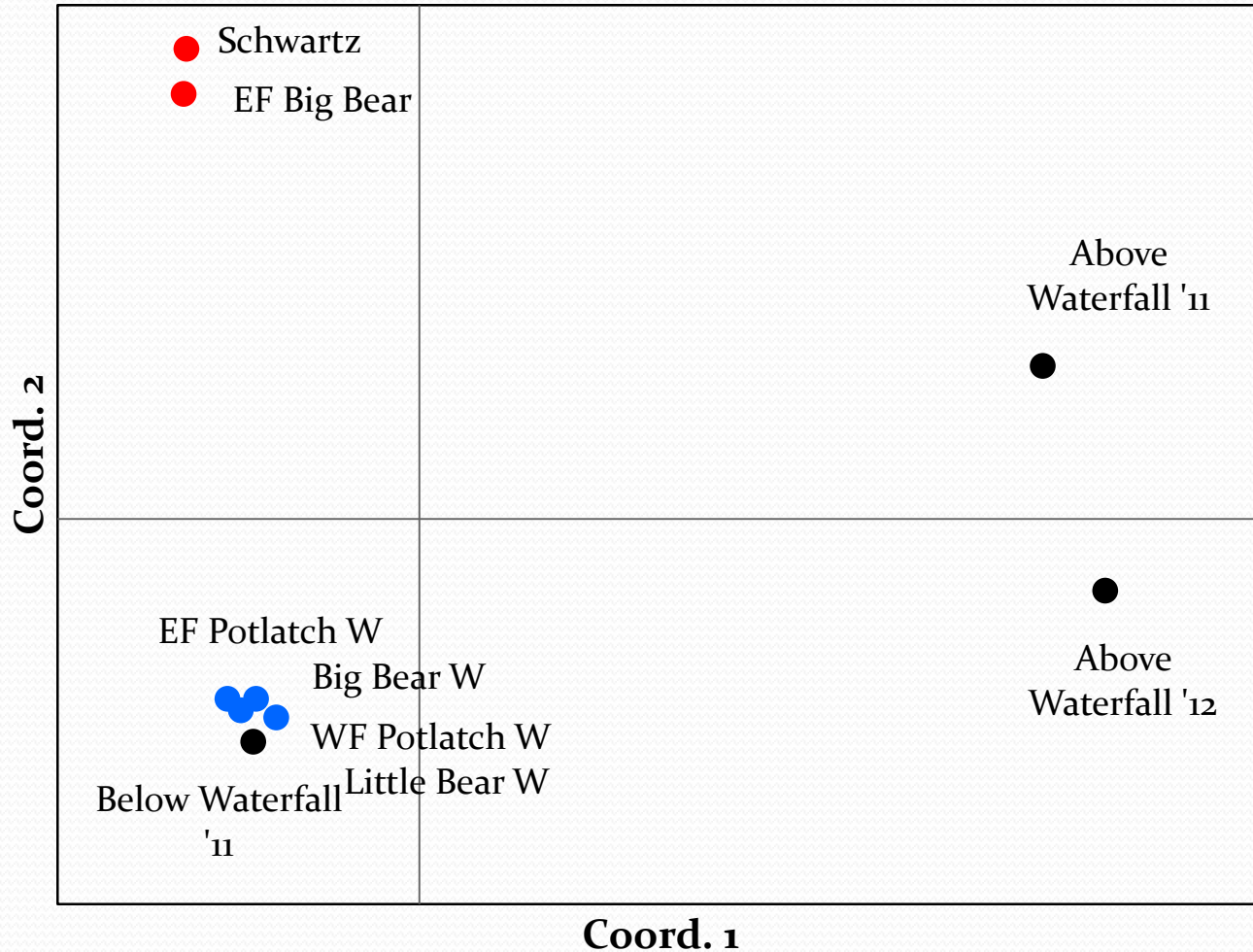
Step 2: Is there evidence of introgression from resident hatchery “coastal” lineage in any of the collections? **NO**

Principal Coordinates

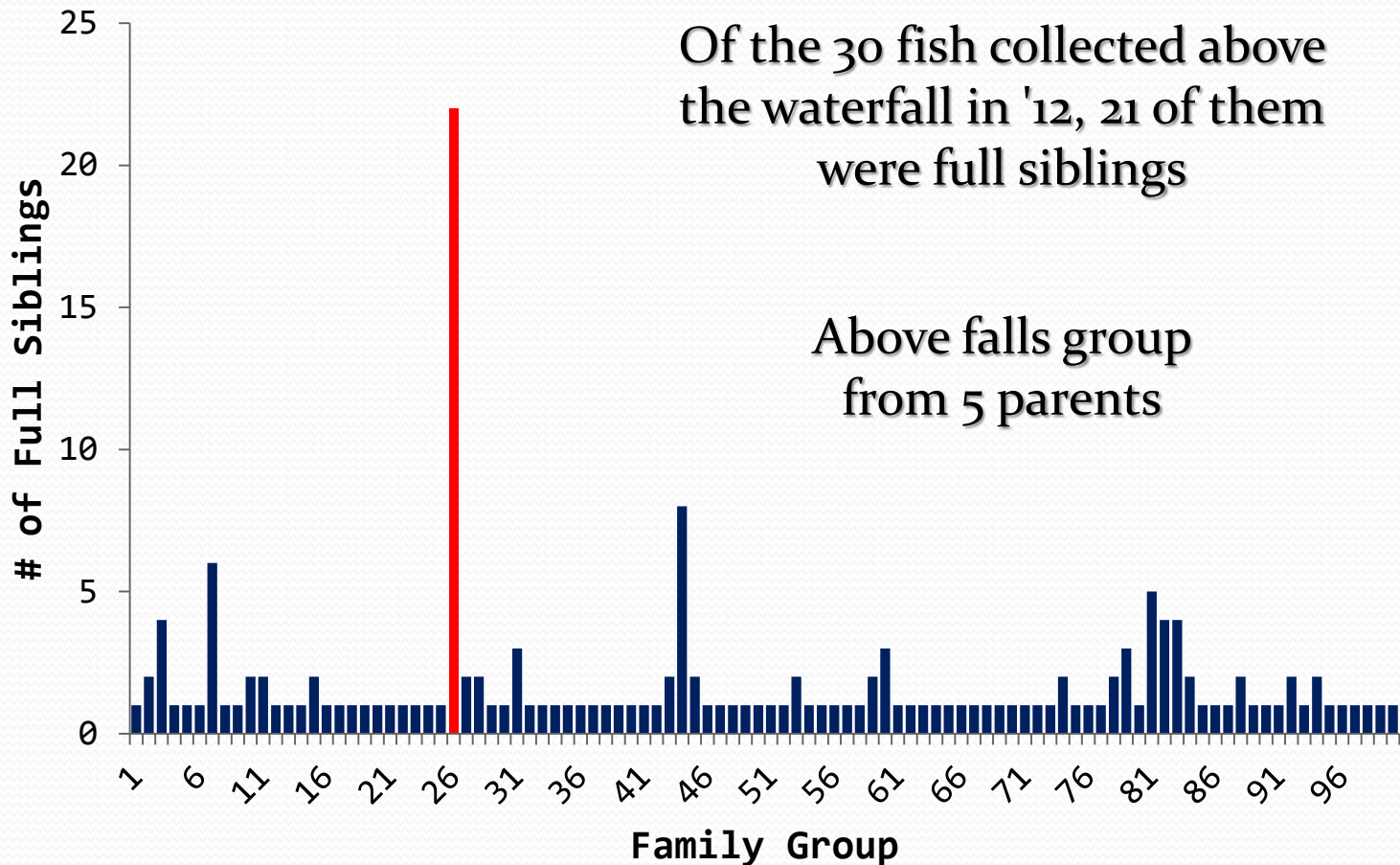


Step 3: How do unknown collections (above/below waterfall) compare to resident and steelhead collections?

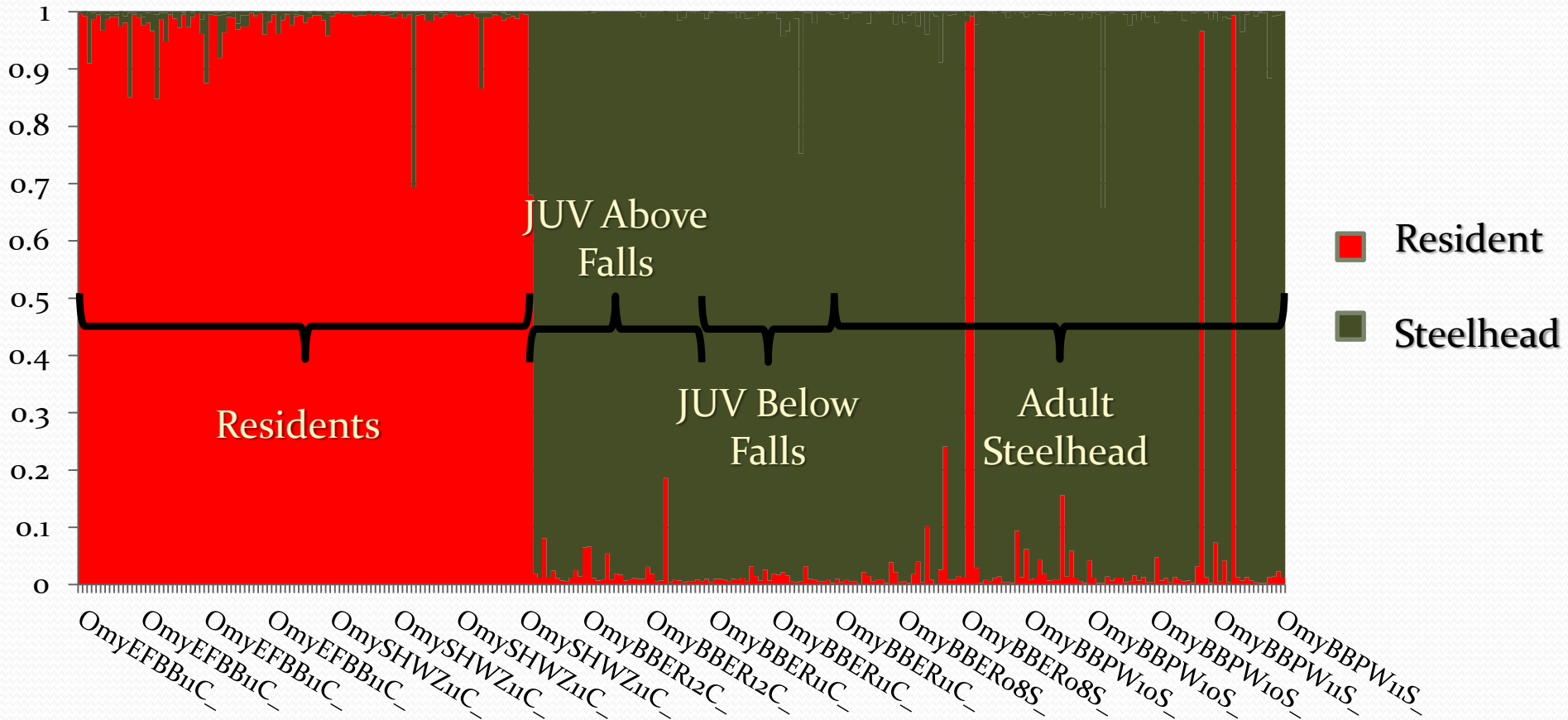
Principal Coordinates



Why are fish above falls different from both residents and steelhead?



Structure Analysis:



What we know:

- Limited passage at falls
 - Steelhead alleles most represented
 - Not many making it over
- Limited interaction between resident and steelhead *O. mykiss* populations
 - Residents contributing to steelhead population
 - Minimal/no contribution of steelhead genes to resident population
- This is based on one year's data



Should we alter the falls?

Potential reasons to provide passage...

- Significant increase in steelhead production from Big Bear Creek by greatly expanding habitat
- Likely spatial and temporal isolation of resident and anadromous *O. mykiss*
 - Thermal regimes
 - ~ 12-15 stream km of separation

Potential reasons to leave it alone...

- Maintenance of life history strategies and genetic diversity
- Some difference in other fish assemblages
- No immediate non-native fish concern BUT
 - Smallmouth bass lower in system

Still don't know...

- How long have the falls been this way?

Questions/Comments

