Lower Columbia IMW Monitoring Approach

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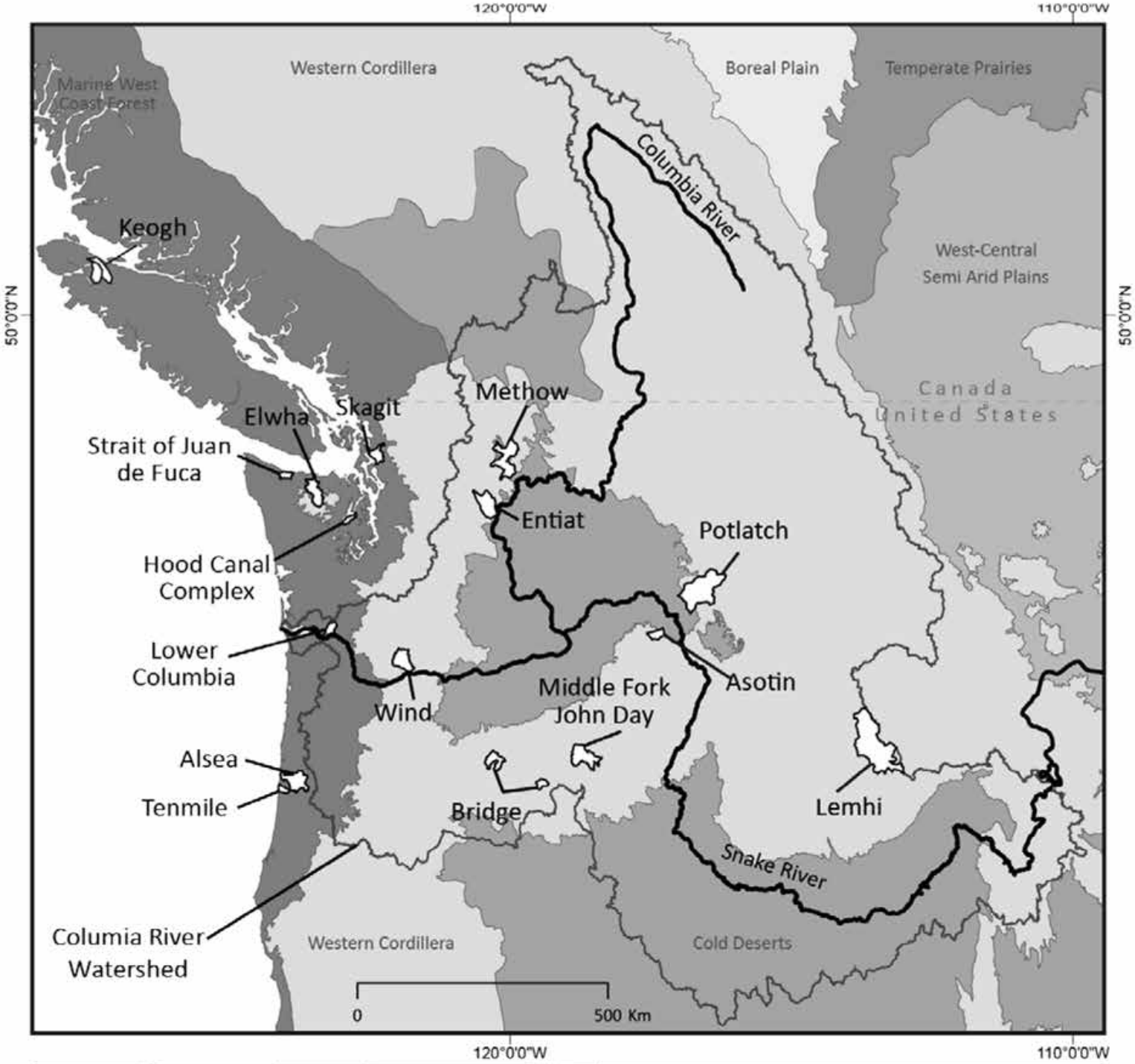
Washington Department of Fish and Wildlife

The Big Questions related to habitat restoration:

- Does habitat restoration increase population productivity?
- Why or Why not?

IMWs -

Intensively Monitored Watershed

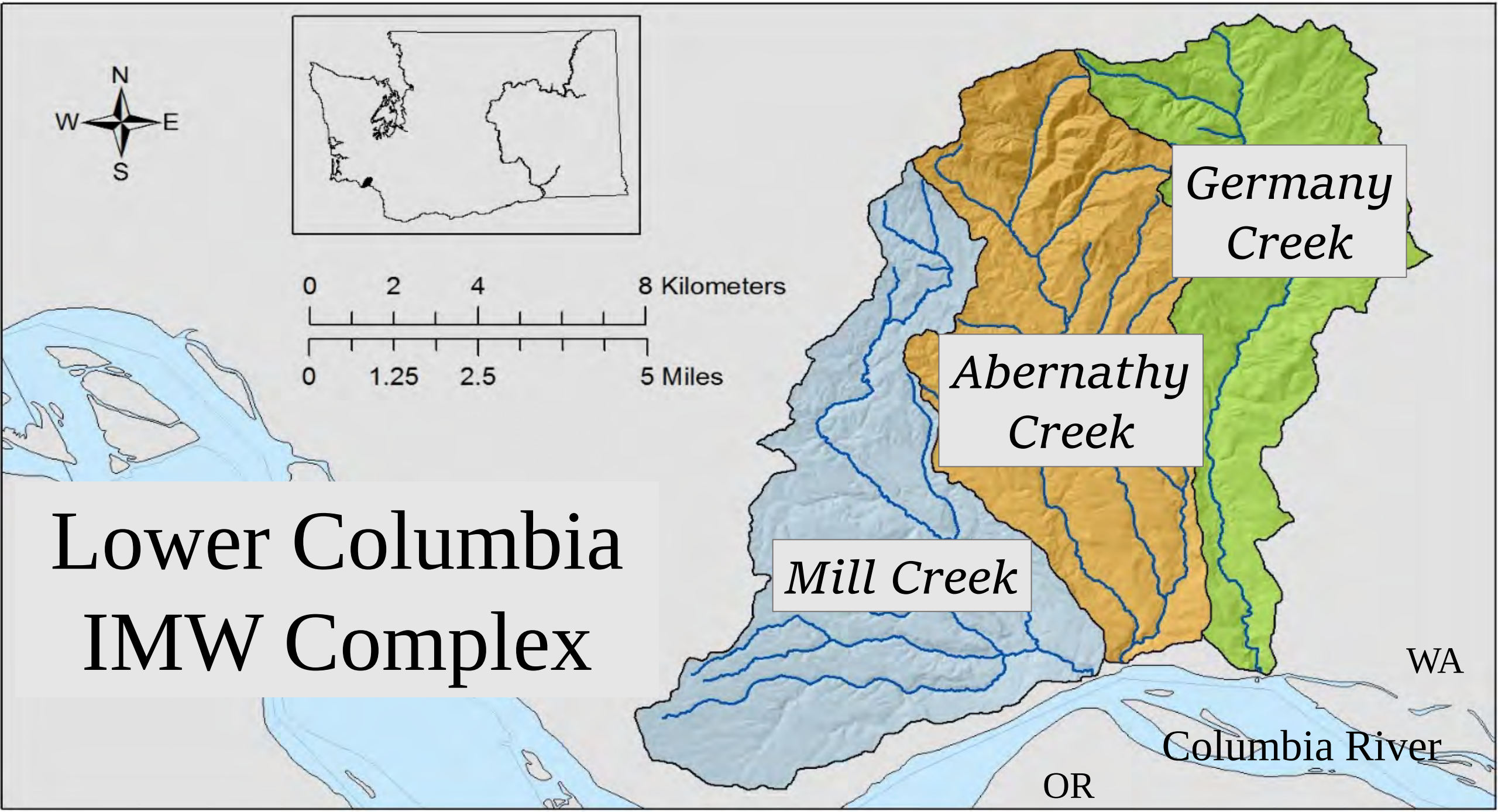


Bennet et al. 2016

IMWs -

Intensively Monitored Watershed

Bennet et al. 2016



Lower Columbia IMW Complex

Species of interest

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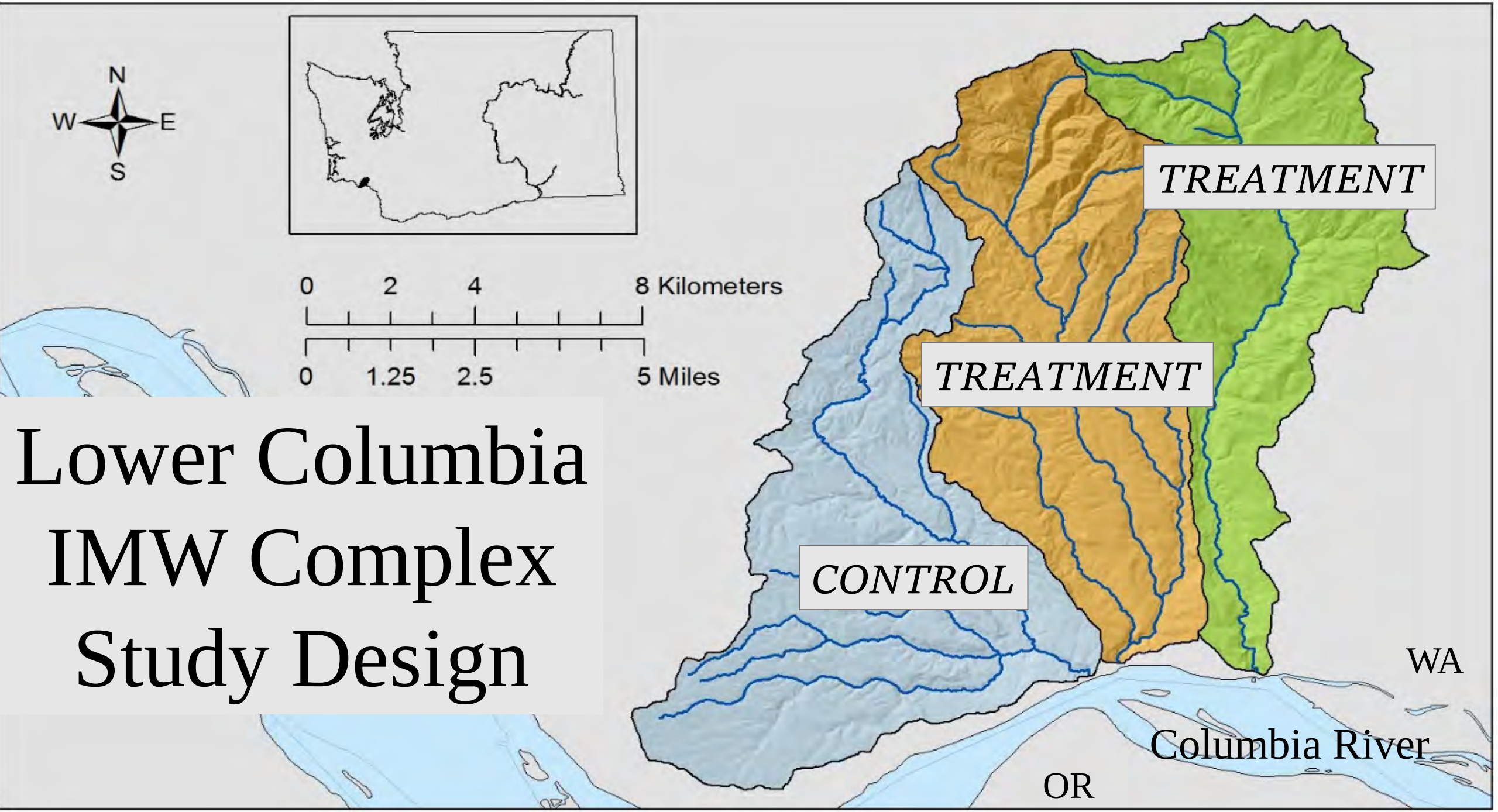
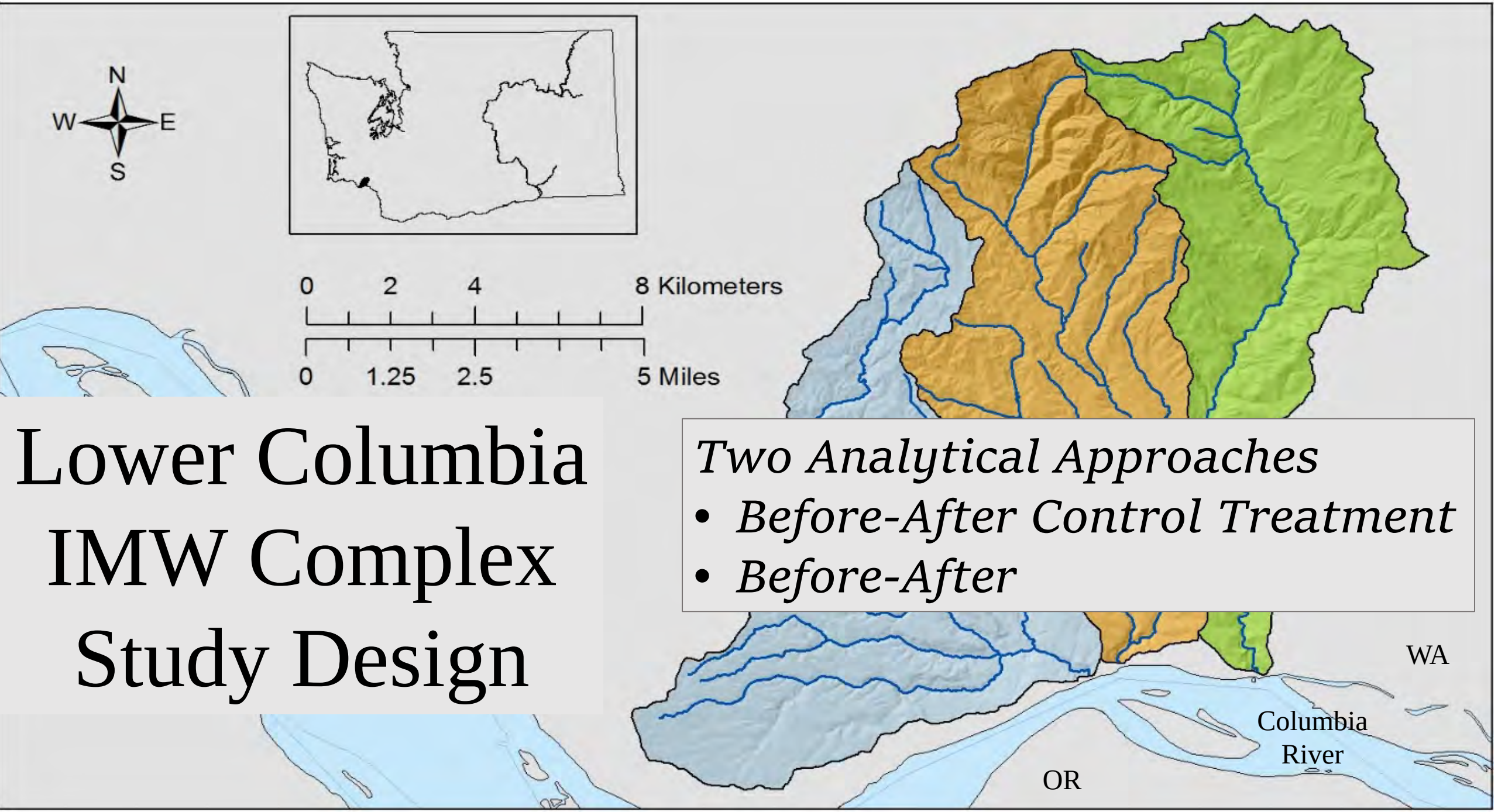


Lower Columbia IMW Complex Study Design

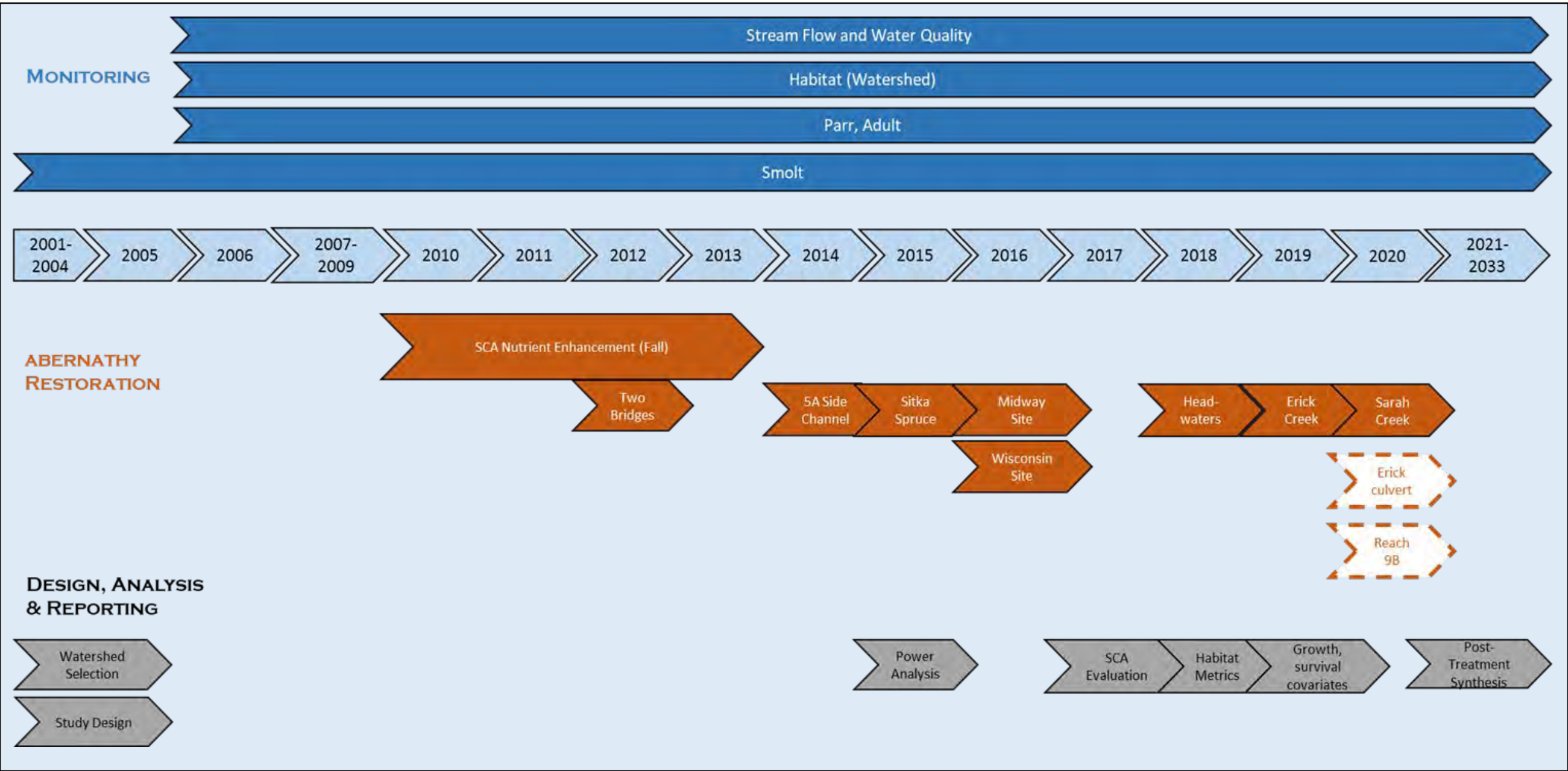


Lower Columbia IMW Complex Study Design

Two Analytical Approaches

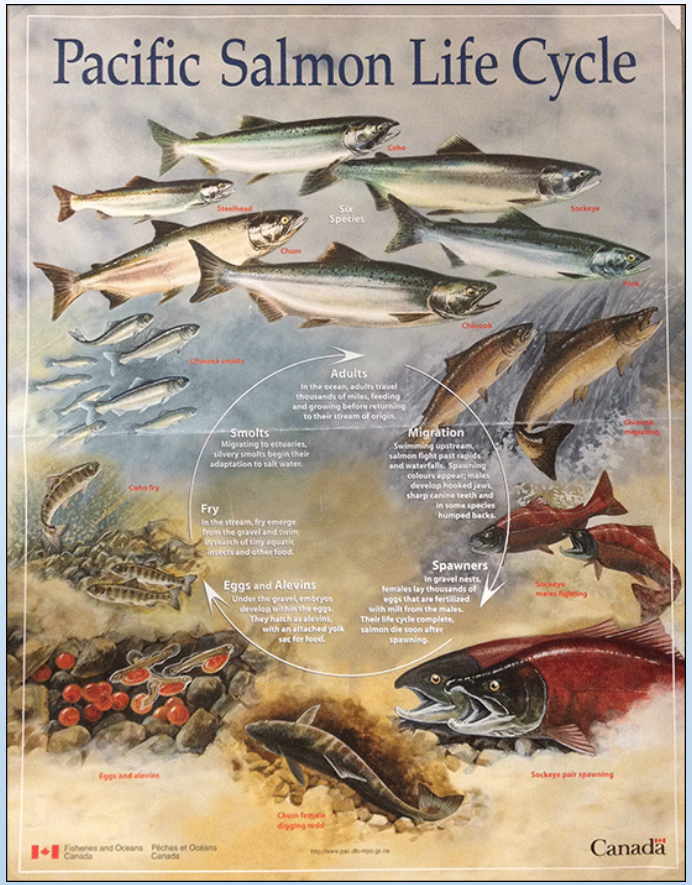
- *Before-After Control Treatment*
- *Before-After*

Restoration and Data Collection Timeline



Life Cycle Data

- Spawner Abundance
- Summer Parr Abundance
- Spring Smolt Abundance



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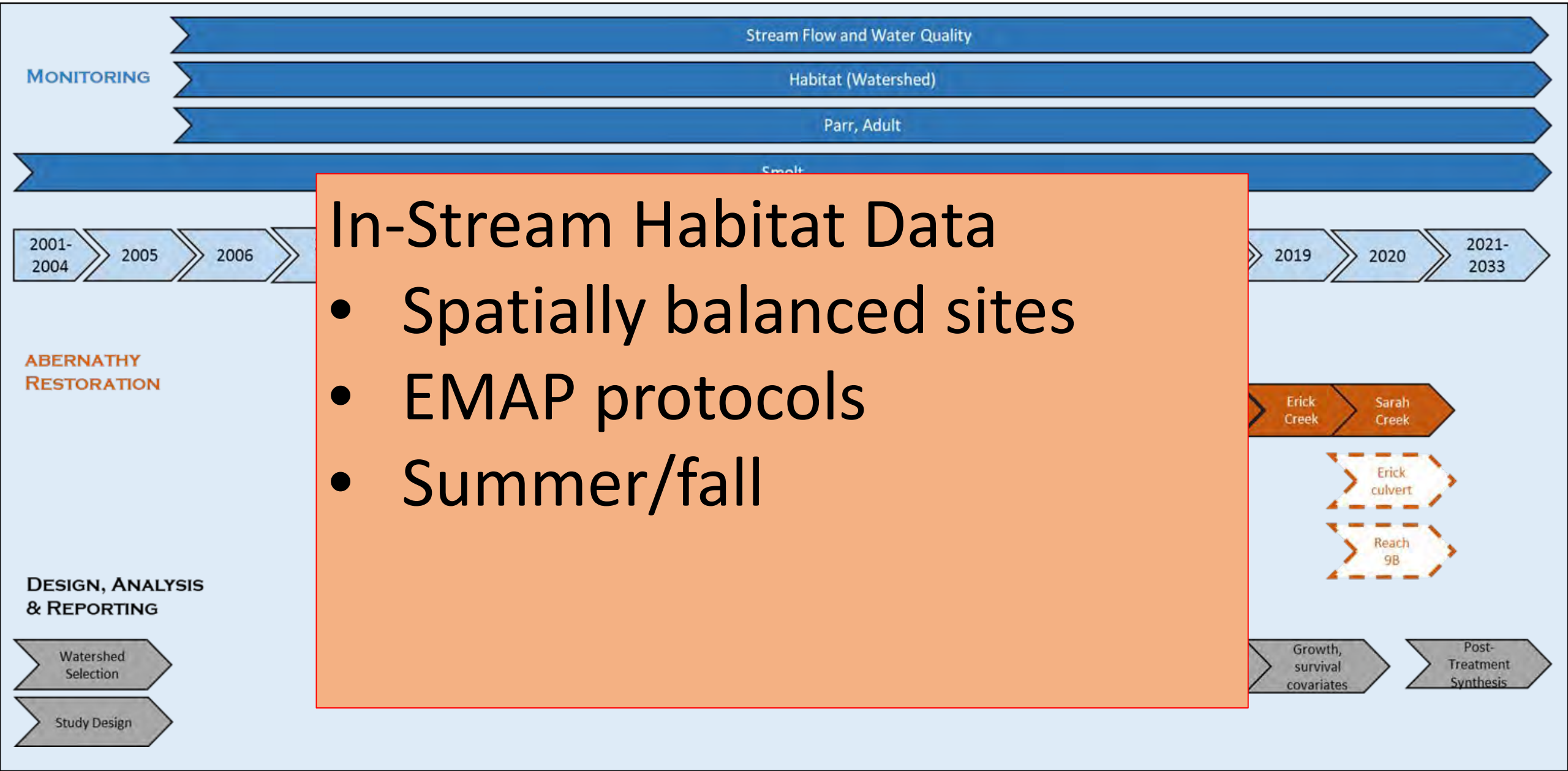
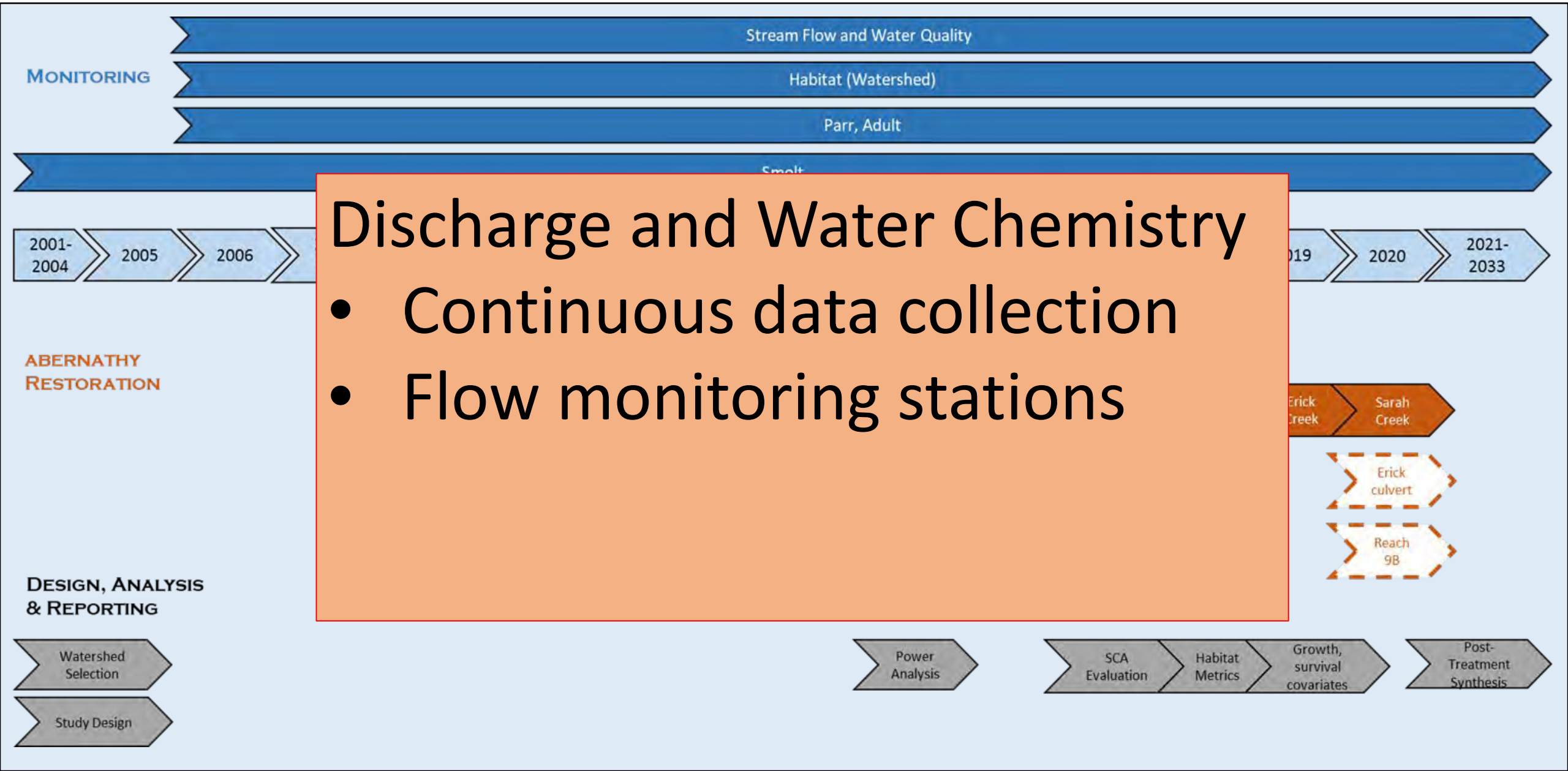


In-Stream Habitat Data

- Spatially balanced sites
- EMAP protocols
- Summer/fall

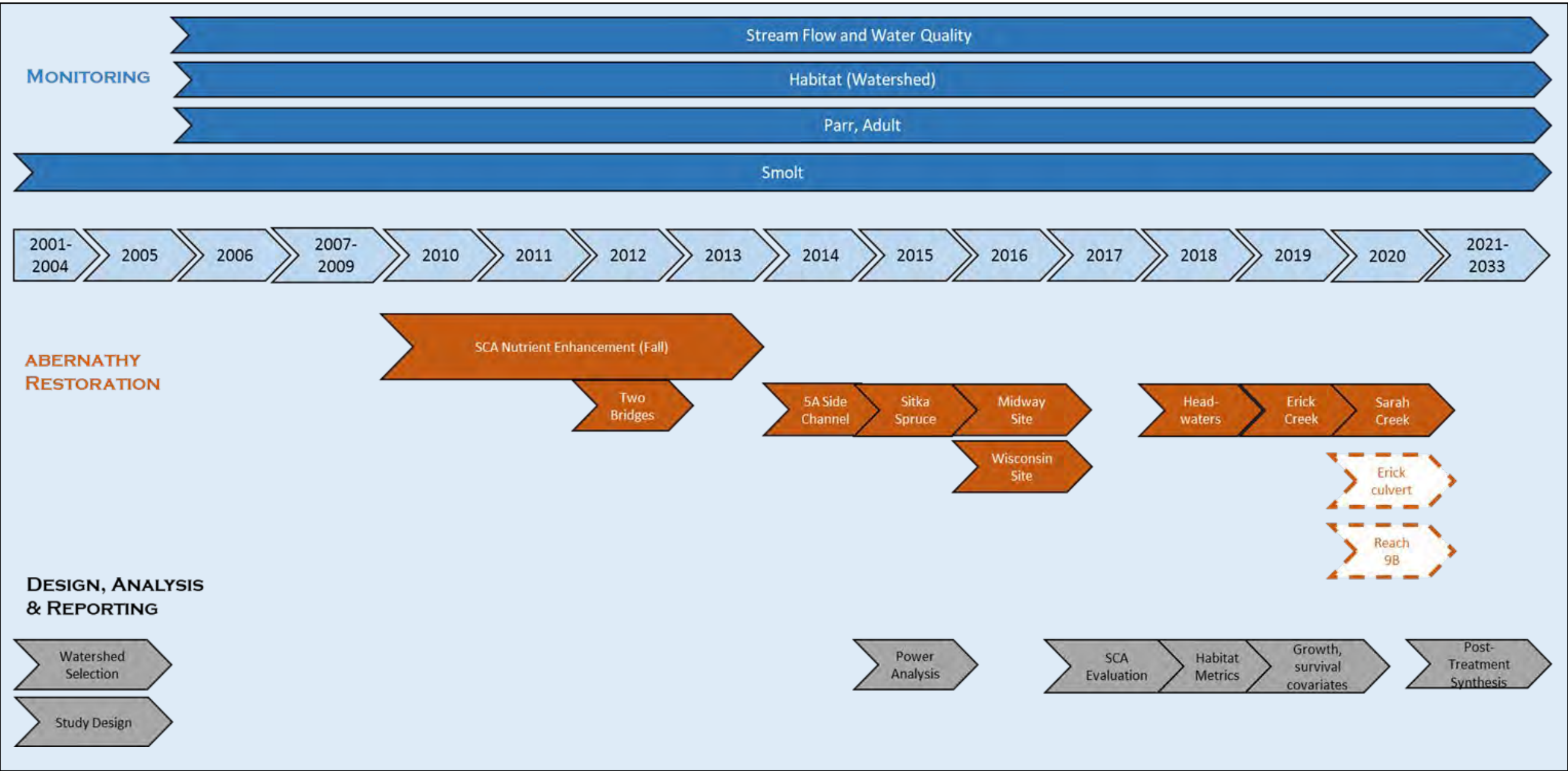
Restoration and Data Collection Timeline



Discharge and Water Chemistry

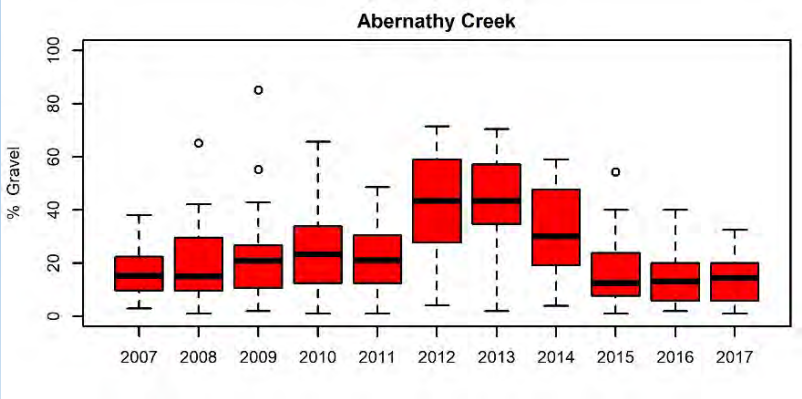
- Continuous data collection
- Flow monitoring stations

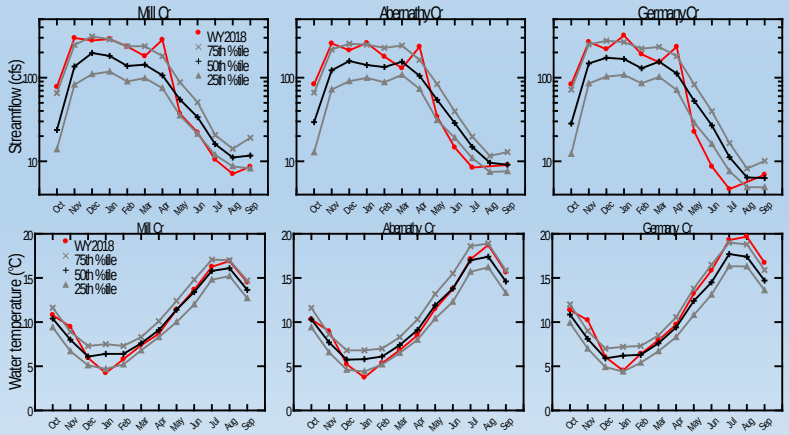
Restoration and Data Collection Timeline



Suite of data to analyze fish response to habitat restoration actions

- 5 years “pre-treatment” data
- 6 years “during treatment” data
- 10 years “post-treatment” data





Abernathy Creek Treatments by the Numbers

13 completed or funded projects

12 acres riparian habitat restored

0.8 miles of new off/side channel habitat

18% of accessible habitat treated (5.5 mi)

What type of habitat response do we expect to see?

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- ↑ Channel Roughness

What type of habitat response do we expect to see?

- ↑ Pool Frequency

What type of habitat response do we expect to see?

- ↑ Spawning Substrate

What type of habitat response do we expect to see?

- ↑ CV Stream Depth

What type of habitat response do we expect to see?

- ↑ Side Channels

What type of habitat response do we expect to see?

Implicit assumption of habitat restoration is that the amount of suitable habitat is limiting freshwater productivity

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If True, ↑ Habitat = ↑ Productivity

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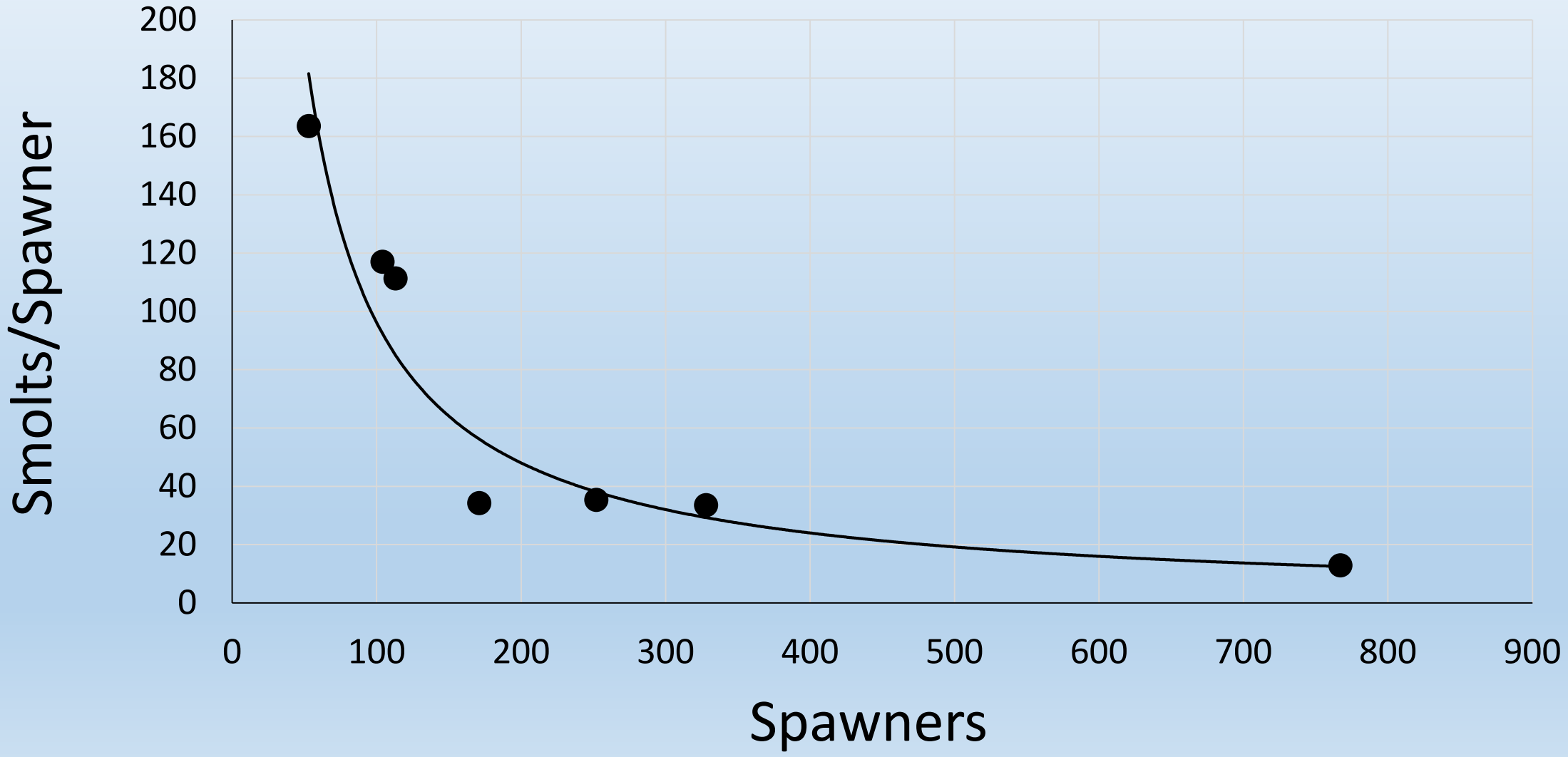
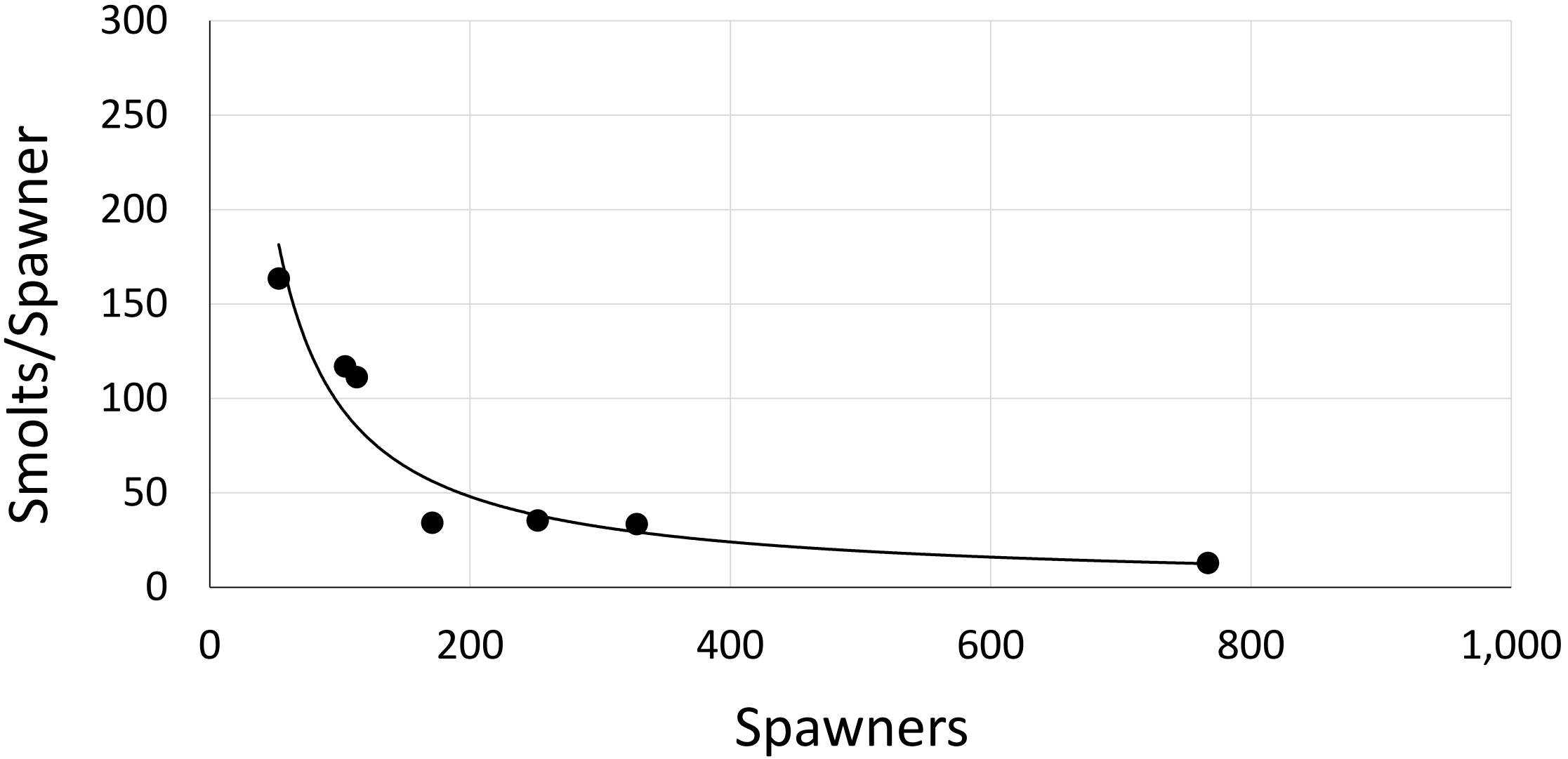
If True, ↑ Habitat = ↑ Productivity

If False, ↑ Habitat = ↔ Productivity

In the Lower Columbia IMW, there is evidence that habitat is limiting freshwater productivity



Metrics such as smolts/spawner or summer parr/spawner should increase at a given escapement.



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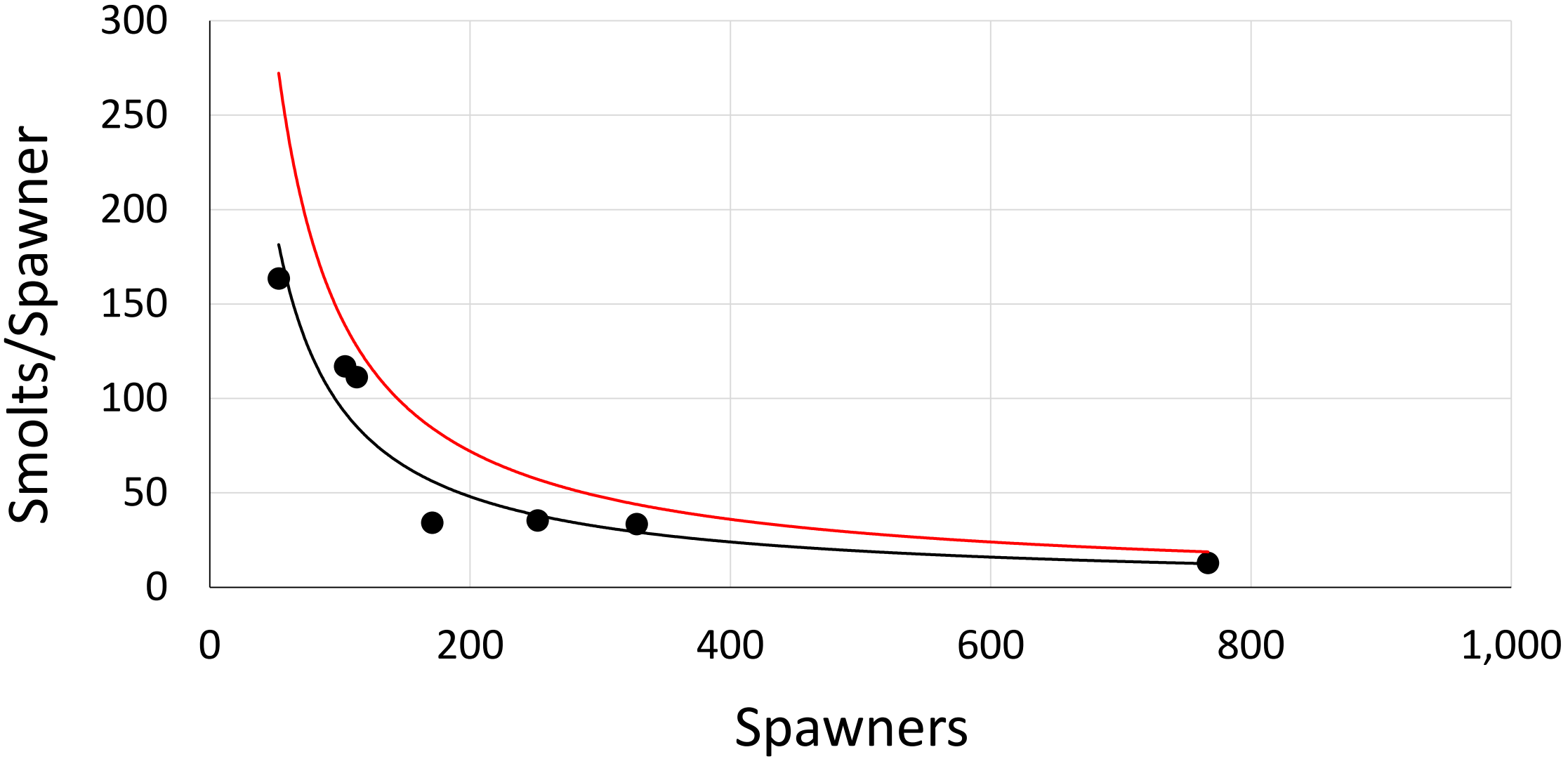
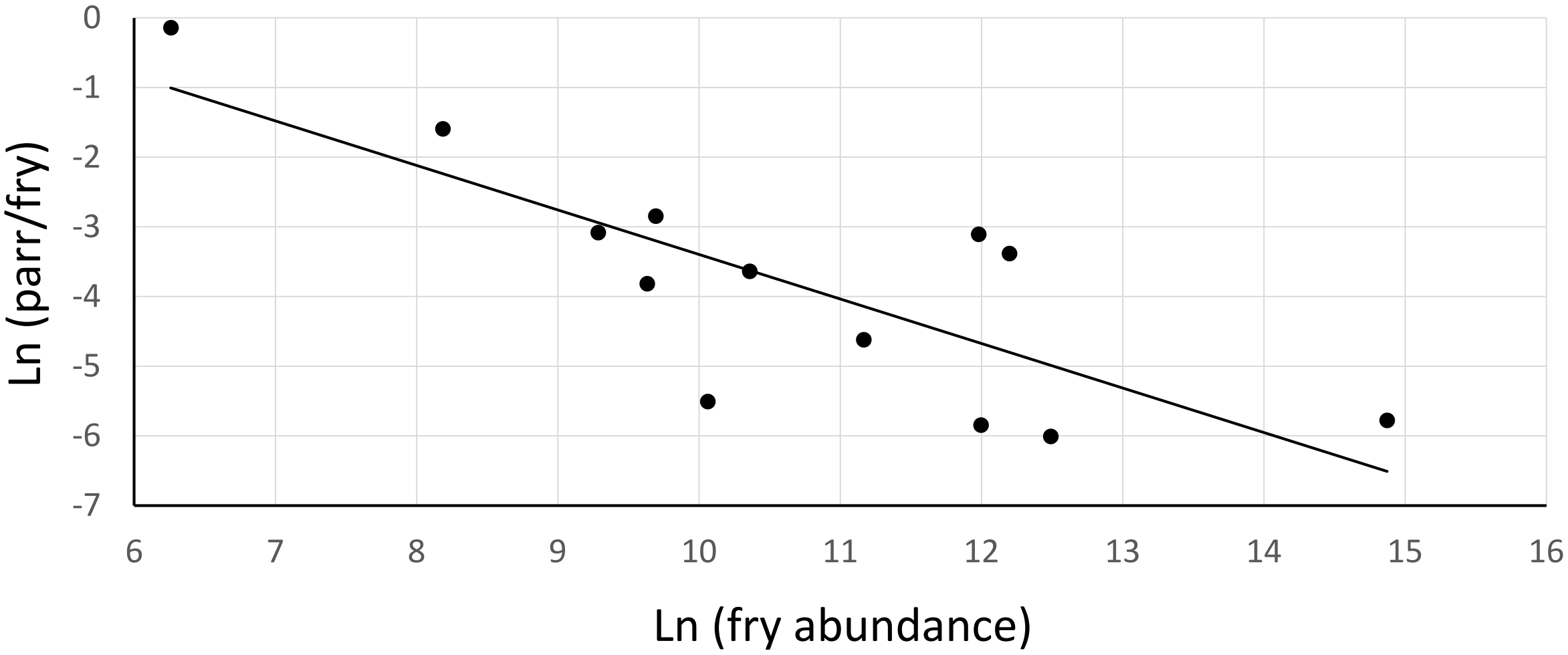


We also would expect to see an increase in parr density and over-winter survival

Expect to see an increase in relative abundance of larger Chinook



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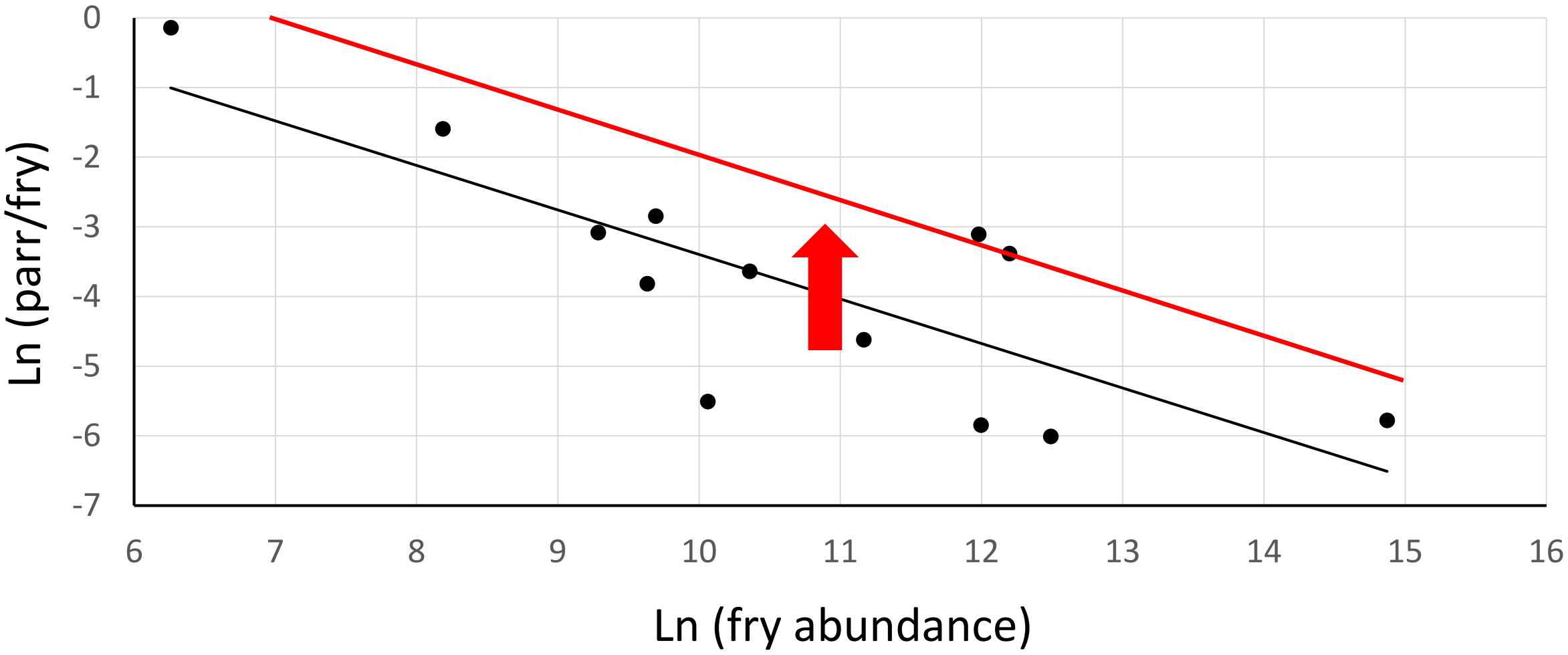
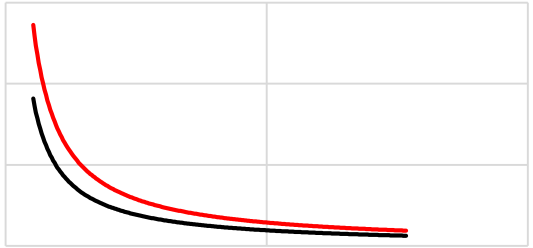


Lower Columbia IMW Monitoring Approach

Highly collaborative monitoring approach that is trying to help answer the question:

Does habitat restoration make more fish?



QUESTIONS