

Habitat Restoration-Foundation of a feast?

What should we do?

Where should we do it?

How well does it work?



Supporting stream habitat restoration through modeling and data visualization

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CONFLUENCE
ENVIRONMENTAL COMPANY



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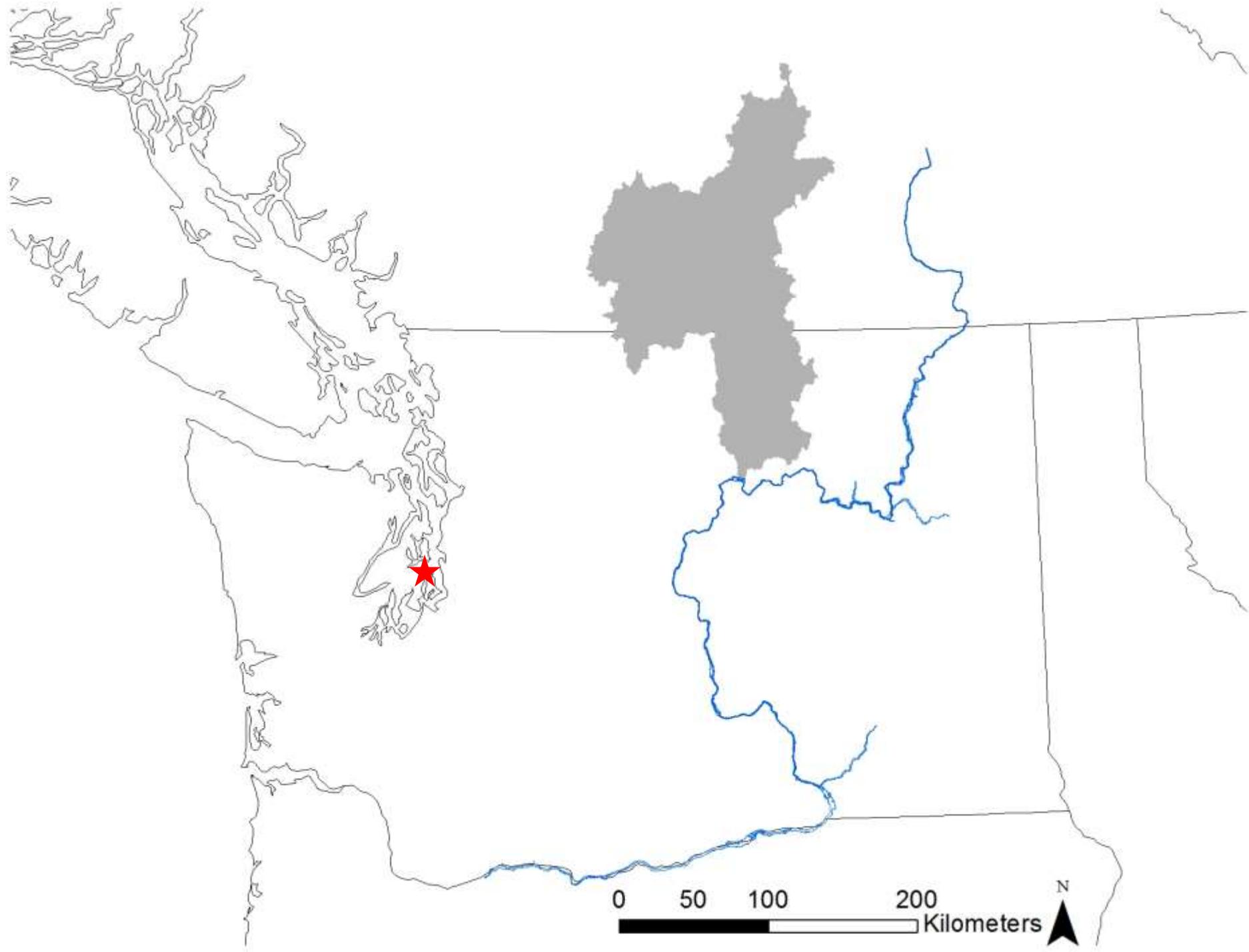




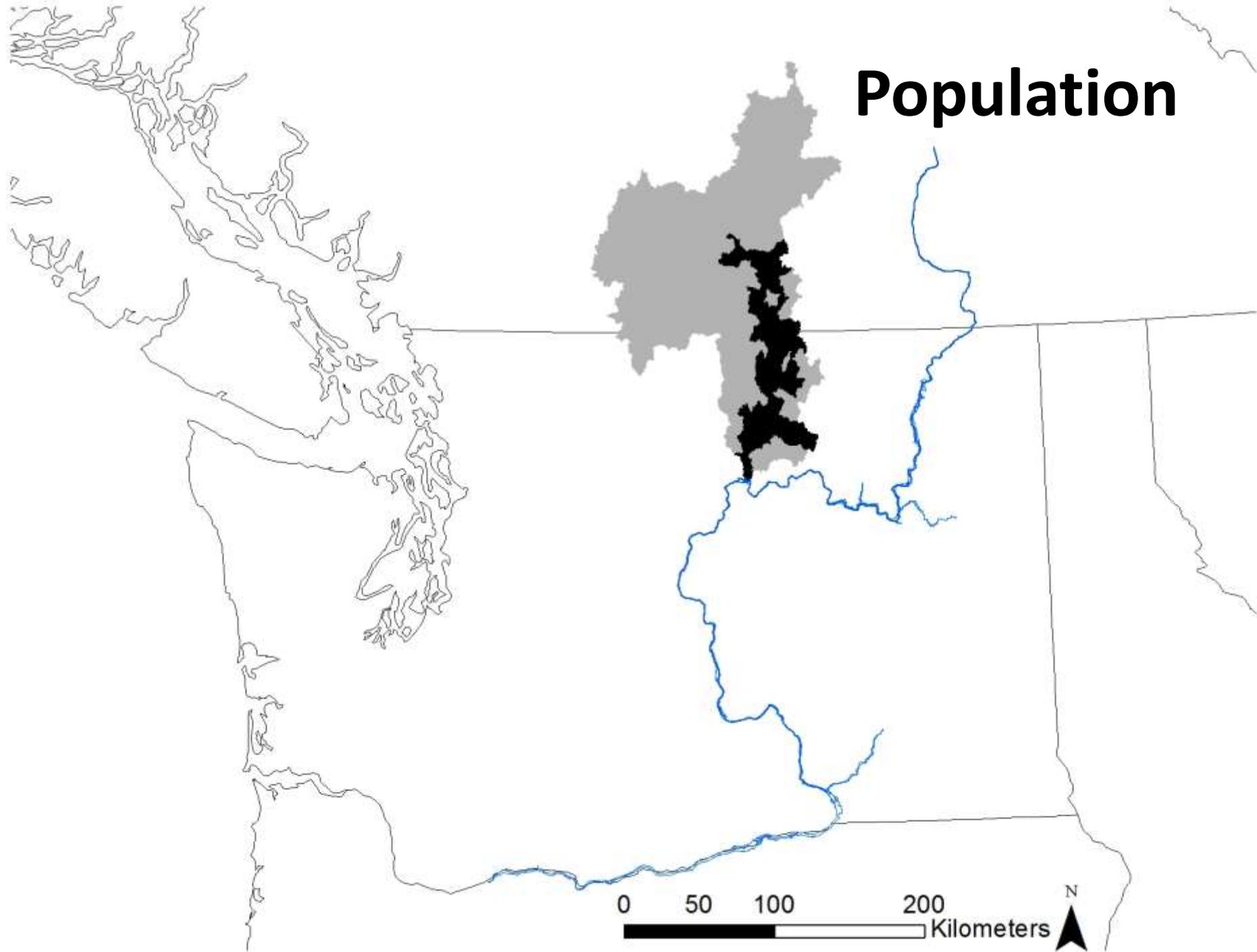
OBMEP Habitat Status and Trend



- Measuring and tracking the quality and quantity of salmon and steelhead habitat ...
- Identifying relationships between ...population...survival...and habitat quality and quantity conditions.
- Develop useful data summaries and maps to assist Expert Panels and other regional technical bodies in identifying habitat impairment and limiting factors.

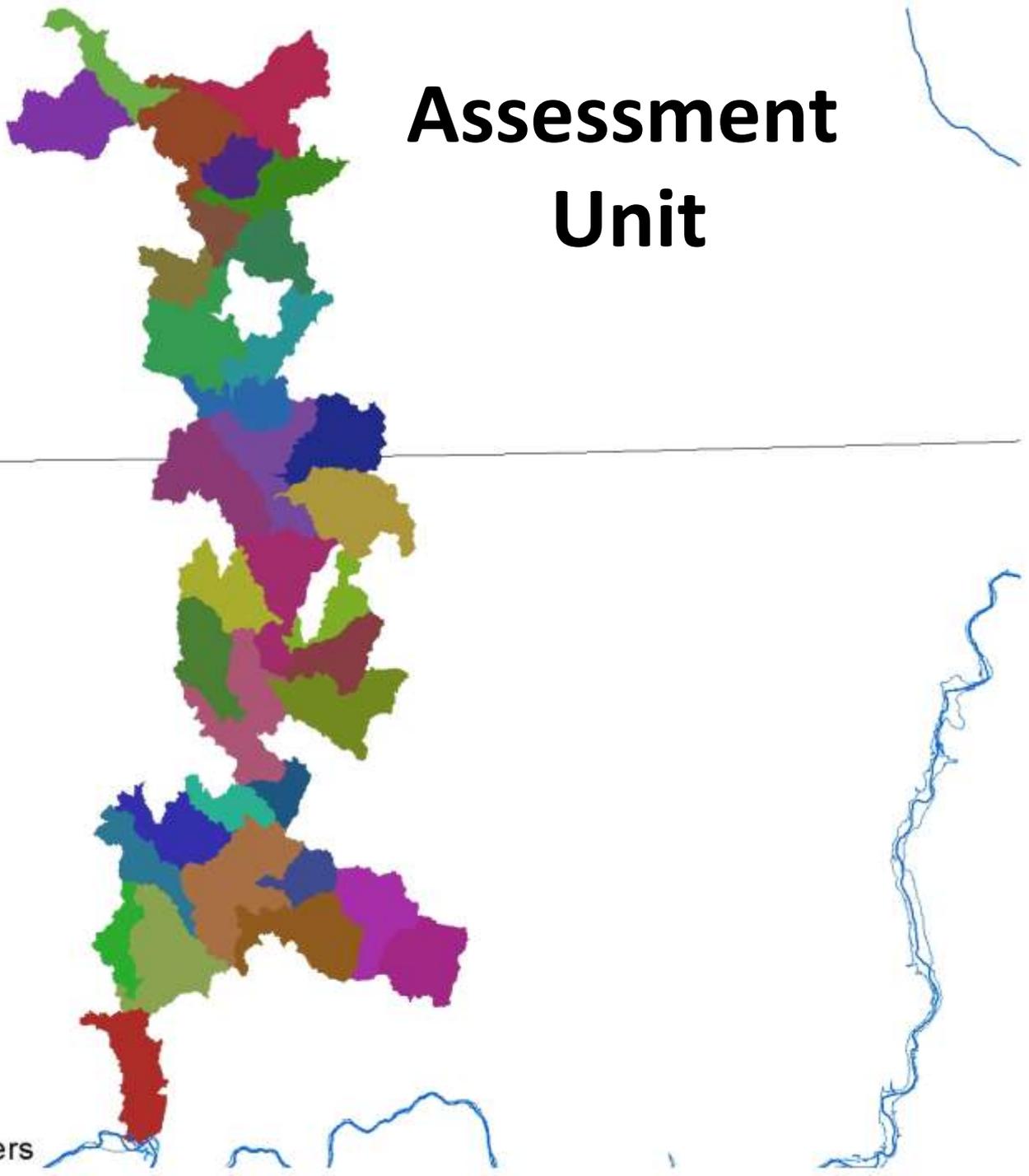


Population





Assessment Unit





Habitat Data...



0 12.5 25

Data Synthesis

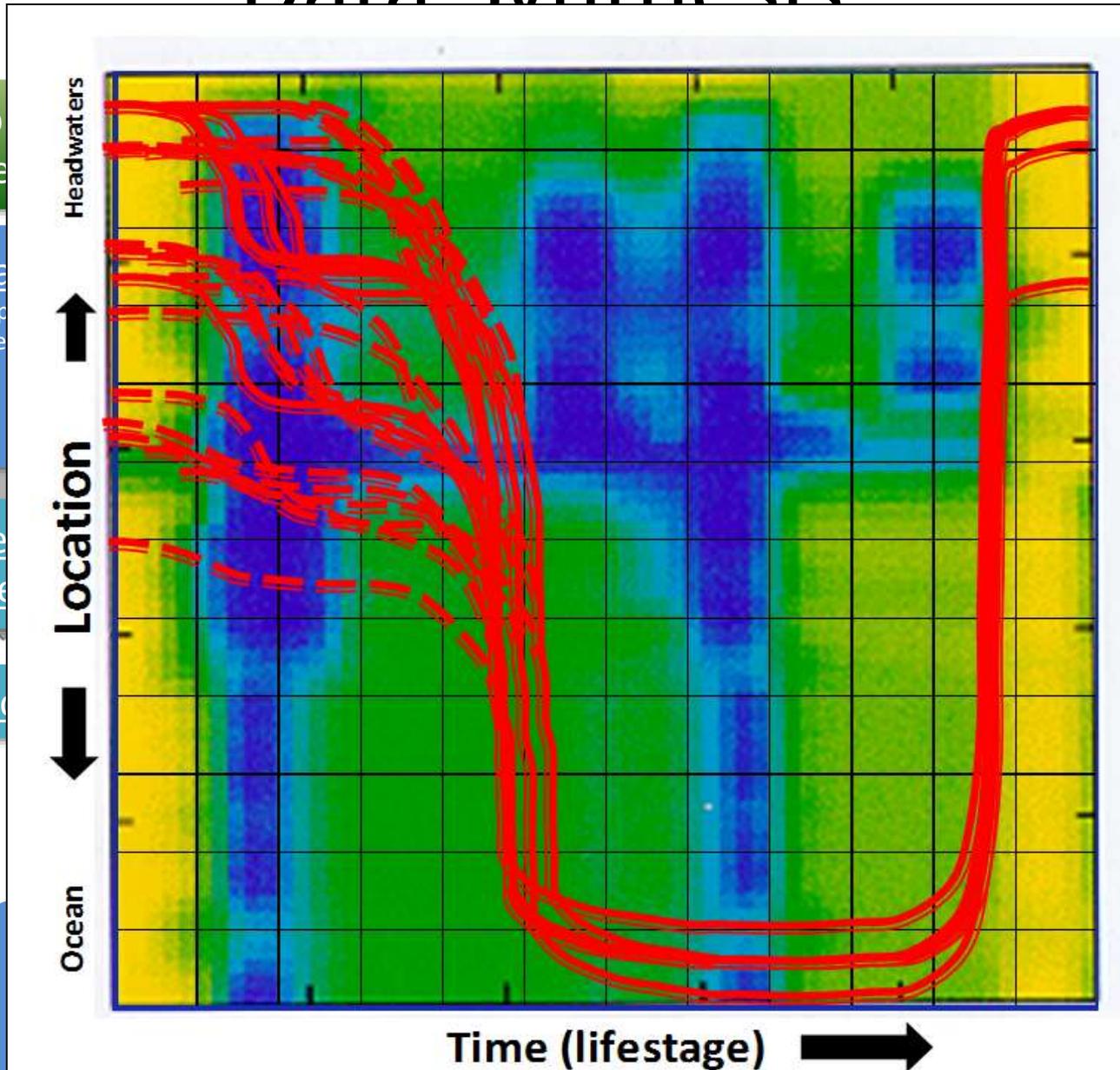
Model Habitat
Environment

OBMEP Data

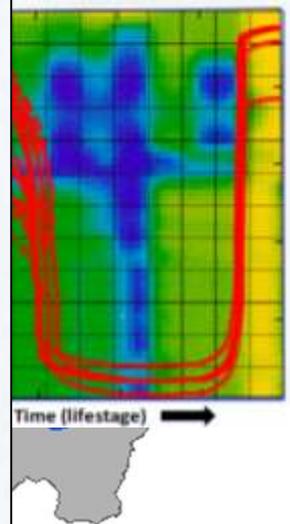
Habitat Complexity
Temperature
Flow
Wood
Substrate

Environment
Attributes

Survival Factors



3 Trajectory
Generator



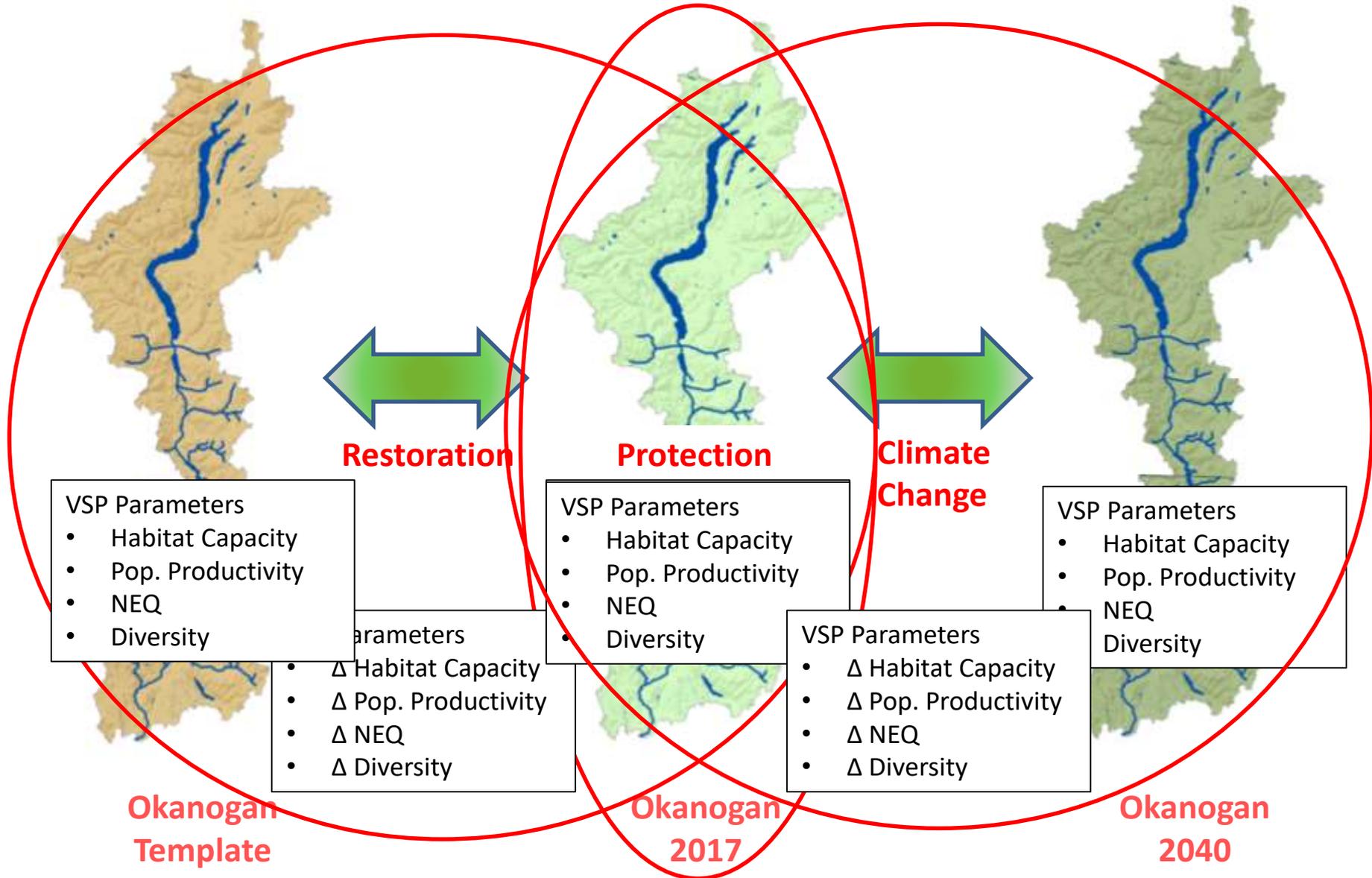
city
ivity
Abundance

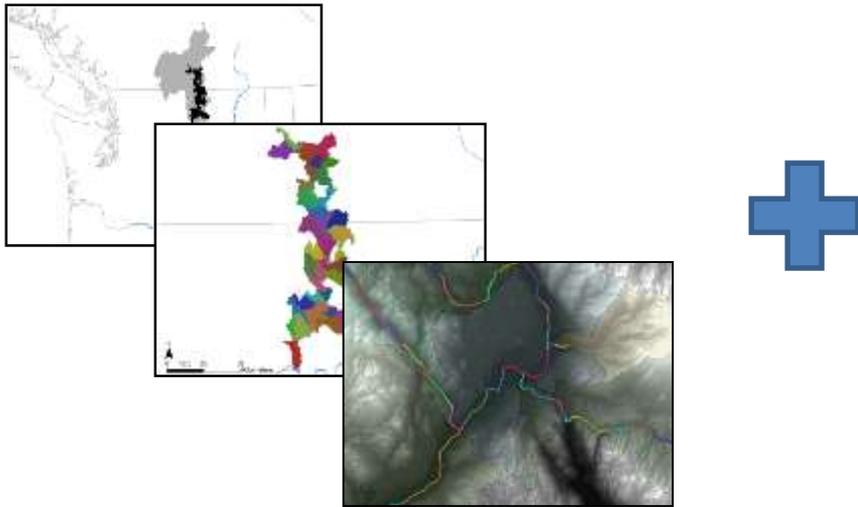
Survival (initial) factors

Diversity

Rates

Habitat Scenarios & Prioritization

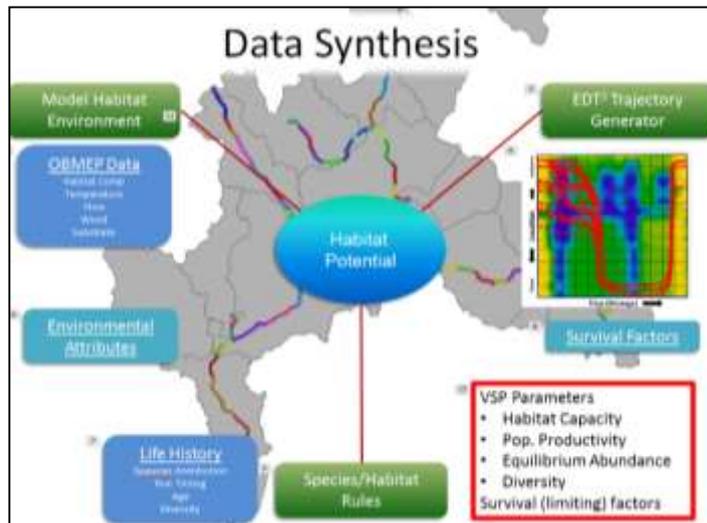




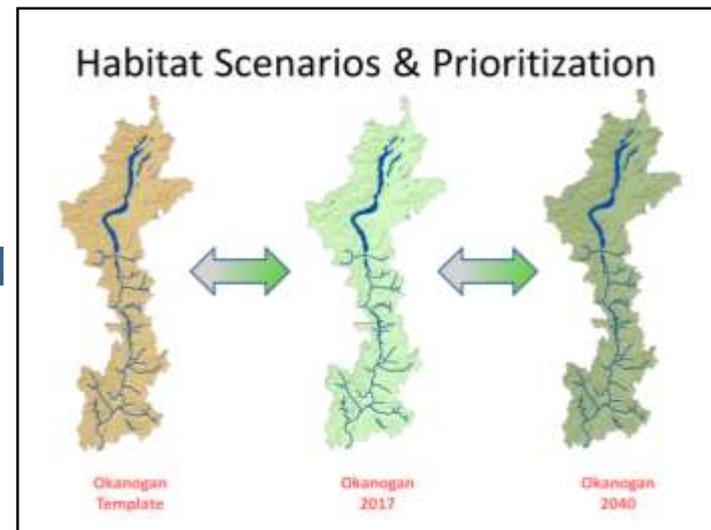
Framework



Data



Habitat Performance



Scenarios & Prioritization

<https://ecosystems.azurewebsites.net/reportcards/okanogan/>

Report Cards

https://ecosystems.azurewebsites.net/reportcards/okanogan/

USGS Current Cond... Hydromet Pacific N... Real-Time Hydrom... Emergency Stage Douglas County RL... Chief Joseph Dam a... Matthew Report Car... DBMAP Northwest River Fis... Okanogan Report C...

WayPoint

Columbia River Okanogan Monitoring and Evaluation Program

The Okanogan Subbasin Report Card: 2017 Habitat Status and Trend Cycle

Country: United States Species: Summer Steelhead Status and Trend Year: 2017 Trend Comparison: Template

Performance Summary VSP Criteria Summary Habitat Trends Obstruction Performance

Read me first! Welcome to the web-based Habitat Status and Trend Report Cards for the Okanogan Subbasin. The tabs directly above access different reporting metrics (hover on these for more info) and the filters found above the report tabs allow you to select the species, status and trend year, and trend comparison year. Note that the trend comparison filter selection will only affect results that are showing a trend, otherwise there will be no change to the data displayed. Hover over the "i" icons on each page for information about the associated features.

The first time you open the report cards and navigate to a new tab your browser will download all the associated data to your browser cache. Download time will vary depending on your internet connection speed. A progress-spinner will display over each report element until the download is complete. Once all the report card data are downloaded, they will remain available in your browser cache for instantaneous navigation as long as your viewing session remains open.

How is the Okanogan Subbasin Performing as Summer Steelhead Habitat?

In 2017 performed at **35%** of historic habitat potential.

How Good is the Information For The Okanogan Subbasin?

Legend: Very Good, Good, Fair, Poor

Population Performance Summary

Population Parameter	EDT Estimate	EDT Trend	Natural Origin Abundance ± 90% CI (range), Trend/year	Hatchery Origin Abundance ± 90% CI (range), Trend/year	Total Origin Abundance ± 90% CI (range), Trend/year	Data Source
Adult Abundance	354	-444	284 ± 88 (109-497) A82/95 percent	945 ± 39 (825-1,066) -916/year	1174 ± 50 (1,077-1,241) -927/year	Data period: 2005-2017, 4-year process, between year 90% CI, and range of expanded weir counts, seel surveys, and PIT tag estimates.
Smolt Abundance	27,242	-16,758	Insufficient data	105,002 ± 321 (95,348-110,200) -2,488/year	Insufficient data	Data period: 2005-2018, 4-year process for hatchery smolts only.

Scenario Assumptions: 2017

This space will be used to provide important information about how to use and interpret information presented on these report cards, and clarify important assumptions used in each selected EDT analysis. In future monitoring cycles, managers will use this space to describe important management milestones that occurred in each reporting unit during the identified status and trend year. For example, managers can identify major fish passage or habitat restoration projects implemented in a given assessment unit that explain measurable changes in habitat performance relative to the prior Status and Trend Year. Managers may also use this space to summarize progress towards habitat objectives at different spatial scales.

Species Distribution Assumptions used in EDT:

- Summer fall Chinook spawn only in selected reaches in the mainstem Okanogan and the Similkameen River, there is now spawning in smaller tributaries.
- Steelhead spawn in selected mainstem and tributary reaches in the model network, which represents the known and potential extent of anadromous habitat in the subbasin. Some reaches were excluded from spawning habitat because they lack historical potential and are unlikely to support spawning in the future.

Limiting Factor Reporting:

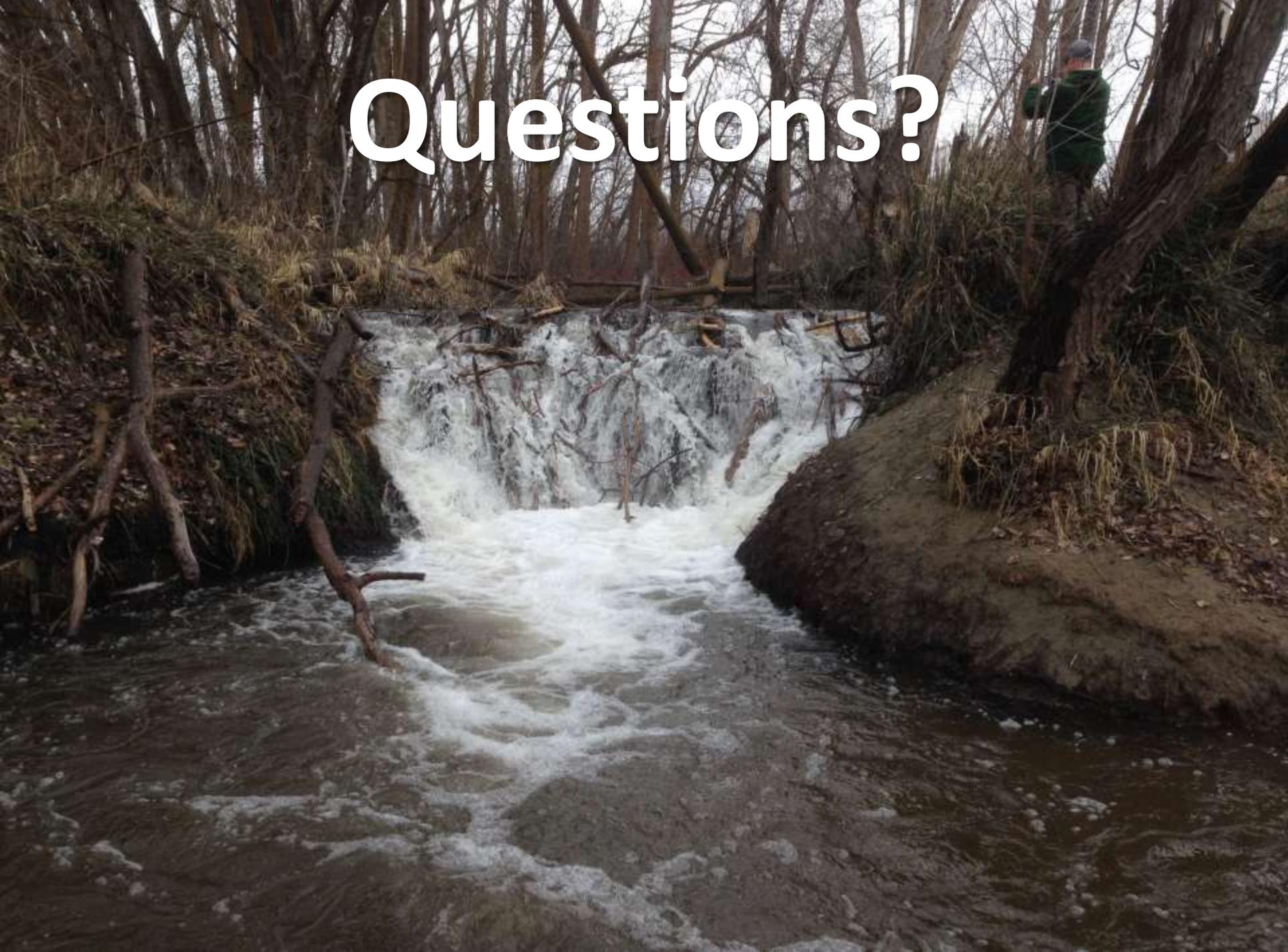
EDT survival factors are analogous to US Forest Service habitat limiting factors. A survival factor can be a habitat limiting factor if it is degraded and negatively impacts habitat performance. The user can access survival factor reporting as follows:

- EDT survival factor performance is summarized at two spatial scales, assessment unit and reach.
- Use the map to the left to navigate to the desired spatial unit, then click the Habitat Trends tab.
- The assessment unit report identifies the top five survival factors in the selected assessment unit based on their effect on habitat performance (factor weight).
- The factor weight score represents the percent of productivity loss attributable to each survival factor.
- % of Template score describes the current survival factors function as a proportion of the historical ideal, the smaller the %, the greater the potential lift from restoration.

Next Steps

- Linking Survival Factors with other regional ecological metrics
- Implementation functions

Questions?



Diagnostic Unit C limiting

fact

OKANOGAN BASIN MONITORING AND EVALUATION PROGRAM

Subbasin
Diag. Unit

Okanogan
Salmon Creek Upper

Reach
Reach Length (mi) 7.85

OBMEP Sites

EDT Level 2 Attribute Ratings

SALMONID POPULATION REPORT CARD

2013 Habitat Status and Trend Cycle

Subbasin: Okanogan (US)
Species: Steelhead
Population: Okanogan Summer
Status & Trend Year: 2013
Trend Comparison: 2013 to 2009

Population Performance Summary

Population Parameter	EDT Estimate	Observed
Adult Abundance	87% WMA	201 total, 2,098 total (2013 5-yr grossed)
Adult Trend	-20%	WMA +51%/yr, total +180%/yr (2005-2012)
Smolt Abundance	22,472	n/a
Smolt Trend	8,574	n/a

Management Milestones: 2009—2013

Actions - Revisions to template and 2009 baseline required due to substantial Okanogan EDT model revision.
New EDT reporting - New results format customized for EDT reporting needs.
Data quality - 87% of reports derived from quantification data.
Habitat actions - EDT results show effect of fish passage at McCreary Dam.

What are the Trends in Habitat Potential for Okanogan (US) Steelhead?

EDT used EDT 9th history regression to model this population

Adult Habitat Productivity¹

Adult Life History Diversity²

Theoretical Adult Capacity and Abundance

Juvenile Habitat Productivity¹

Juvenile Life History Diversity²

Theoretical Juvenile Capacity and Abundance

Priority Habitats for Steelhead

Change in Population Productivity If...

The Diagnostic Unit	Degrades	Is Restored
Wells Pool Inundated		
Okanogan River 01: Chelicut to S Long Leap Creek		
Long Leap Creek Resident		
Salmon Creek Lower		
Salmon Creek Upper		
Salmon Creek Resident		
Okanogan River 02: Salmon to Gr Creek Creek Lower		
Gr Creek Upper		
Gr Creek Resident		
Okanogan River 03: Gravel to River		
Wanacoit Creek		
Wanacoit Creek Resident		
Johnson Creek		
Okanogan River 04: Riverside to S Tusk Creek		
Tusk Creek Resident		
Okanogan River 05: Janks to Slick		
Arroyo Creek Resident		
Bonanza Creek		
Bonanza Creek Resident		
Swath Creek		
Swath Creek Resident		
Okanogan River 06: Swath to Col		
Arroyo Creek Lower		
Wilhoite Spring Creek		
Swathbarren River Lower		
Swathbarren River Middle		
Okanogan River 07: Confluence to Grayson Lake		
Transford Creek		
Transford Creek Resident		
Warrior Creek		

How Good is Our Information in This Subbasin?

How Has Steelhead Habitat Potential Changed Between 2009 and 2013?

Population Parameter and Trend Since Template	DIAGNOSTIC UNIT																												Symbol Key			
	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Trend	Value
Productivity	0.0	5.6	2.2	6.1	0.0	4.3	0.0	5.0	1.2	0.0	1.2	1.3	1.3	0.0	0.0	0.0	0.0	1.0	1.9	1.9	1.7	2.4	1.7	0.0	0.0	3.9	3.7	<2%	▲	▲		
Trend	▲	▲	▲	▲	▼	▲	▲	▼	▼	▼	▼	▼	▼	▲	▼	▼	▼	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	<-1.0%	▼	▲	
Abundance	0	27	22	307	0	36	0	0	2	0	15	2	46	0	0	0	0	0	9	1	54	102	47	0	0	34	53	>5%	▼	▲		
Trend	▲	▲	▲	▲	▼	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	>5%	▼	▲	
Habitat Capacity	0	37	40	367	153	125	38	0	9	6	164	7	165	0	15	0	0	0	8	29	3	135	177	129	97	0	53	73	>5%	▼	▲	
Trend	▲	▲	▲	▲	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	>5%	▼	▲	
Diversity	0%	22%	13%	72%	0%	18%	0%	0%	2%	0%	1%	7%	1%	0%	0%	0%	0%	0%	2%	6%	2%	2%	18%	15%	0%	0%	25%	43%	>5%	▲	▲	
Trend	▲	▲	▲	▲	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	▼	>5%	▼	▲	



