

Wild Fish Conservancy

N O R T H W E S T

S C I E N C E E D U C A T I O N A D V O C A C Y

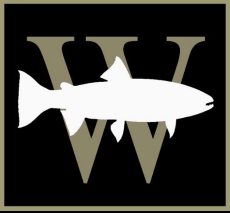
Jamie Glasgow, Director of Science



OUR MISSION:

To preserve, protect and restore the Northwest's wild fish and the ecosystems they depend on through science, education, and advocacy.

www.wildfishconservancy.org



Coho Pre-spawning Mortality Assessment



<https://pubmed.ncbi.nlm.nih.gov/29044812/>

Coho Urban Runoff Mortality Syndrome in Puget Sound

[Introduction](#)

[Predicted Mean Annual Coho Mortality Map](#)

[Identifying Coho](#)

[Identifying Coho Mortality Syndrome](#)

[Report Coho Mortality](#)



Predicted Mean Annual Coho Runoff Mortality Syndrome Rates Across the Puget Sound

[Ecol Appl.](#) 2017 Dec;27(8):2382-2396. doi: 10.1002/eap.1615. Epub 2017 Oct 18.

Roads to ruin: conservation threats to a sentinel species across an urban gradient

Blake E Feist¹, Eric R Buhle², David H Baldwin³, Julann A Spromberg³, Steven E Damm⁴, Jay W Davis⁴, Nathaniel L Scholz³

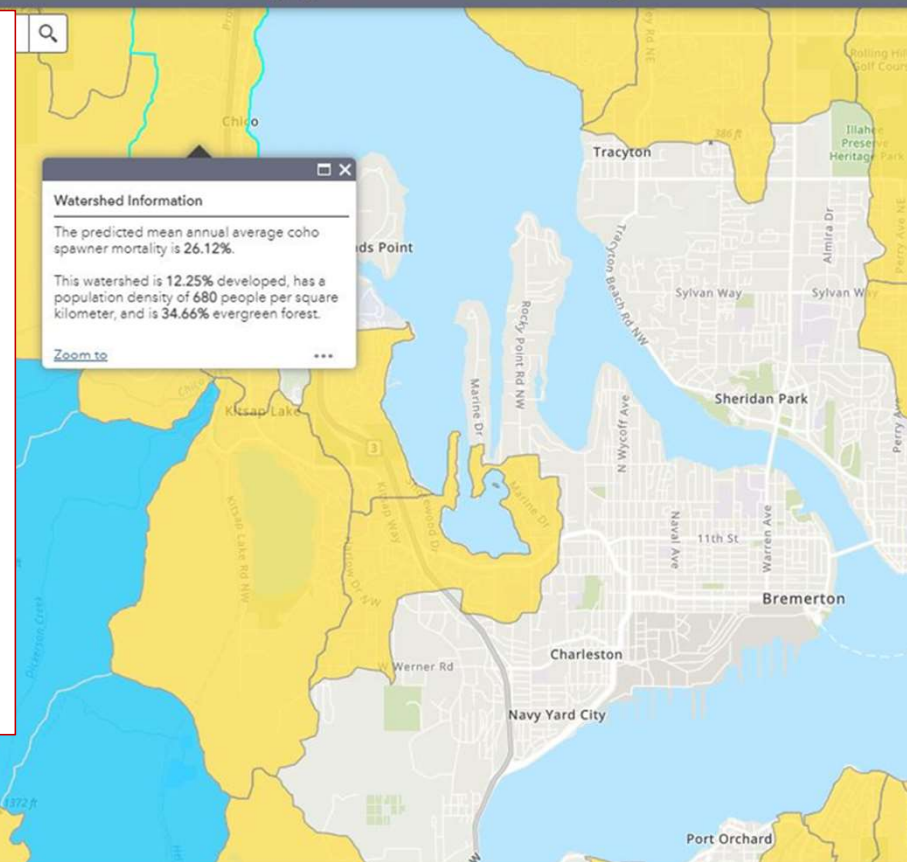
Affiliations [+](#) expand

PMID: 29044812 PMCID: PMC6084292 DOI: 10.1002/eap.1615

[Free PMC article](#)

Abstract

Urbanization poses a global challenge to species conservation. This is primarily understood in terms of physical habitat loss, as agricultural and forested lands are replaced with urban infrastructure. However, aquatic habitats are also chemically degraded by urban development, often in the form of toxic stormwater runoff. Here we assess threats of urbanization to coho salmon throughout



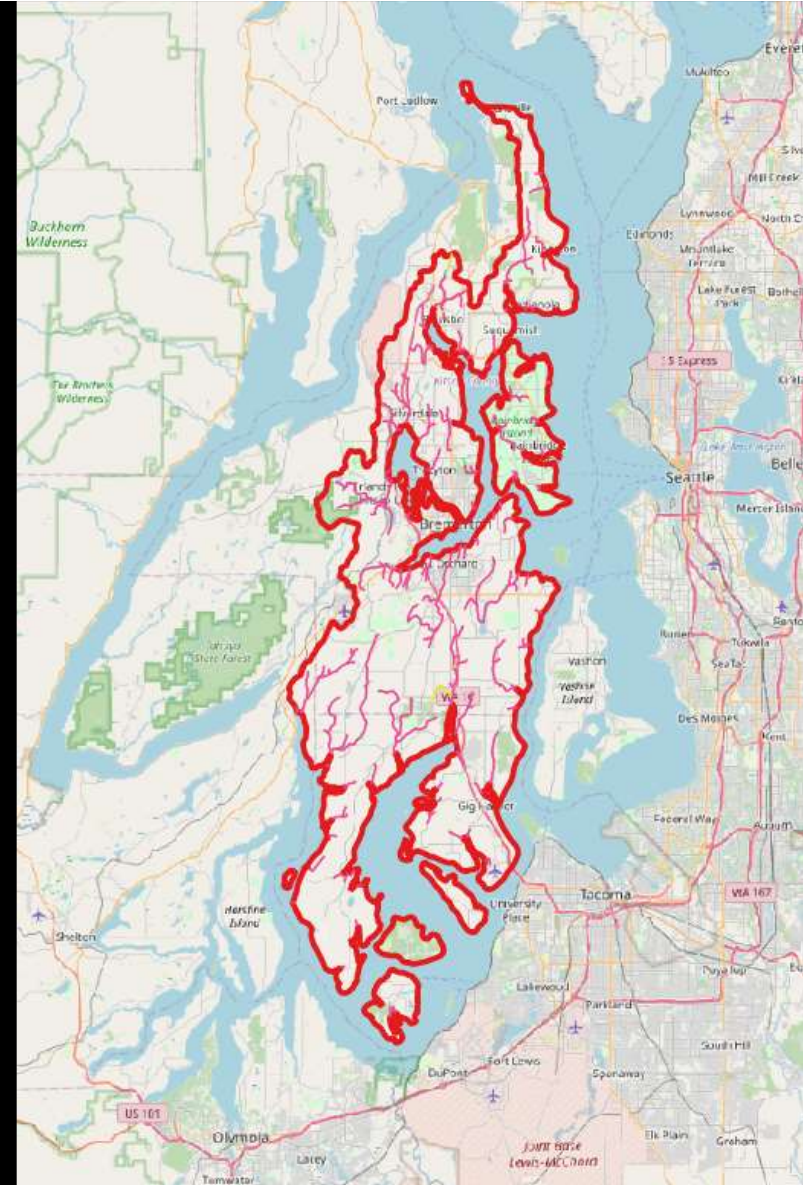
Fall 2021-2022 Scope

- Weekly coho spawning surveys in five West Sound watersheds
- Coho spawning data (live fish, dead fish)
- Coho egg retention assessment
- Data to NOAA's NWFSC to refine model.
- Data to WDFW, Tribes, etc.



Weekly coho spawning surveys in five West Central PS watersheds

1. Watersheds representing a range of development (road-density / stormwater inputs). (Range of 'R2R' modeled conditions).
2. Significant watersheds lacking escapement data (unsurveyed or just 'spot checked.')
3. Watersheds large enough to expect >10 coho to return annually.
4. Reasonable access to survey reaches.

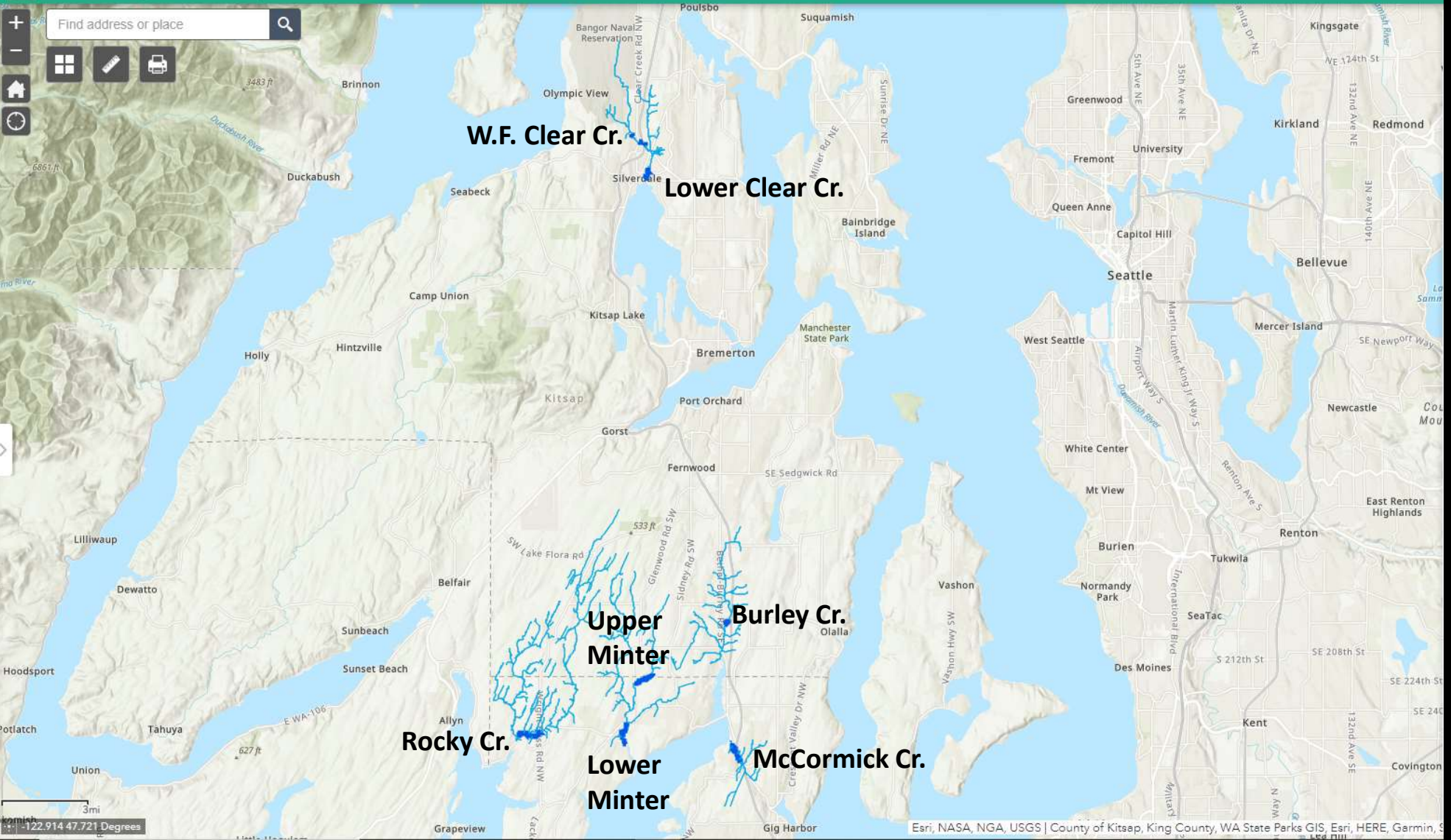




Coho Pre-Spawn Mortality 2021

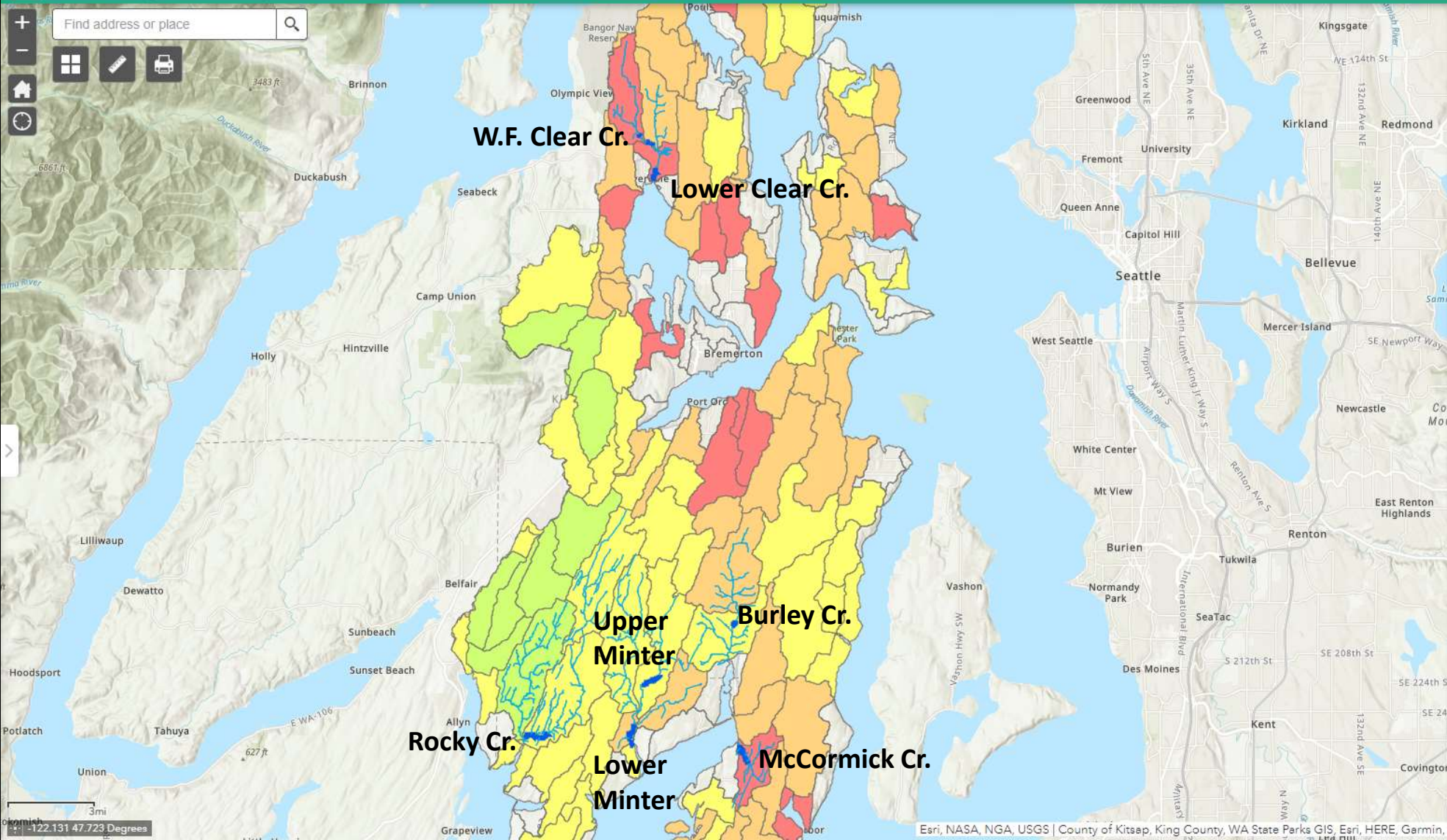
with ArcGIS Web AppBuilder

Find address or place



Find address or place

Map navigation icons: Home, Full Screen, Print, Refresh, Back, Forward



Coordinates: -122.131 47.723 Degrees

Weekly surveys
from

10/20/2021

to

12/14/2021





Clear Cr.
Observation #7
11/03/2021



Clear Cr.
Observation #7
11/03/2021





Date
Stream
Reach DS end: lat lon
Reach US end: lat lon
Crew
Flow
Visibility
Weather
Water Temp
Start time, End time
Survey Conditions Notes

Species
Live #
Dead #
Redds #
GPS
Ad clip
CWT
Length
Sex
Eggs Retained (4 percentiles)
Scavenged
Body Cavity Intact
Carcass age
Fins worn
Symptomatic
Photos and Notes



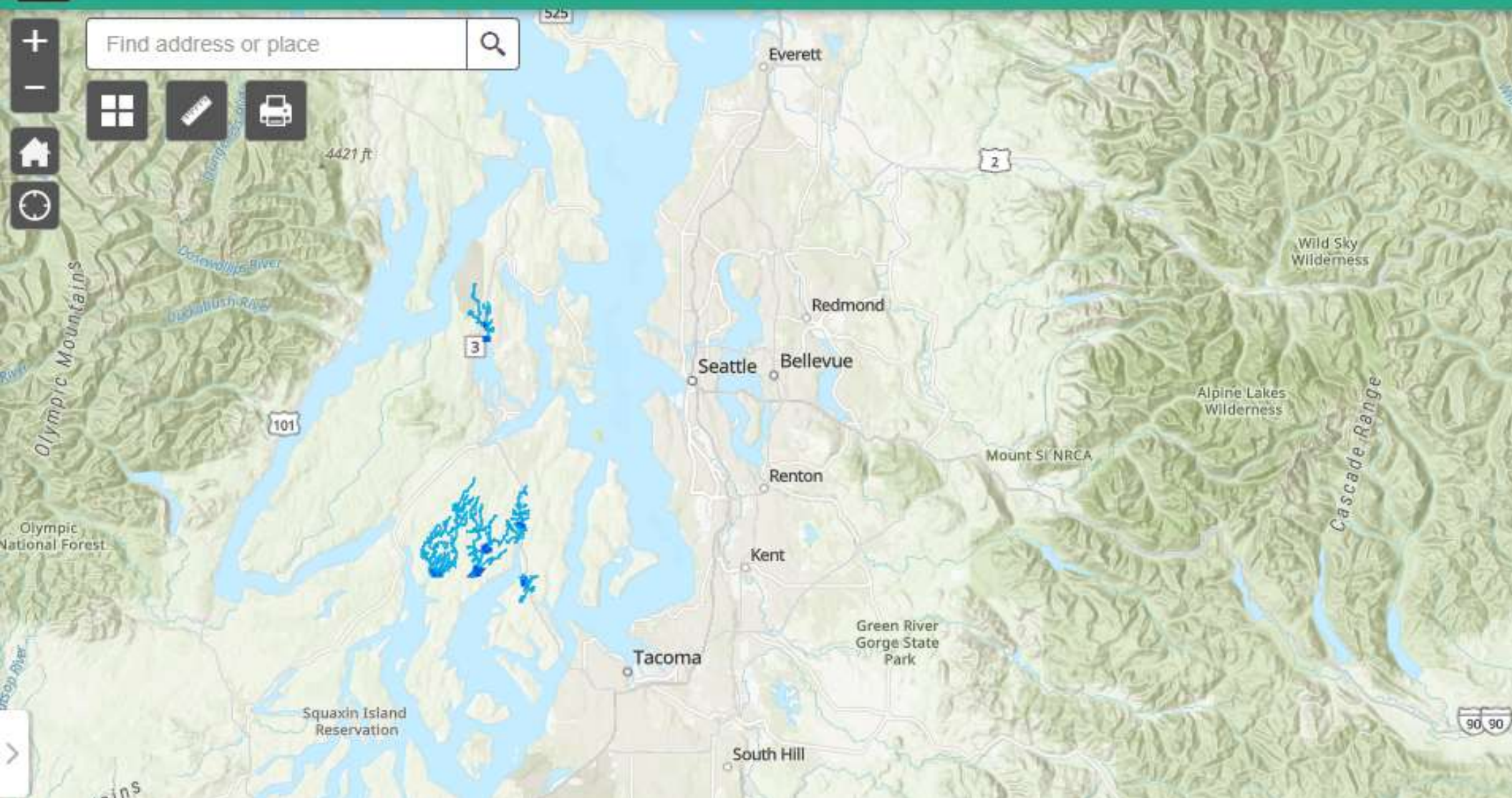
7 reaches, each sampled weekly (7 times) between 10/20/2021 and 12/14/2021

<i>Reach</i>	<i># Female Carcasses</i>	<i>0-25% Egg Retention</i>	<i>25-50% Egg Retention</i>	<i>50-75% Egg Retention</i>	<i>75 - 100% Egg Retention</i>	<i>Unknown Egg Retention</i>	<i>% >50% egg retention</i>	<i>R2R Prediction</i>
Rocky Creek	1	1	0	0	0	0	0	10-20%
Lower Minter Creek	6	2	0	1	3	0	50	20-30%
Upper Minter Creek	8	6	0	0	0	2	0	10-20%
McCormick Creek	1	1	0	0	0	0	0	30-40%
Burley Creek	0	0	0	0	0	0	-	10-20%
Lower Clear Creek	4	1	0	1	1	1	66.7	30-40%
West Fork Clear Creek	5	5	0	0	0	0	0	30-40%
Total	25	16	0	2	4	3		



Coho Pre-Spawn Mortality 2021

with ArcGIS Web AppBuilder



Why spawning surveys?

- Validate and improve predictive PSM models
- Test assumptions
- Identify 'anomalies' for future research
- Unanticipated discoveries (like PSM itself)
- Critical spawner escapement data for fishery management, salmon population status and trend assessments, habitat + WQ restoration effectiveness monitoring, and recovery planning.



Of the VSP parameters, spawner escapement is recognized as “the single most important measurement needed for ESA evaluations” (Crawford and Rumsey 2009) and a *Vital Sign Indicator* of ecosystem health (McManus et al. 2020).









Spawning survey UNCERTAINTIES:

- Unknown fate of many adult fish (live fish, carcasses that were scavenged),
- Imperfect detection (visibility, scavenging, flows that flush carcasses),
- Small sample sizes (a result of PSM?),
- Straying

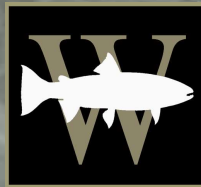


Opportunities for coordination, collaboration for expanding salmon spawning surveys, including consistent egg-retention data collection.

News Release: Updated PSP Vital Signs

VITAL SIGN > INDICATOR	PROGRESS	STATUS
— Salmon		
Number of natural-origin Chinook salmon on spawning grounds		
Number of natural-origin coho salmon on spawning grounds		
Number of natural-origin Puget Sound steelhead on spawning grounds		
Number of natural-origin summer chum salmon on spawning grounds		

Better Data. Better Decisions



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