



Documenting *O. mykiss* life histories in Rattlesnake Creek and the White Salmon River prior to the reintroduction of anadromous fish above Condit Dam

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Habitat use and life history characteristics of rainbow trout in the White Salmon River above Condit Dam

Objective

Assess connectivity of Northwestern Lake with mainstem White Salmon River and its tributaries

Funded by:



Condit Dam,
White Salmon River Basin (WA)



Assess Current and Potential Salmonid Production in Rattlesnake Creek Associated with Restoration efforts

Objectives

- 1.) Characterize fish populations, isotopes, water quality/quantity, and habitat prior to re-introduction
- 2.) Identify restoration needs

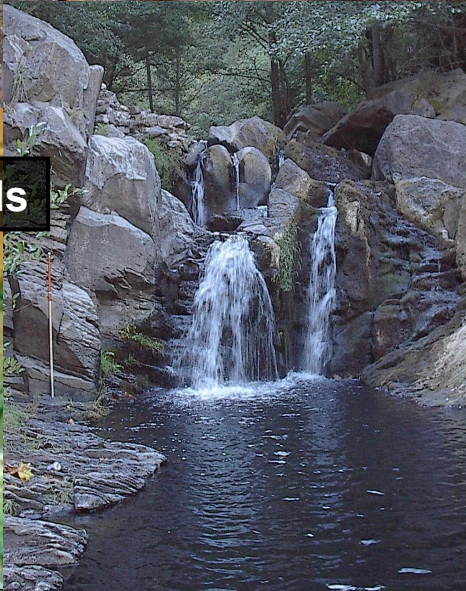
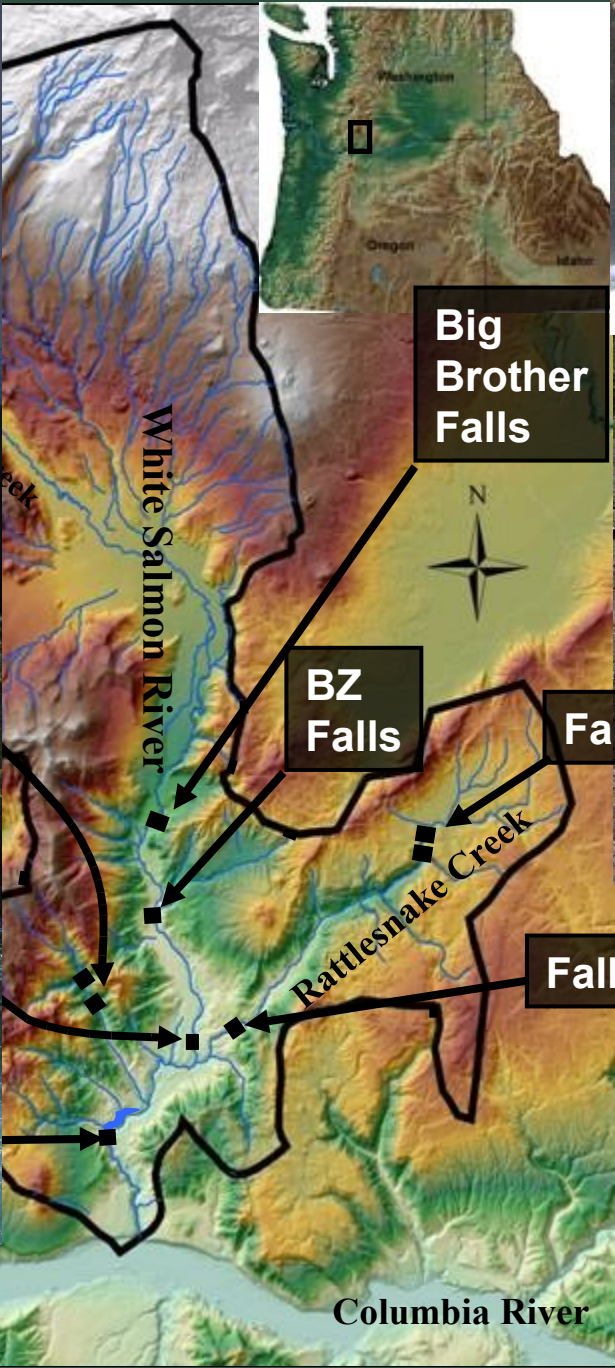


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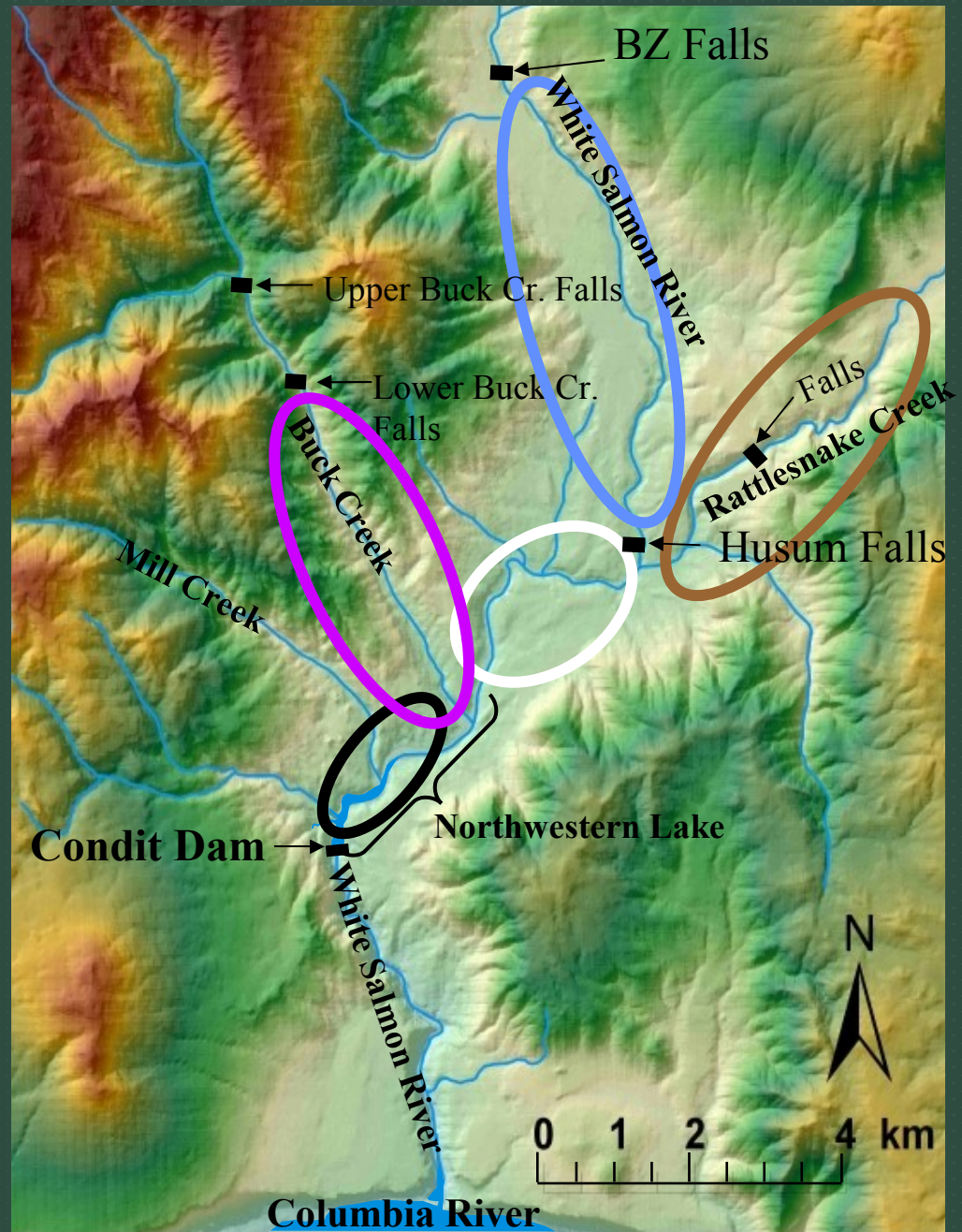
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Connectivity within the White Salmon watershed

How do fish use the system?



Two types of tags for tracking fish in the White Salmon subbasin:

Passive Integrated Transponder (PIT) Tags

Radio Tags

& Radio Tags

PIT Tags

Uniquely identify individuals.

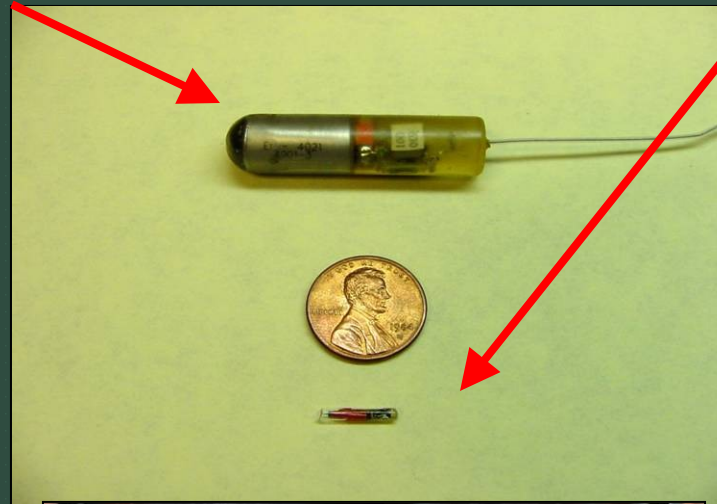
Can be read from long distances.

Difficult to pinpoint locations in whitewater.

Cannot be put in small fish.

Tags are expensive.

Battery life is limited.



Uniquely identify individuals.

Cannot be read from long distances.

Get pinpoint locations.

Can be put in small fish.

Tags are not expensive.

No battery, lasts the life of the fish.



Some of our fish had both types of tags



Fish collection: hook and line, some netting
Data collected: location, length, weight, scale sample, and genetic sample

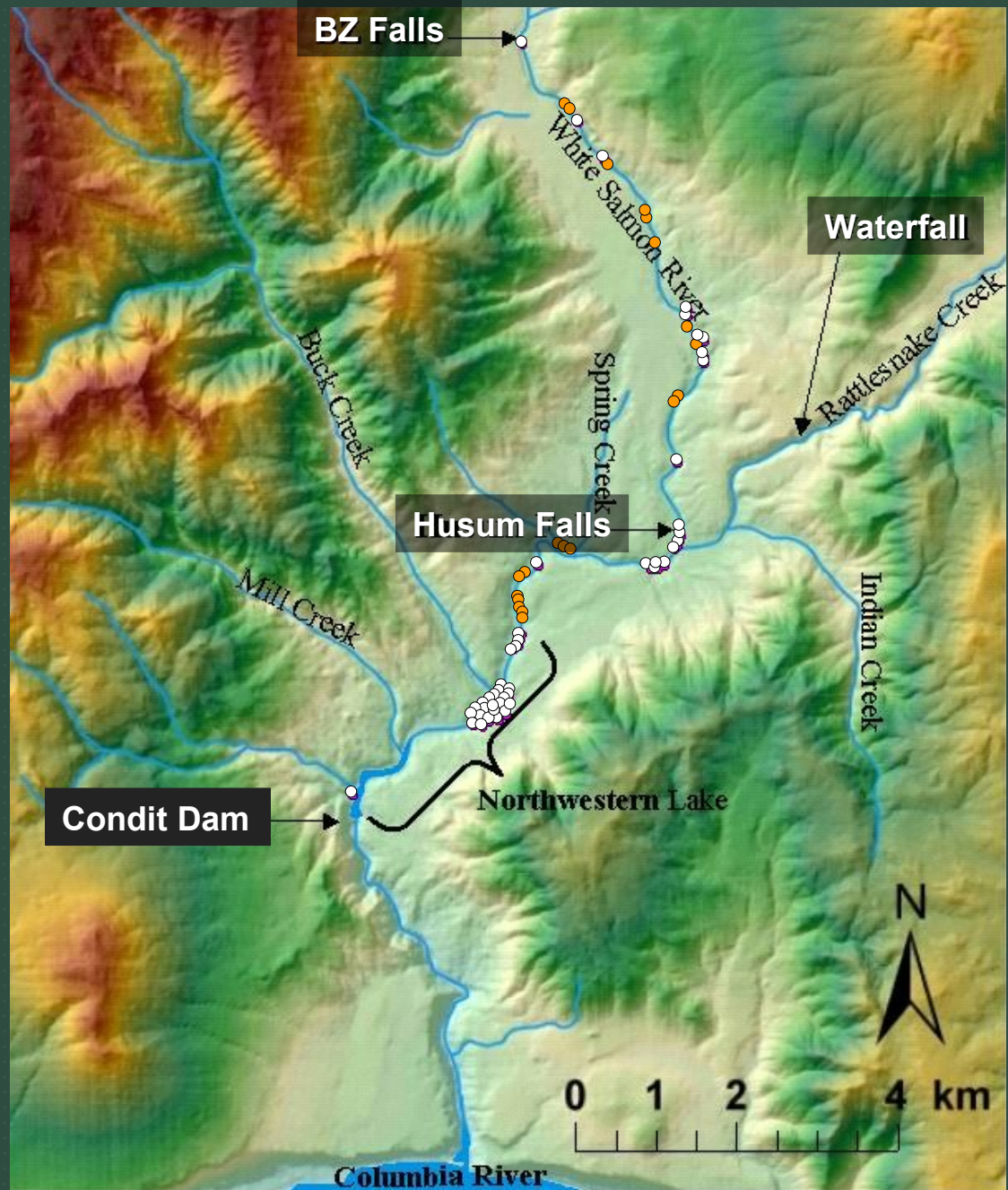




PIT tagging and surgery if radio tagged

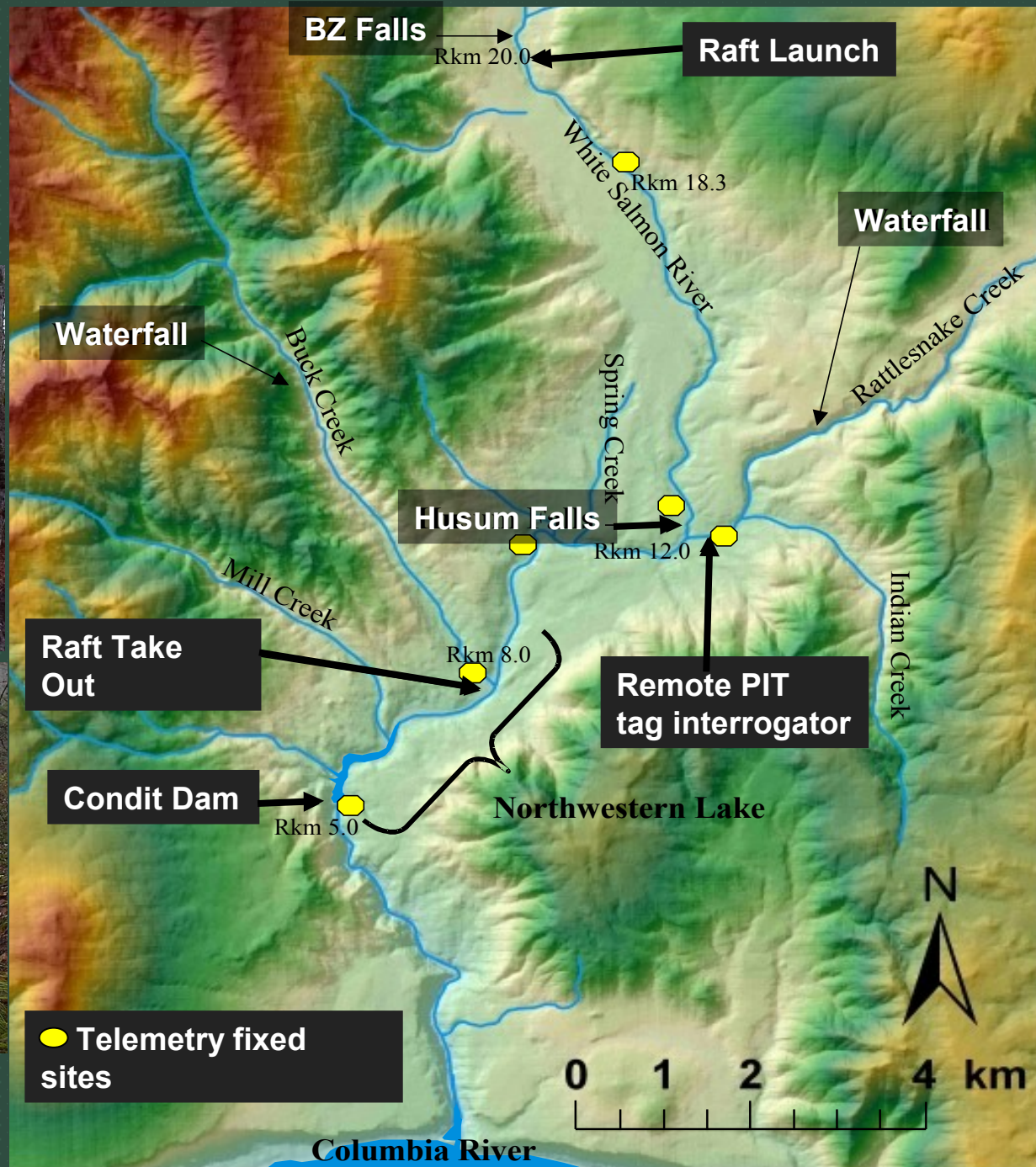
Radio Tagging:

- 2001: 44 tags
 - 12 above Husum
 - 9 below Husum
 - 23 in reservoir
- 2002: 20 tags
 - 10 above Husum
 - 10 below Husum



Tracking:

- Fixed sites

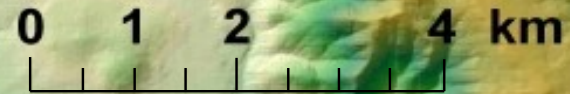


Tracking:

- Fixed sites
- Mobile

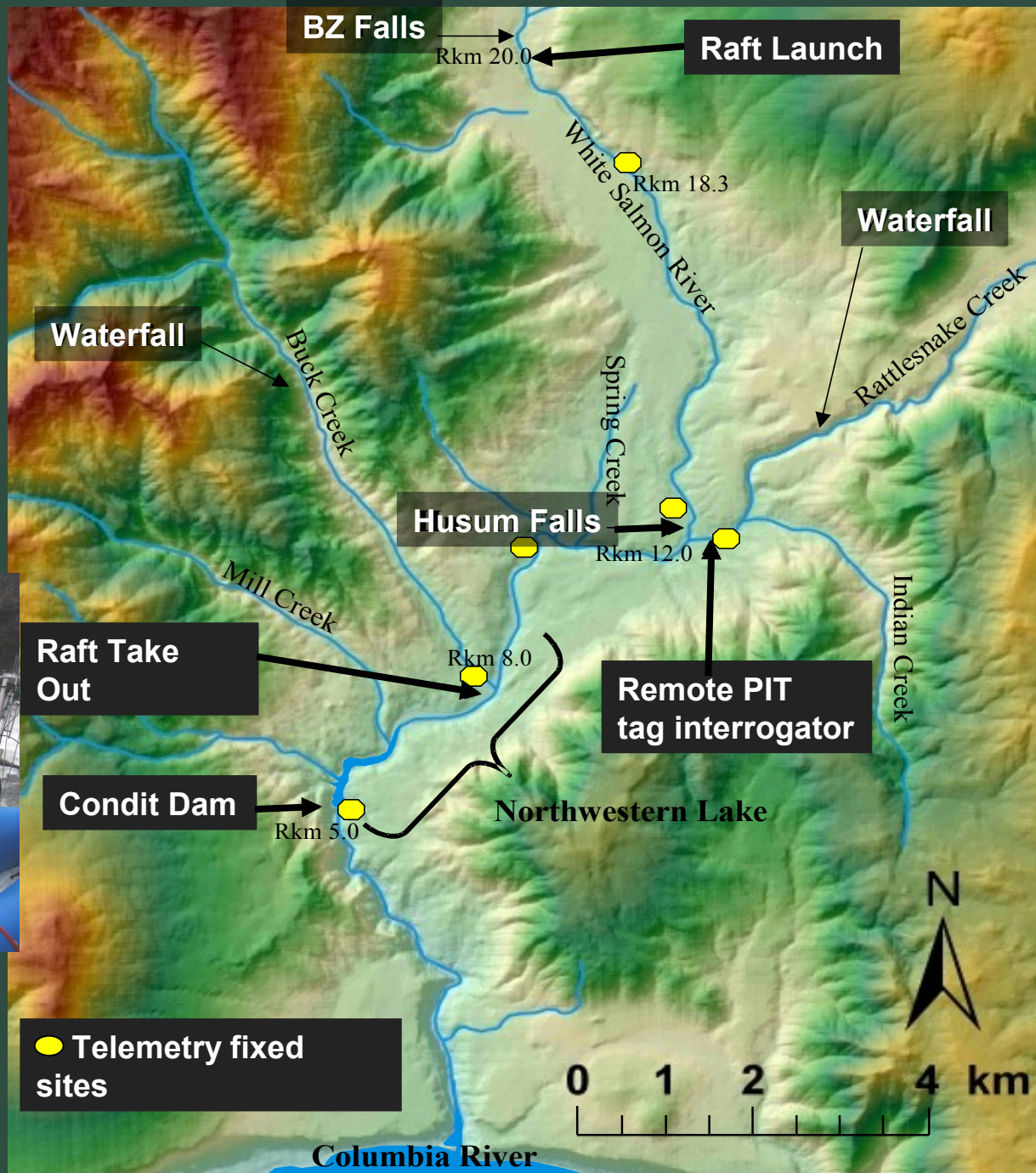


● Telemetry fixed sites



Tracking:

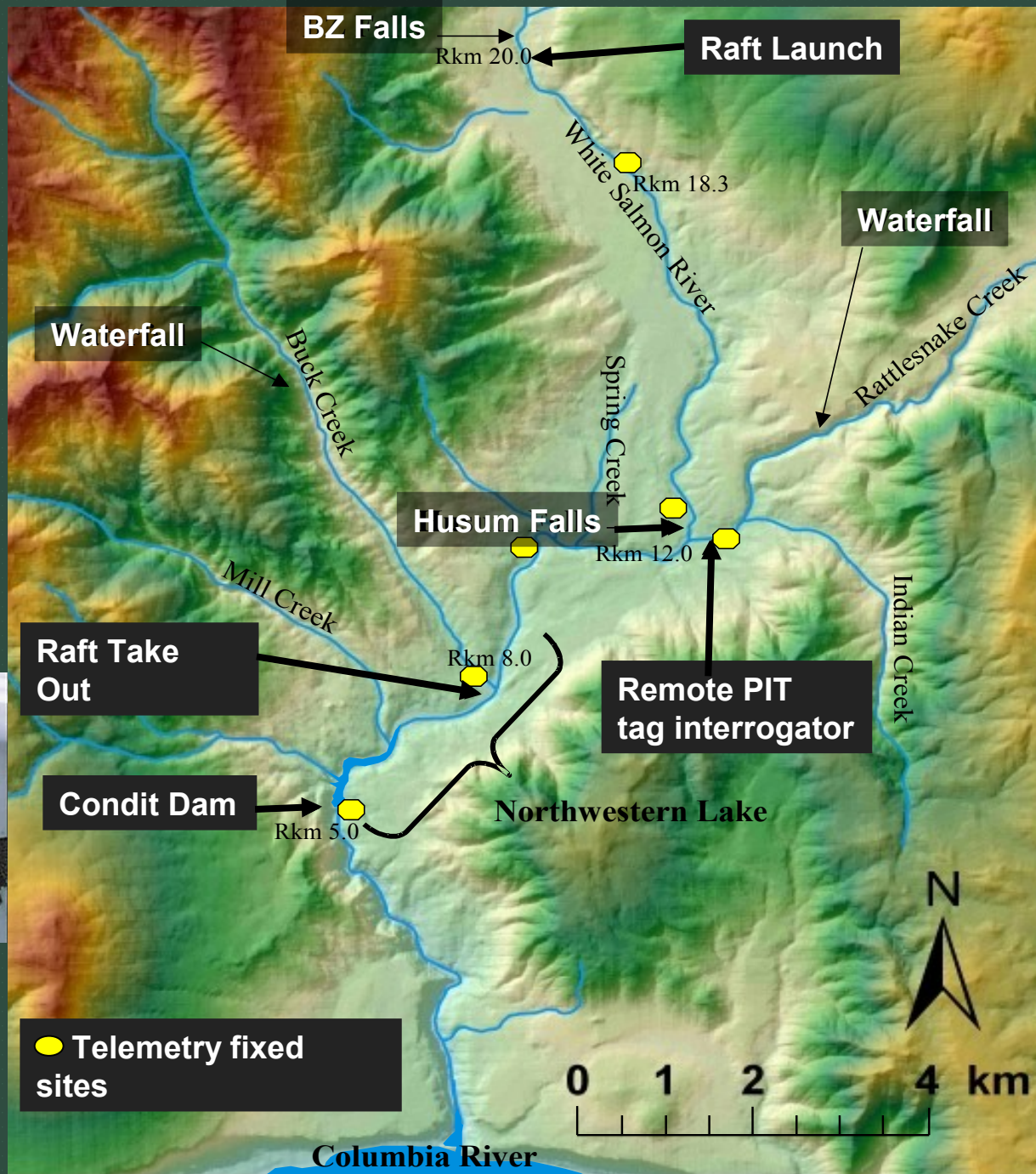
- Fixed sites
- Mobile
- Raft
- Boat



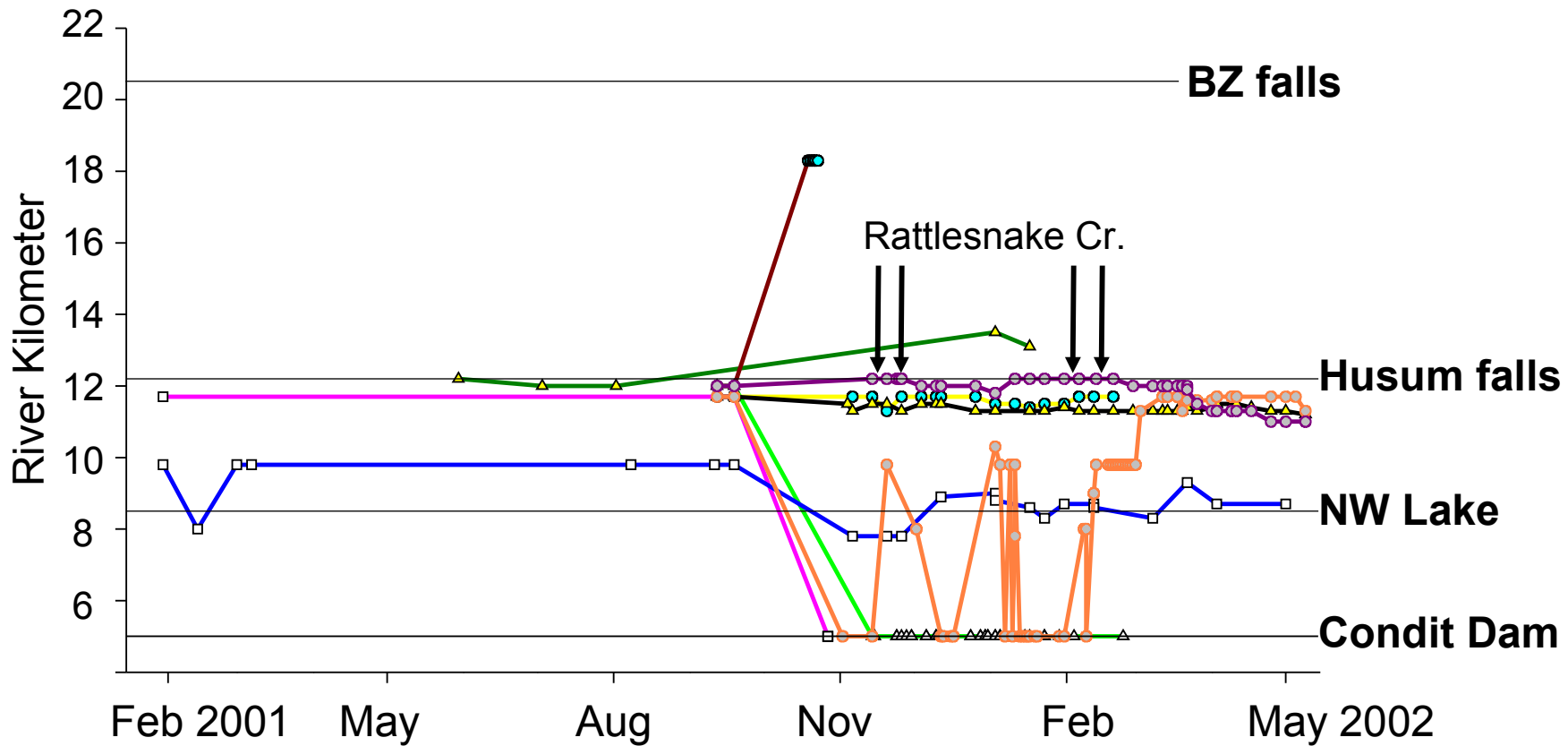
Tracking:

- Fixed sites
- Mobile
- Raft
- Boat

- PIT tags



Movement through time of radio-tagged fish in the White Salmon River





Assess Current and Potential Salmonid Production in Rattlesnake Creek Associated with Restoration efforts

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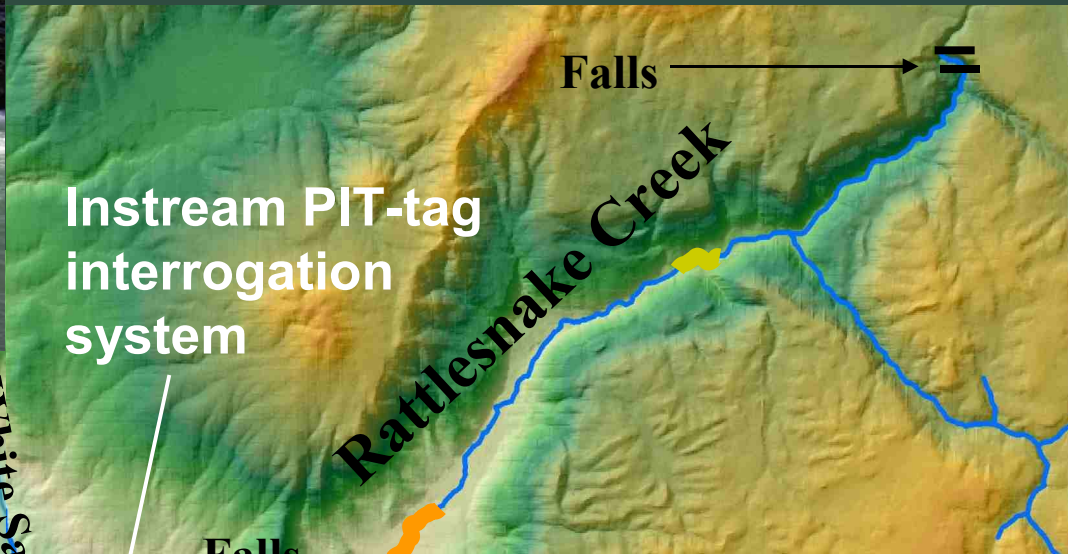


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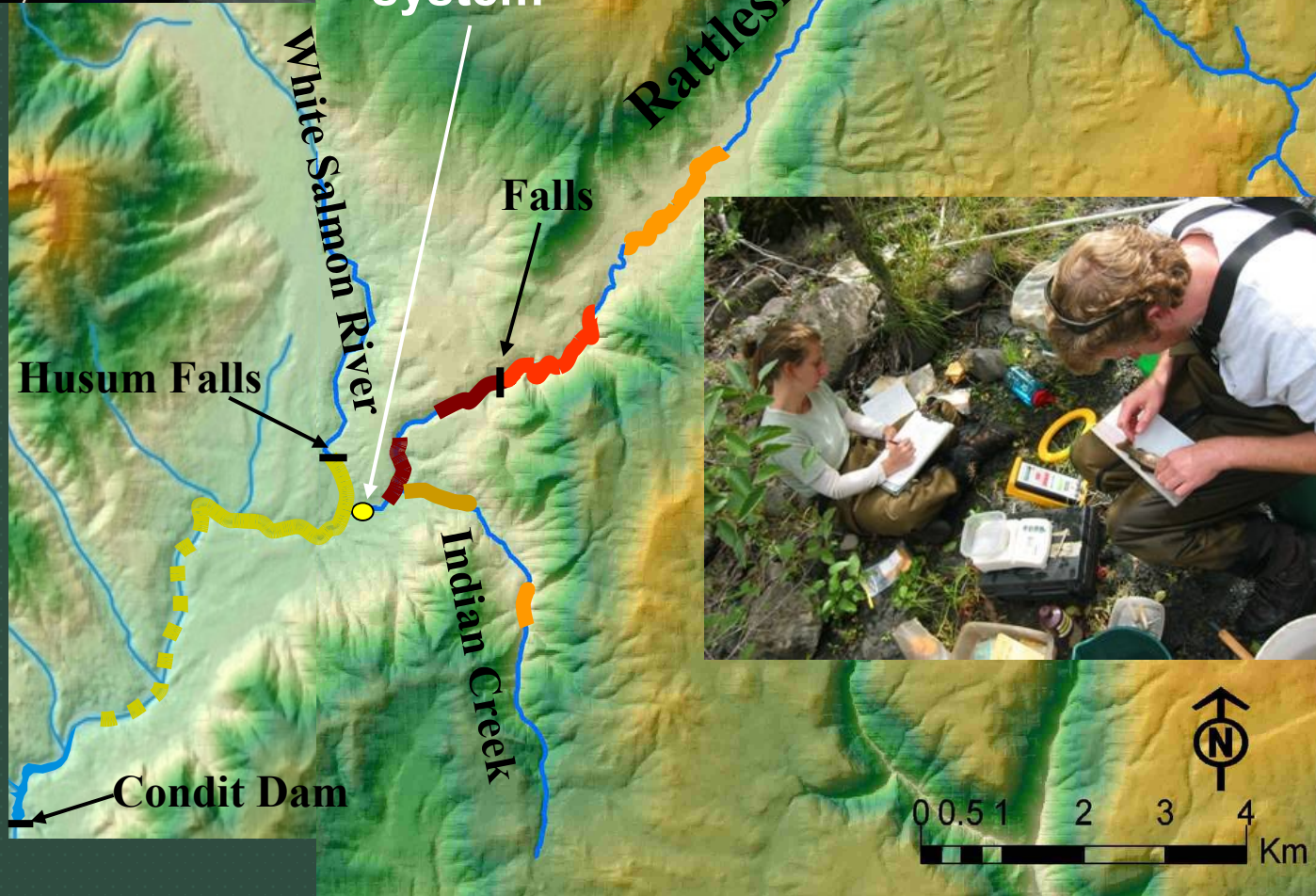


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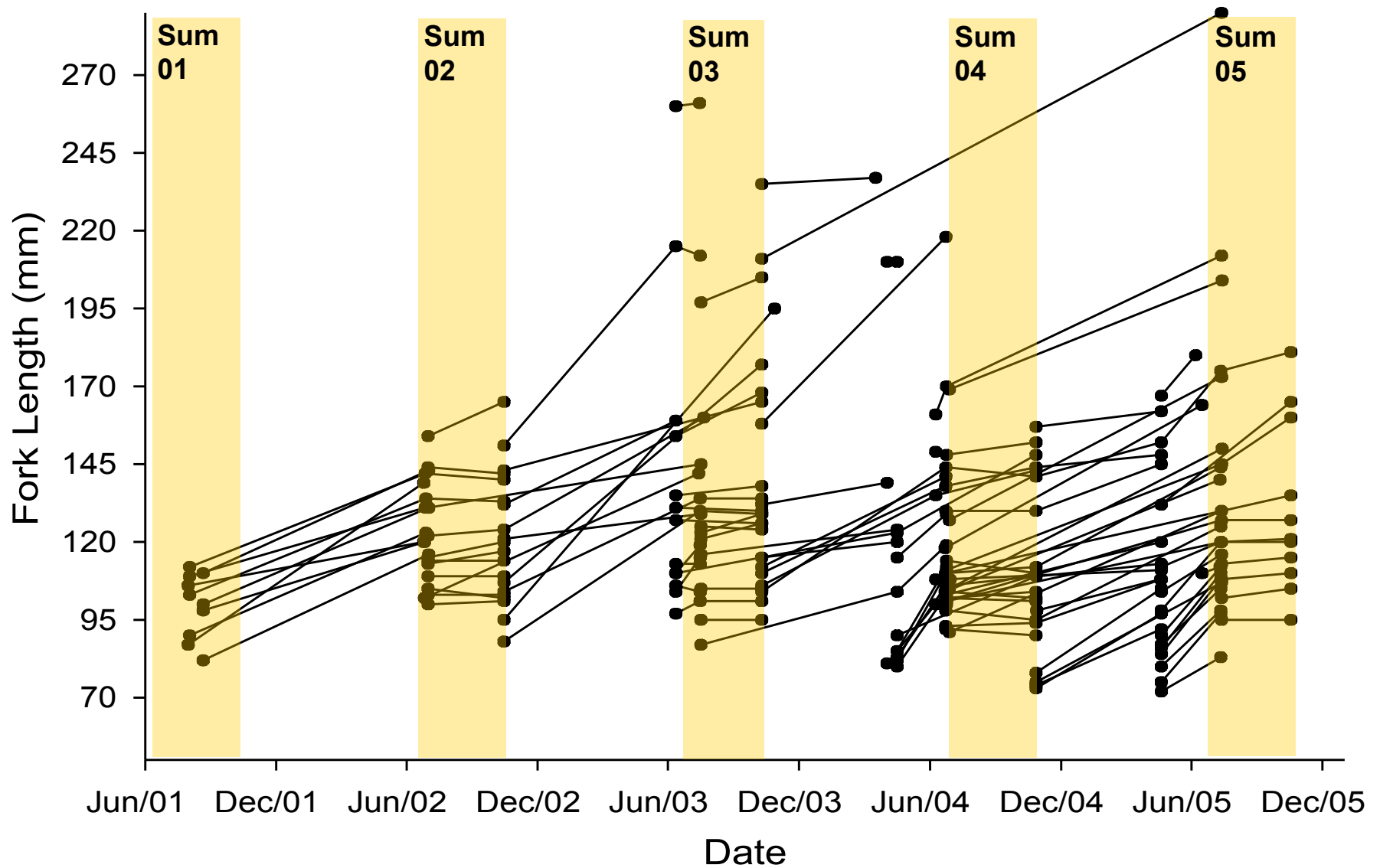
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- Fish sampled
- Species, abundance, movement, growth, disease

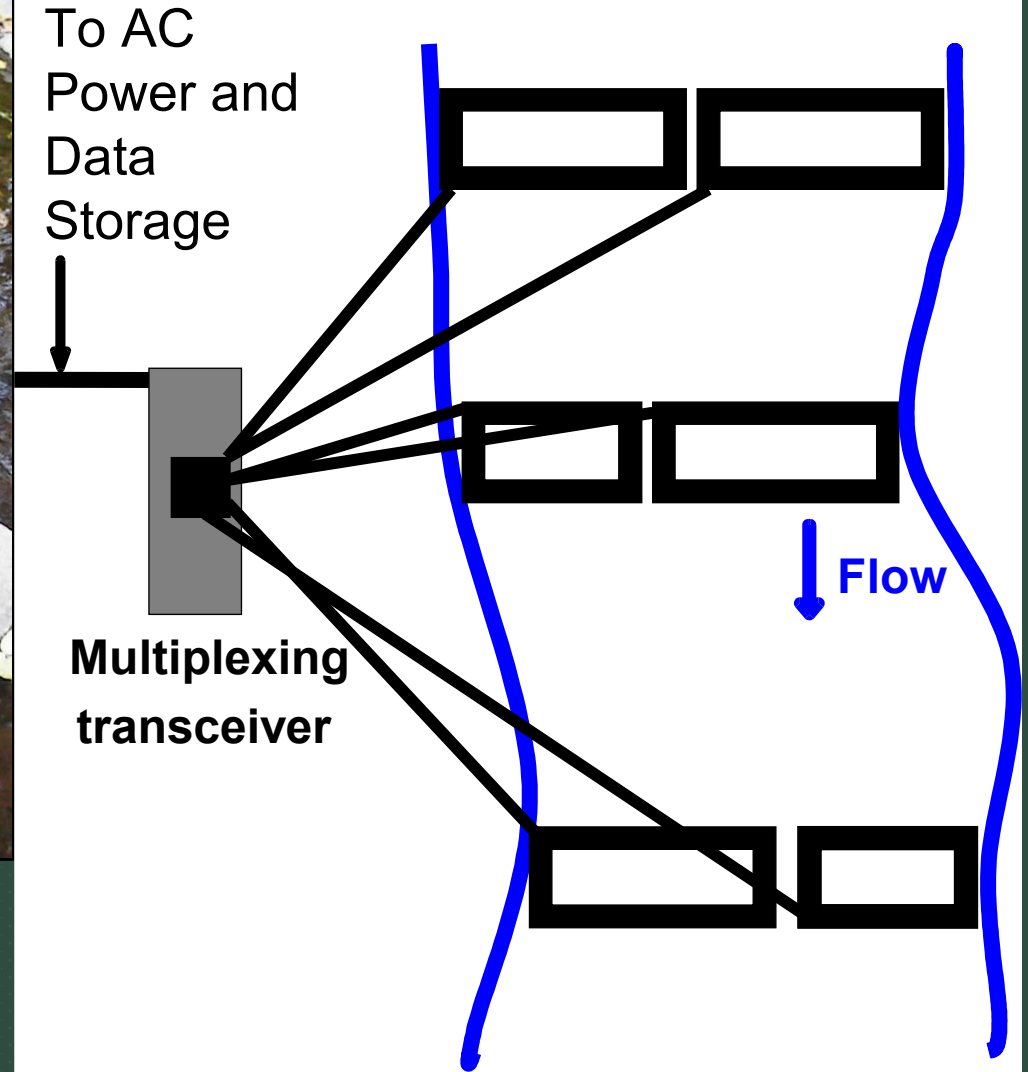


Seasonal growth of PIT-tagged fish in lower Rattlesnake Creek



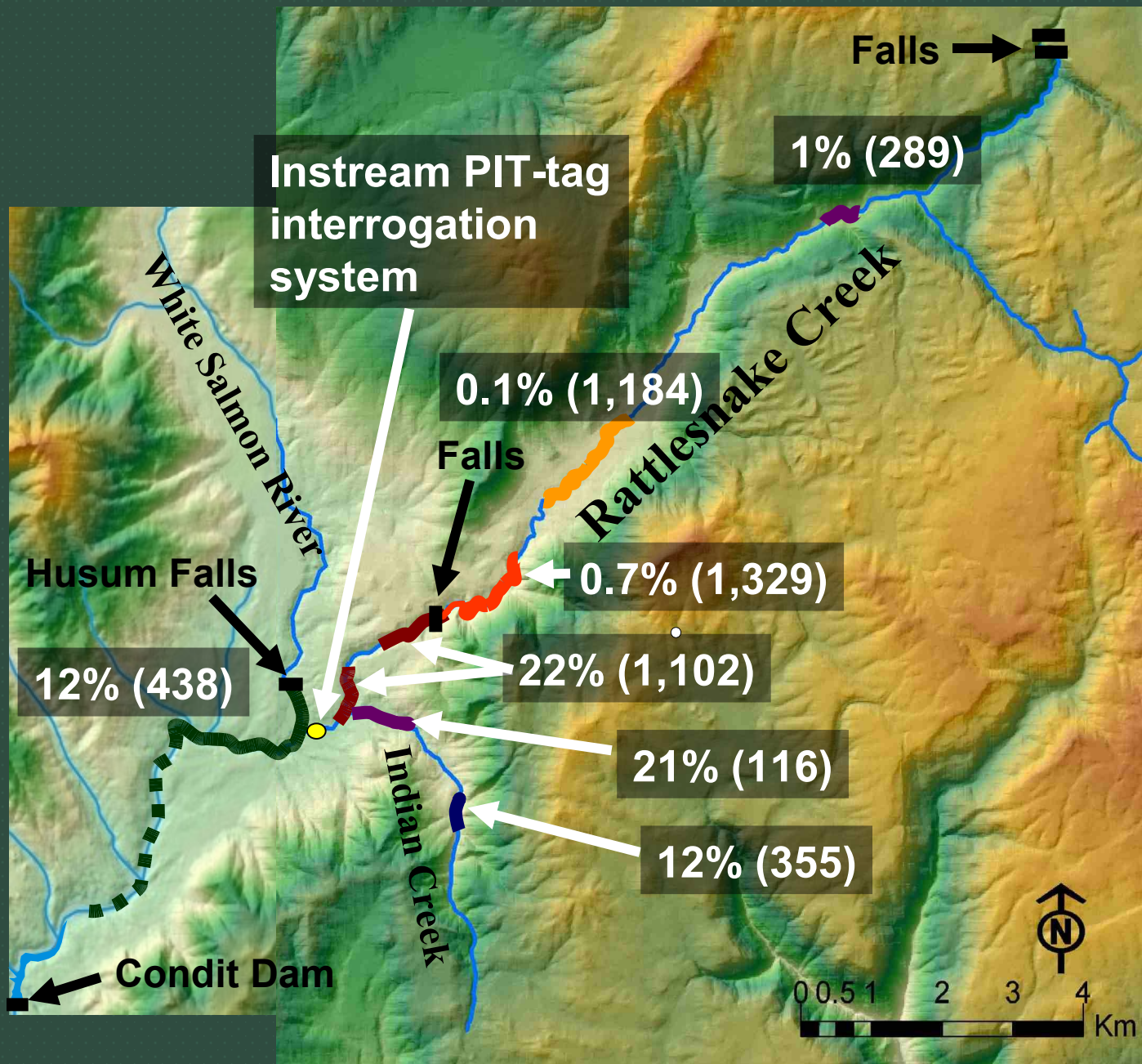


Rattlesnake Creek antenna system

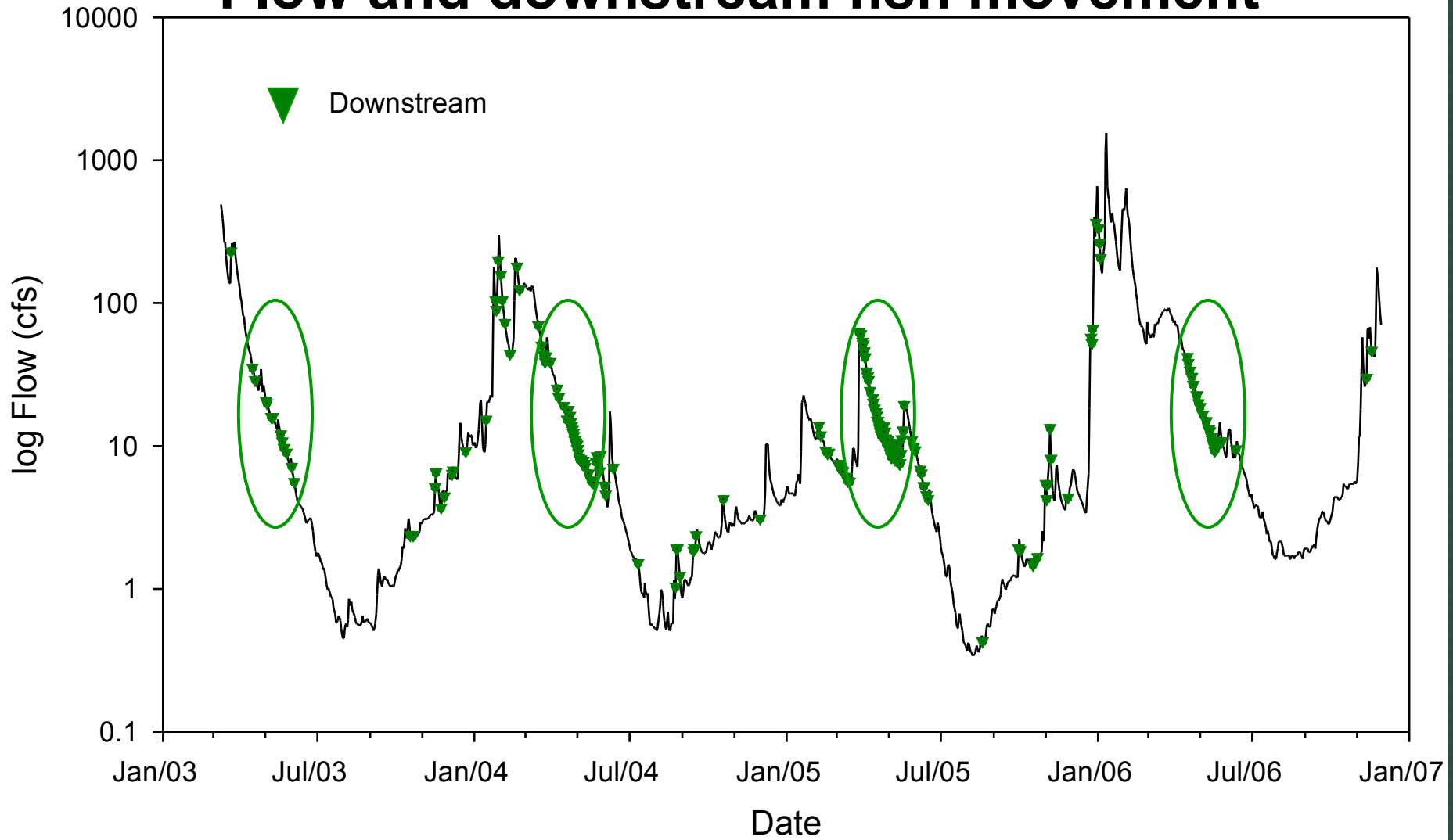


Connectivity to the White Salmon watershed

How do fish use the system?



Flow and downstream fish movement



The Big Detector Unit

An aerial photograph of a large dam and power plant complex on a river. The dam is a long, multi-gated structure with water cascading over it. To the right of the dam is a large power plant building with a complex roof structure. The river flows through a valley with dense green forest on the surrounding hills. A road and some utility structures are visible on the left side of the river.

**RBT (98mm FL) tagged on 16 Sept 2004 in middle Indian Creek
Detected 29 March 2005 as an out-migrant in lower Rattlesnake Creek
Detected 22 July 2006 moving up through Bonneville adult fish ladder.
A one salt steelhead?**



**RBT (156mm FL) tagged on 27 Oct 2004 in lower Rattlesnake Creek.
Detected 27 April 05 as an outmigrant in lower Rattlesnake Creek
Tag found 30 Nov 2005 at East Sand Island Tern Colony**



White Salmon River conclusions

- Confirmed use of Rattlesnake and Indian creeks by trout from the White Salmon River, including repeat spawners
- Some White Salmon trout overwinter in Rattlesnake Creek
- Juvenile trout from lower Rattlesnake and Indian creeks leave Rattlesnake Creek and enter the White Salmon River, primarily during spring, some during fall
- Confirmed passage of trout above Husum Falls

Conclusions

- **Radio-tagging:**
 - gives detailed movement and range information to define or broaden area of interest
 - identifies key locations for PIT-tag detectors
- **PIT-tagging:**
 - rare life histories may be detected via larger sample size
 - better likelihood of recapture for growth information
 - can be tagged earlier and detected throughout fish lifespan
 - opportunity for detection at other facilities (Columbia River)

When possible – use both

Acknowledgements

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