Salmon Recovery in Washington State

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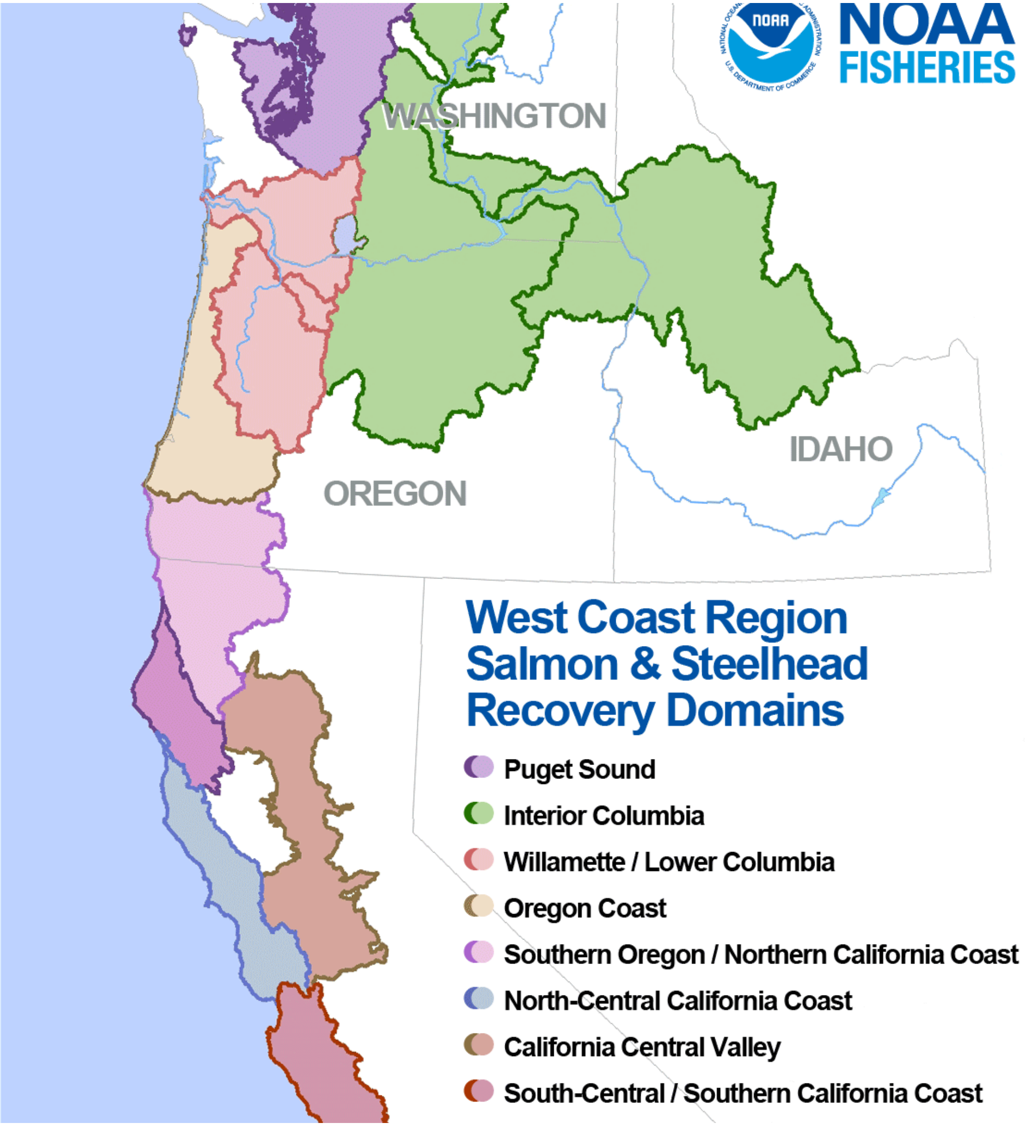
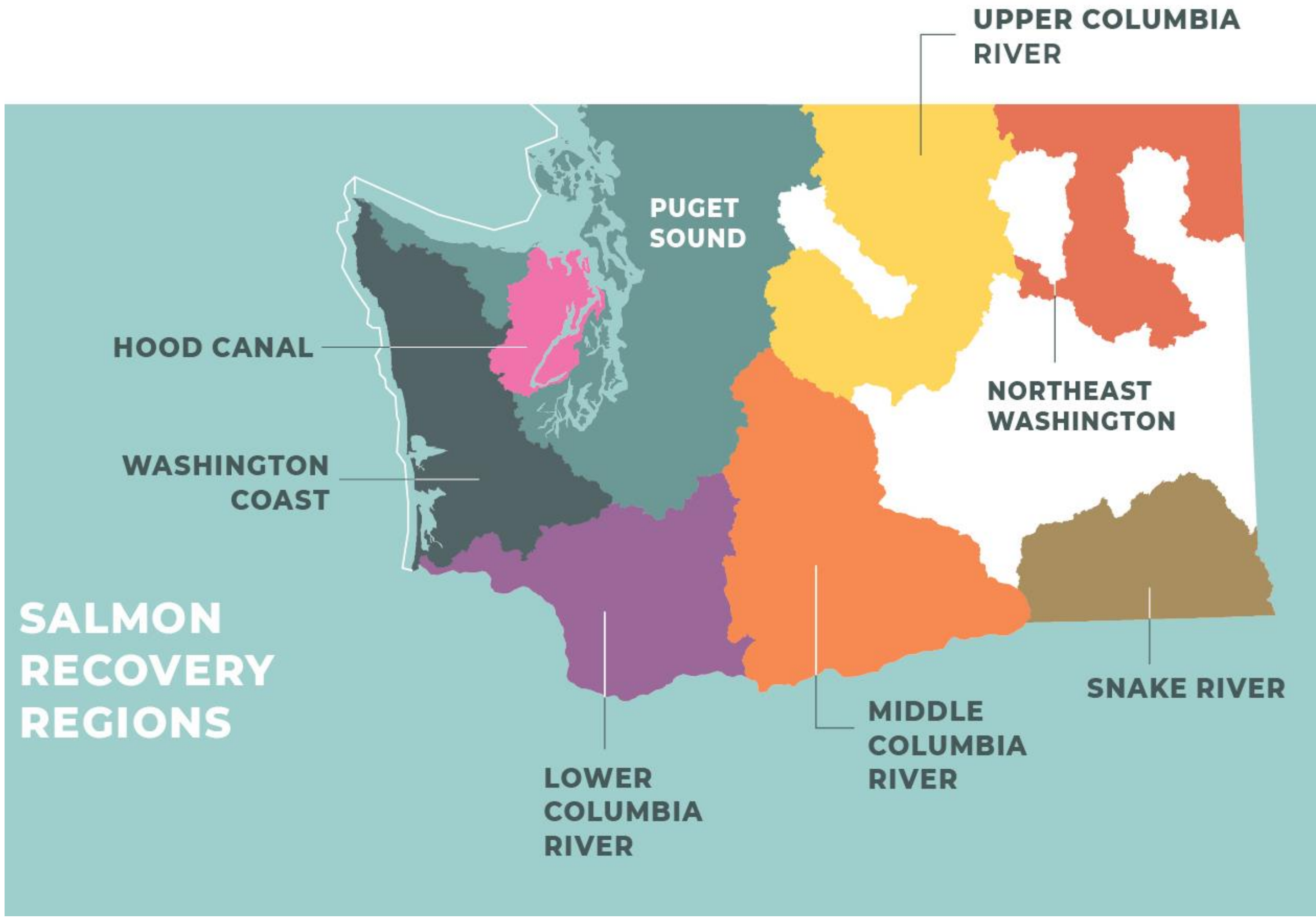
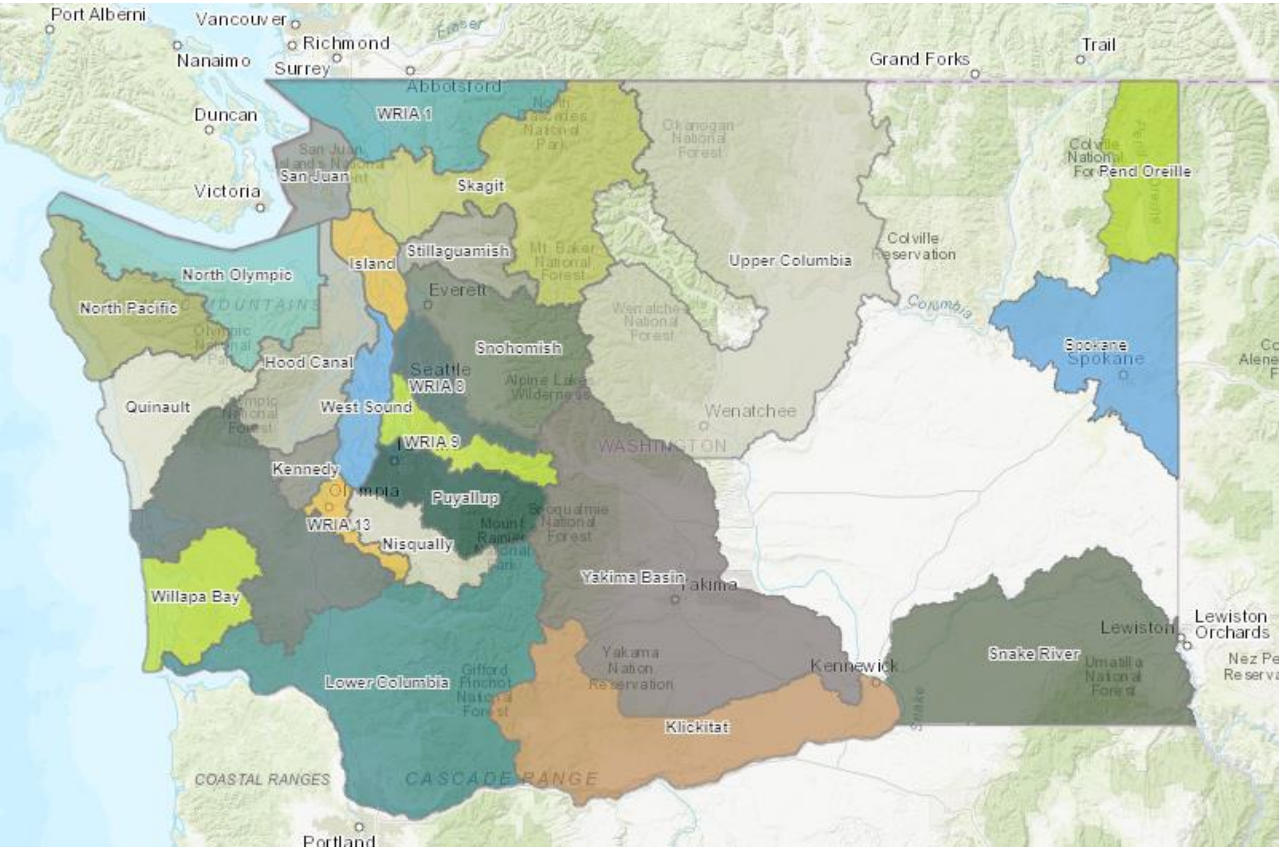
Washington Department of FISH & WILDLIFE


NOAA FISHERIES
WASHINGTON
OREGON
IDAHO
West Coast Region Salmon & Steelhead Recovery Domains
Puget Sound
Interior Columbia
Willamette / Lower Columbia
Oregon Coast
Southern Oregon / Northern California Coast
North-Central California Coast
California Central Valley
South-Central / Southern California Coast


UPPER COLUMBIA RIVER
PUGET SOUND
HOOD CANAL
WASHINGTON COAST
NORTHEAST WASHINGTON
SALMON RECOVERY REGIONS
SNAKE RIVER
MIDDLE COLUMBIA RIVER
LOWER COLUMBIA RIVER

Lead Entities and Salmon Recovery



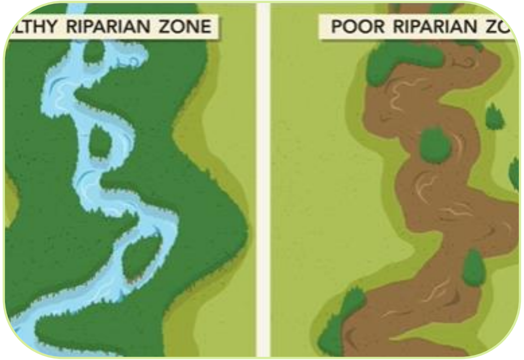
Lead Entity Watersheds

- Develop watershed-scale recovery actions
- Build partnerships and trust
- Local science and community priorities
- Prioritize projects to maximize public's investments

Local Implementing Partners

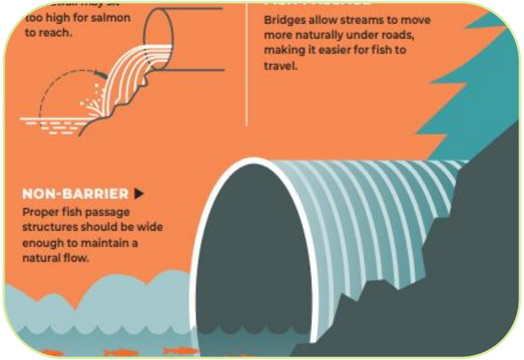
- Conservation Districts, Regional Fish Enhancement Groups (RFEGs), Land Trusts, Local Governments, etc.
- Secure grants, implement projects, and build local partnerships and volunteer networks

SALMON STRATEGY PRIORITIES



Protect & restore vital salmon habitat

Invest in clean water infrastructure



Correct fish passage barriers & restore access

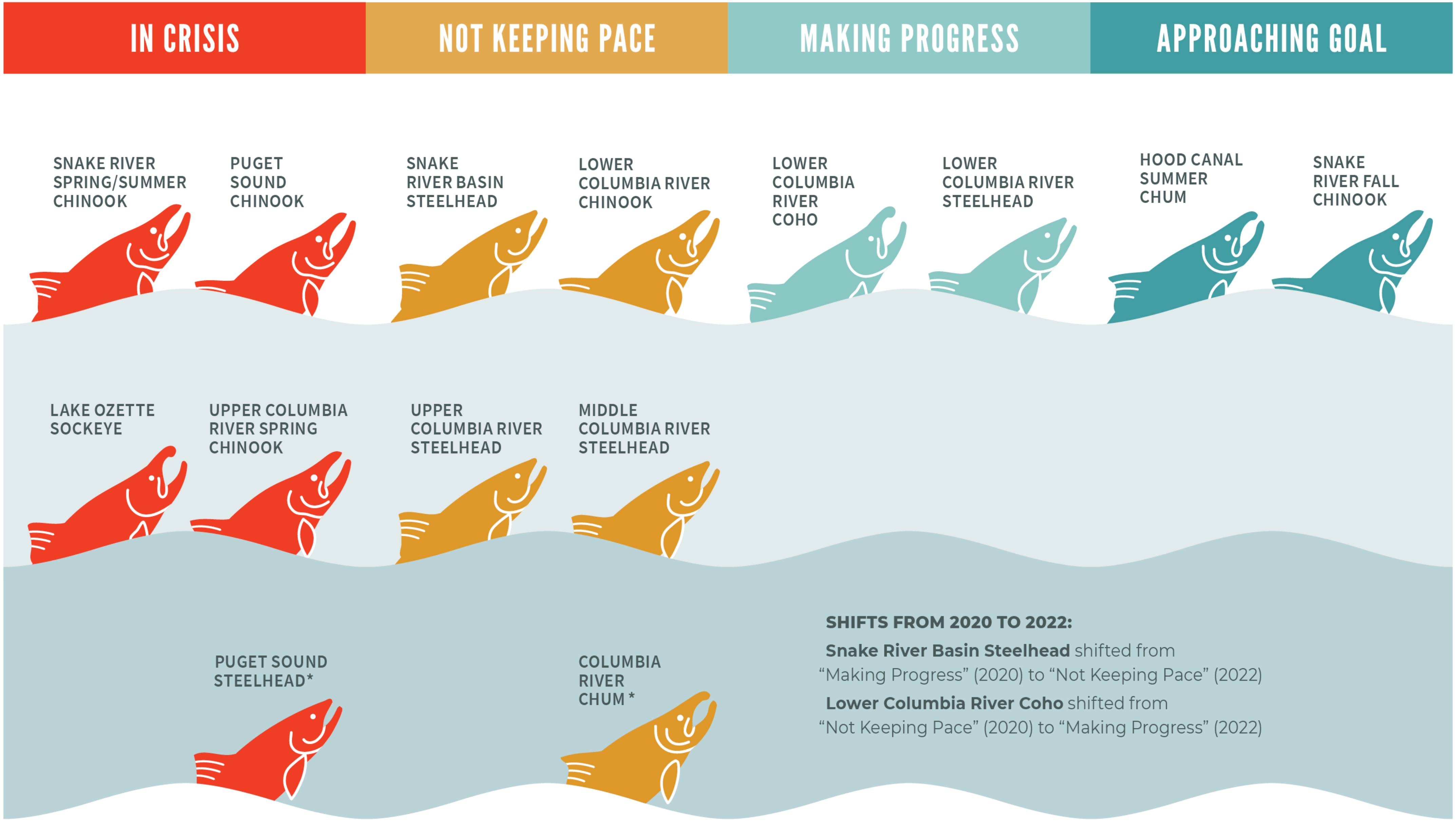
Build climate resiliency

Align harvest, hatcheries, & hydropower

Address predation & food web issues

Enhance commitments & coordination across programs

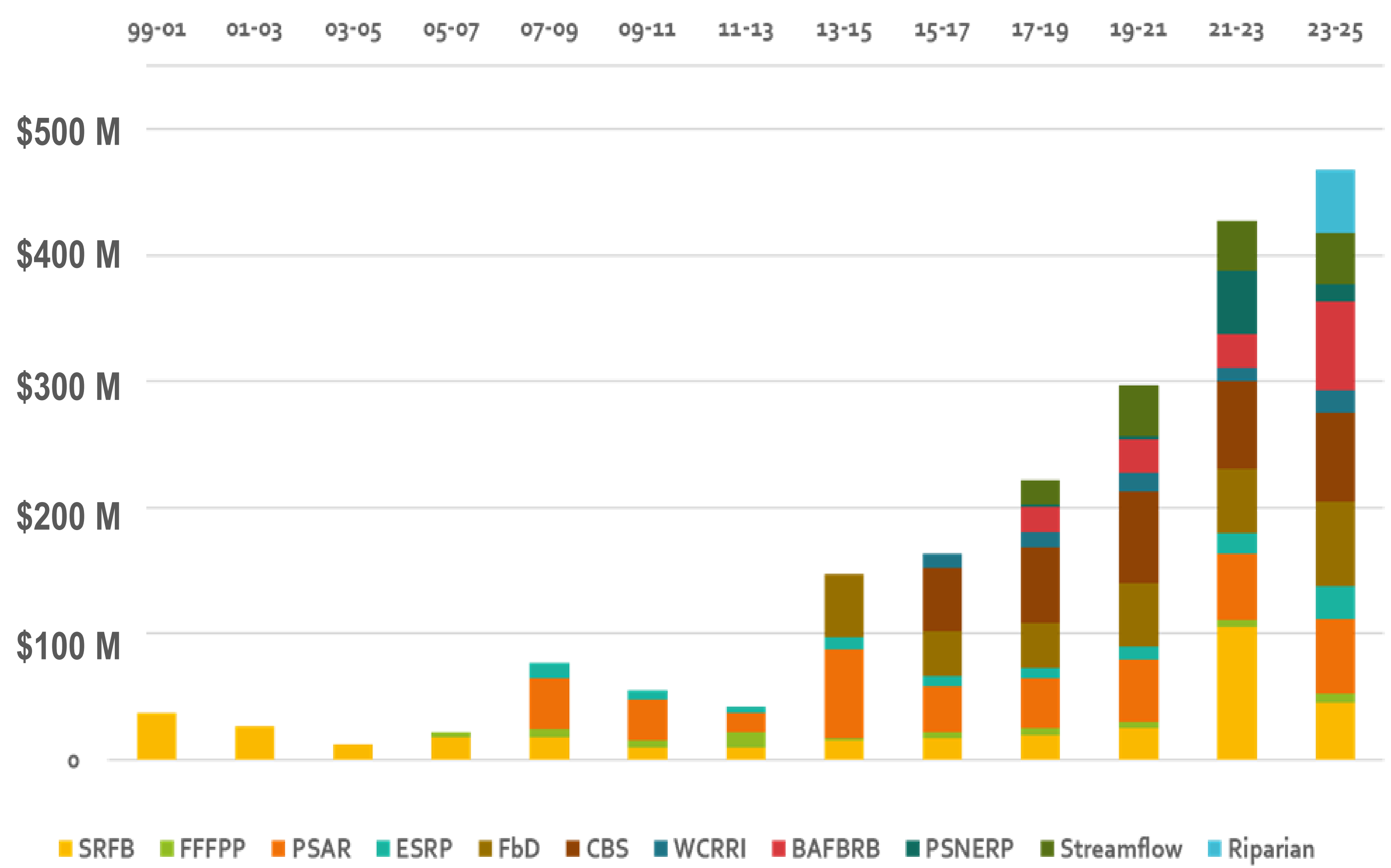
Strengthen science, monitoring, & accountability



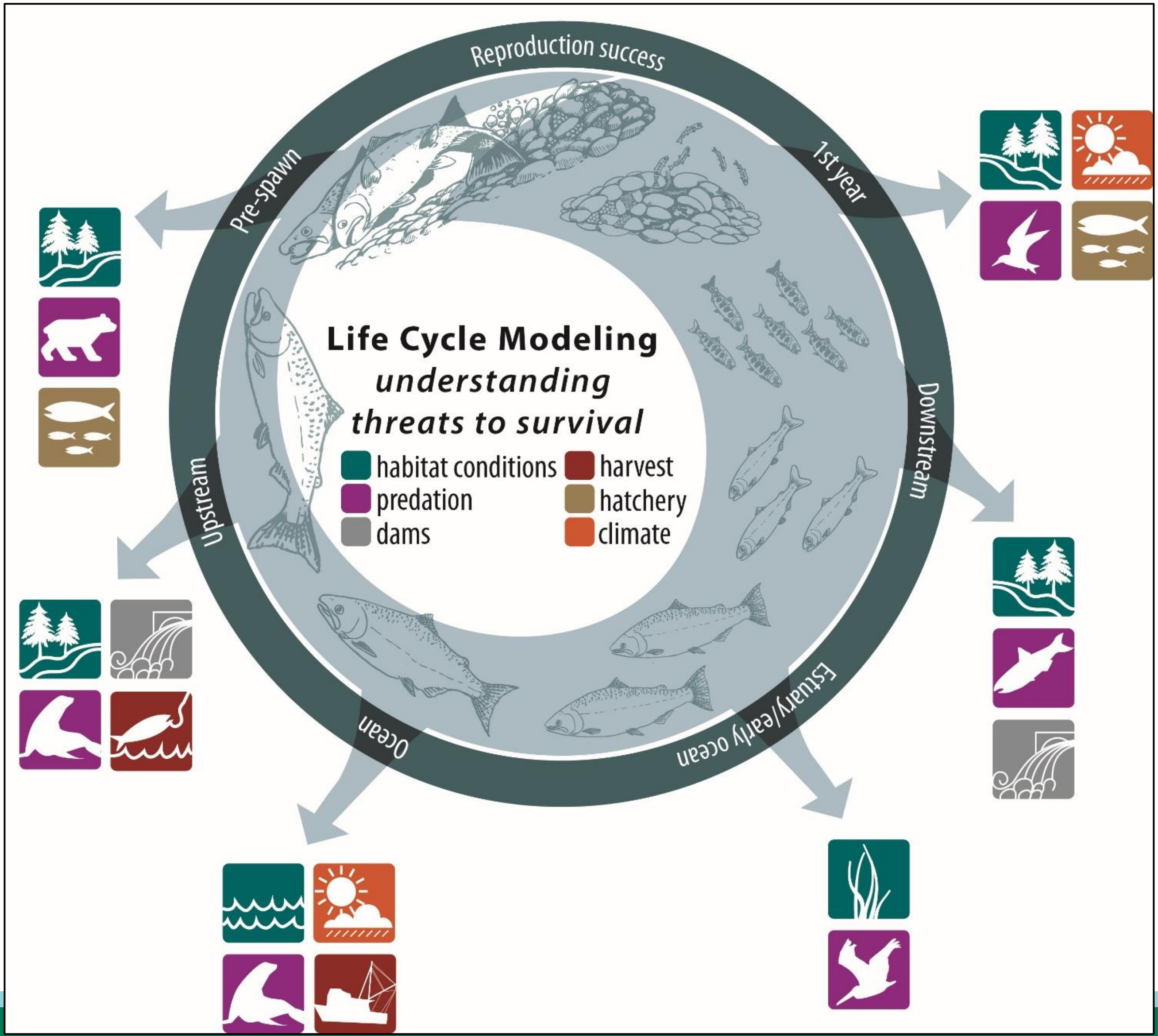
* Lacks complete data
Data and analysis by Washington Department of Fish and Wildlife

Biennial Funding for Habitat Restoration

Voluntary incentive salmon restoration programs



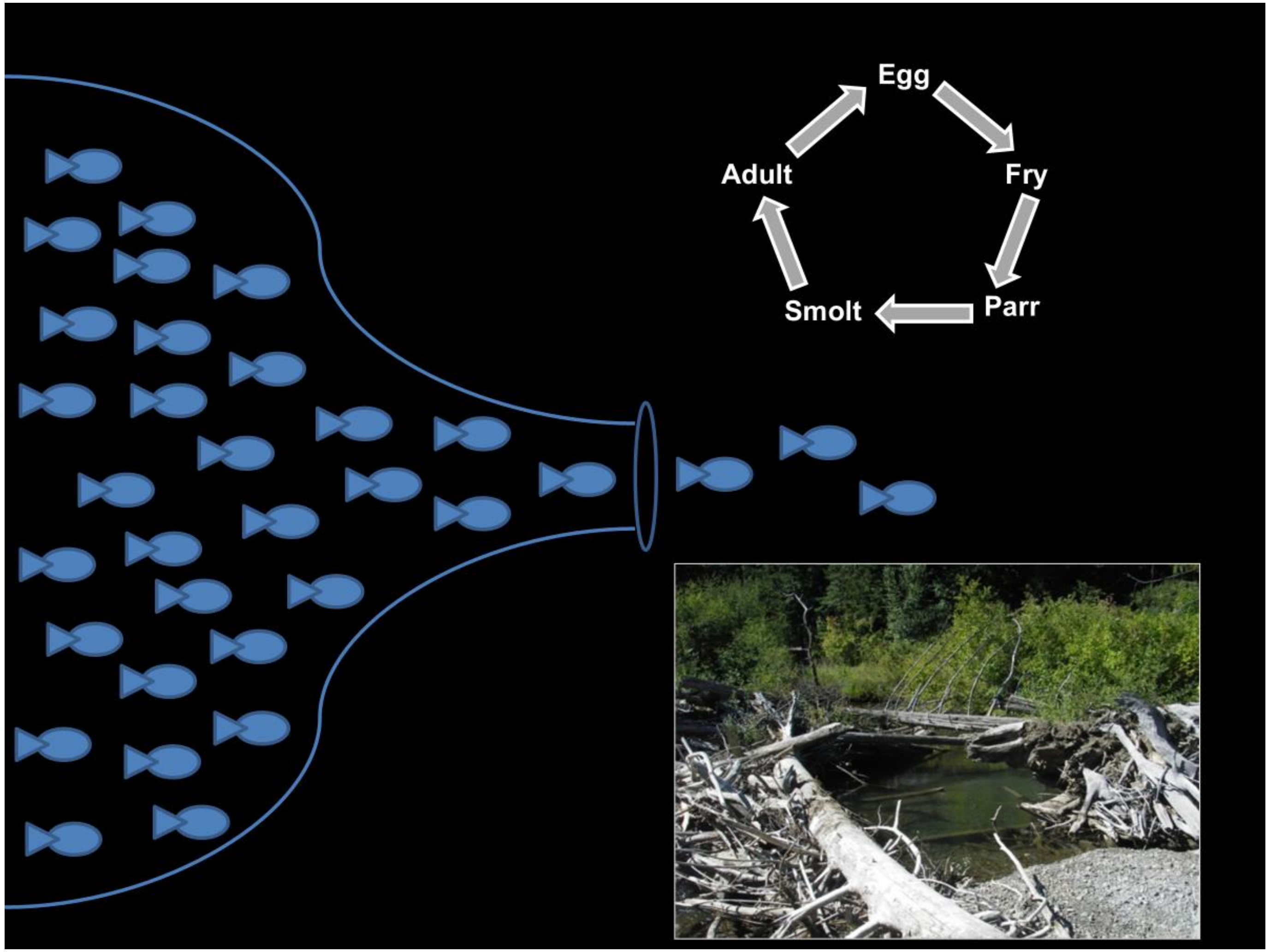
Salmon Recovery Priorities

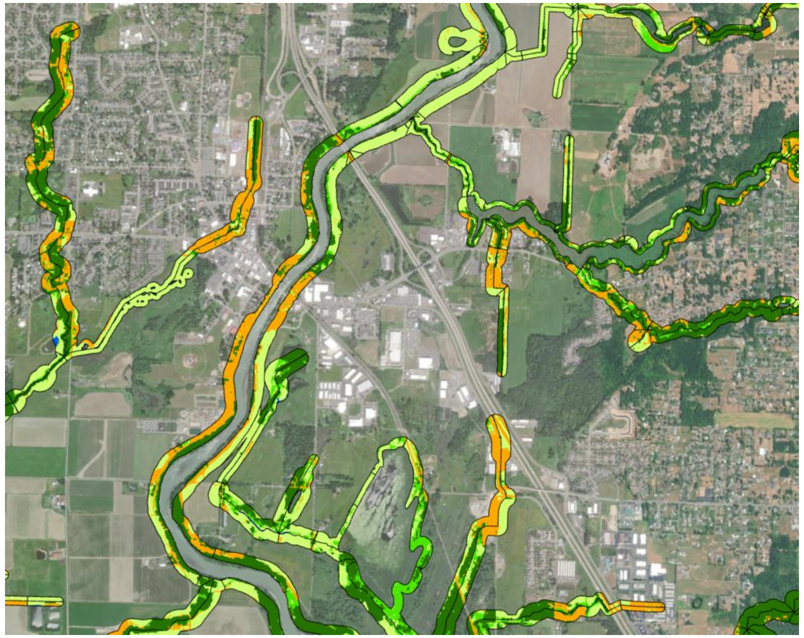


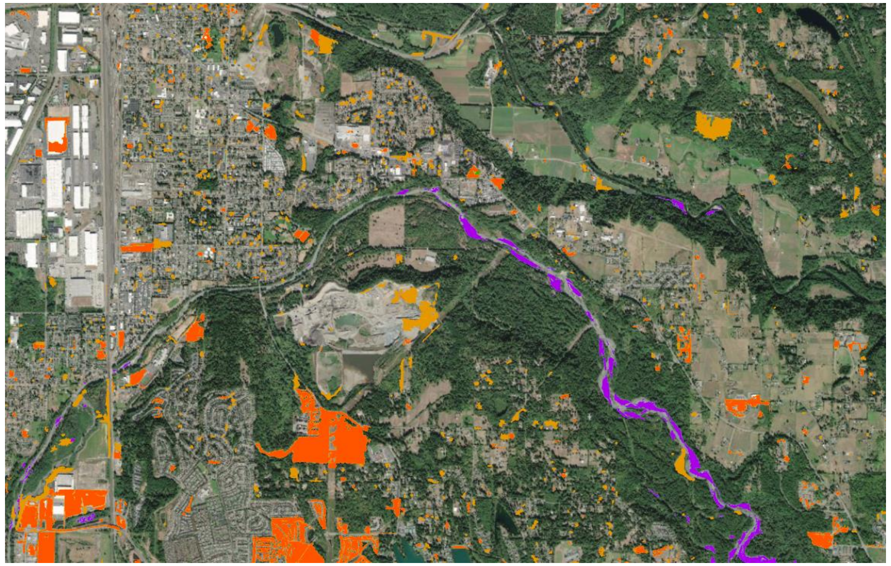
WDFW Salmon Recovery Priorities

- Fish population monitoring
- Fishery and hatchery reform
- Population viability modeling
- Collaboration with external partners
- Emerging threats
  - Toxics
  - Food web issues
- Climate change
- Fish passage and survival at dams
- Habitat restoration, protection, and monitoring

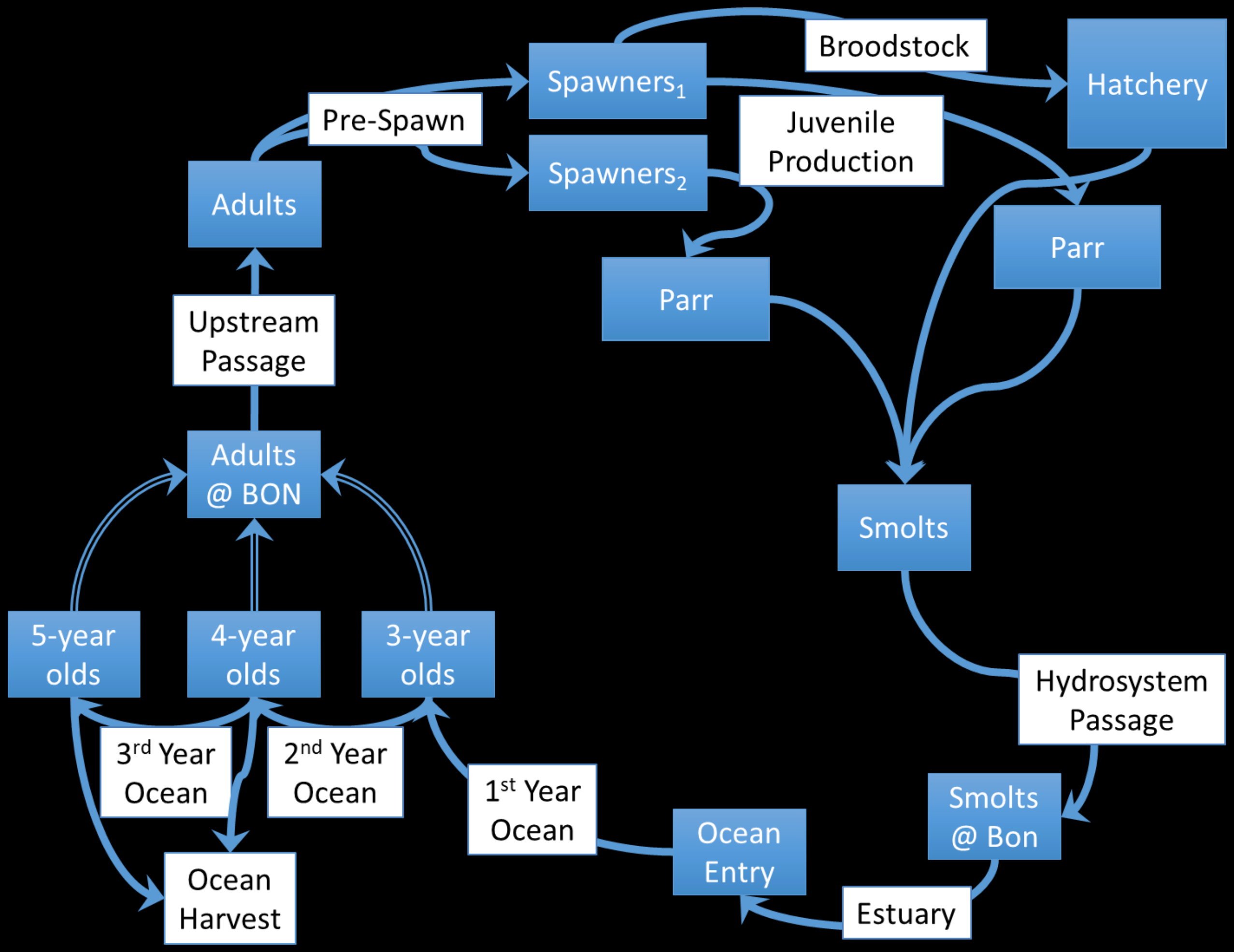
Strengthen Science, Monitoring, and Accountability

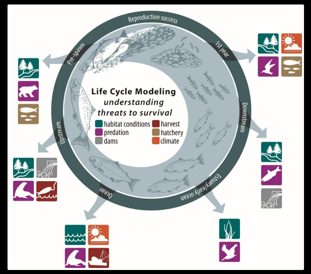






Using a Life Cycle Model to Identify Survival Bottlenecks





b. Viability Curve including minimum population threshold of 1,000 spawners for use with Large- sized chinook populations.

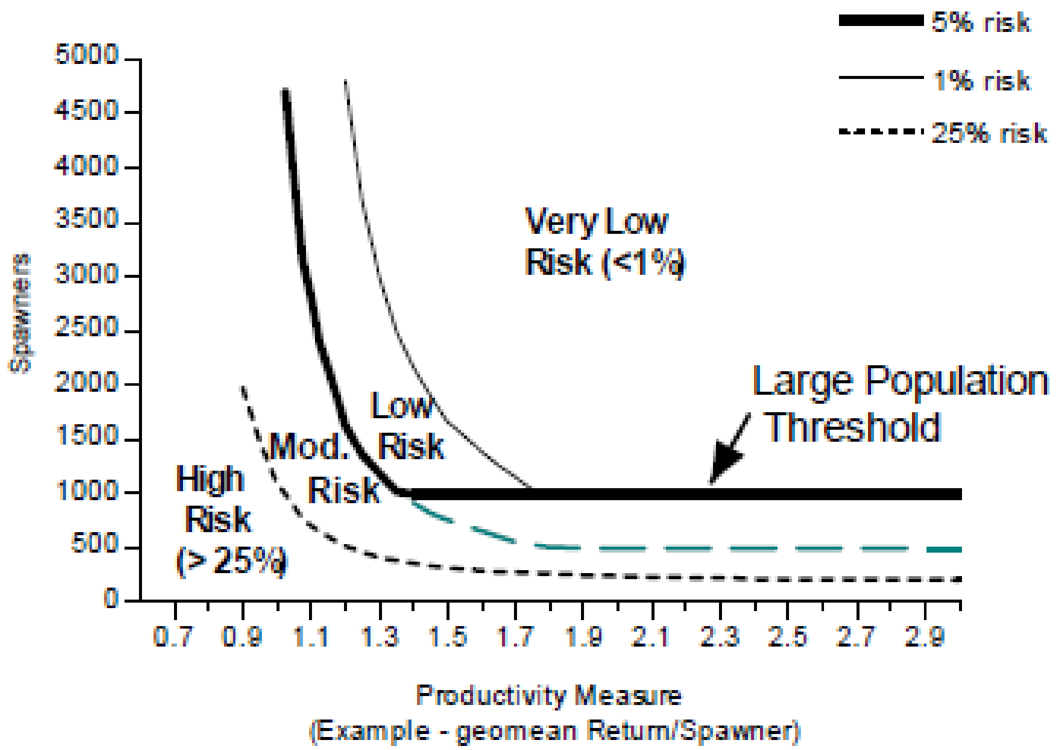


Figure 1. Matrix of possible Abundance/Productivity and Spatial structure/Diversity scores for application at the population level. Percentages for abundance and productivity (A/P) scores represent the probability of extinction in a 100-year time period. Cells that contain a "V" are considered viable combinations; "HV" indicates Highly Viable combinations; "M*" indicates combinations that can be regarded as candidates for "maintained." The darkest cells represent combinations of A/P and SSD at greatest risk.

		Spatial Structure/Diversity Risk			
		Very Low	**Low**	**Moderate**	**High**
Abundance/ Productivity Risk	**Very Low** (<1%)	**HV**	**HV**	**V**	M*
	Low (1-5%)	**V**	**V**	**V**	M*
	Moderate (6 – 25%)	M*	M*	M*	
	High (>25%)				

Fish and Habitat Science

Co-Managing Sustainable Fisheries

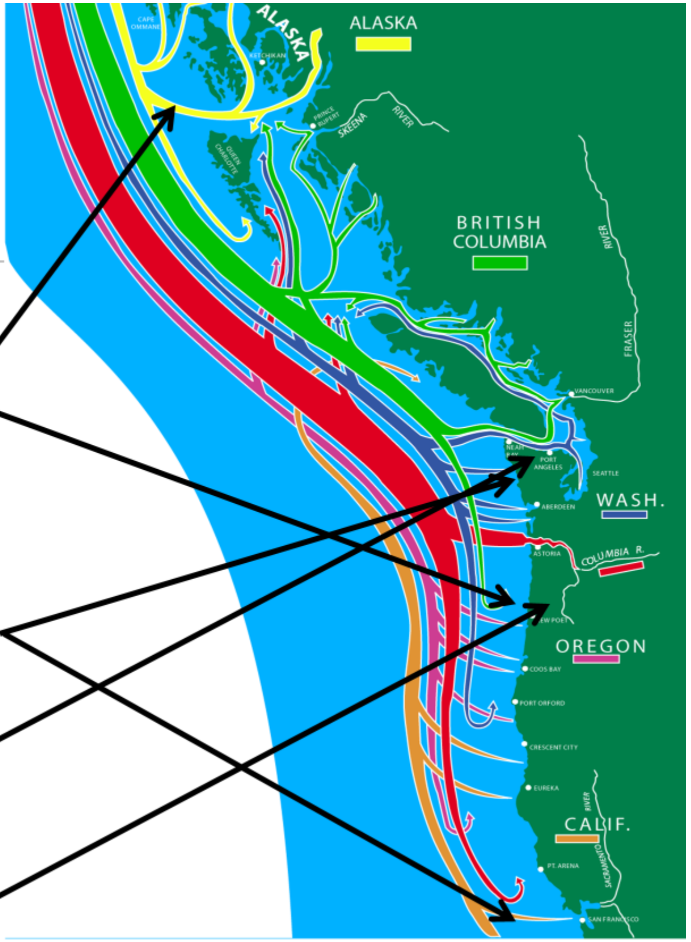
Complex, multi-jurisdictional processes

Pacific Salmon Treaty

Pacific Fishery Management Council

U.S. v Washington

U.S. v Oregon



- Comanagement of fisheries in WA with Treaty Tribes
  - Pre-season negotiations and in-season management
  - Conservation goals
  - SRKW
- Modernizing data systems and reporting
- ESA-compliant fishery modeling
- Sustainable commercial and recreational opportunities

Align Hatcheries and Harvest with Salmon Recovery

Protect and Restore Vital Salmon Habitat

- Priority Habitats and Species
- Riparian science and policy
- Water science and policy
- Net Ecological Gain proviso
- Technical guidance for local governments
- Restoration implementation and guidance
- Synthesizing data for evaluation and prioritization

Fish Passage

Brian Abbott Fish Barrier Removal Board

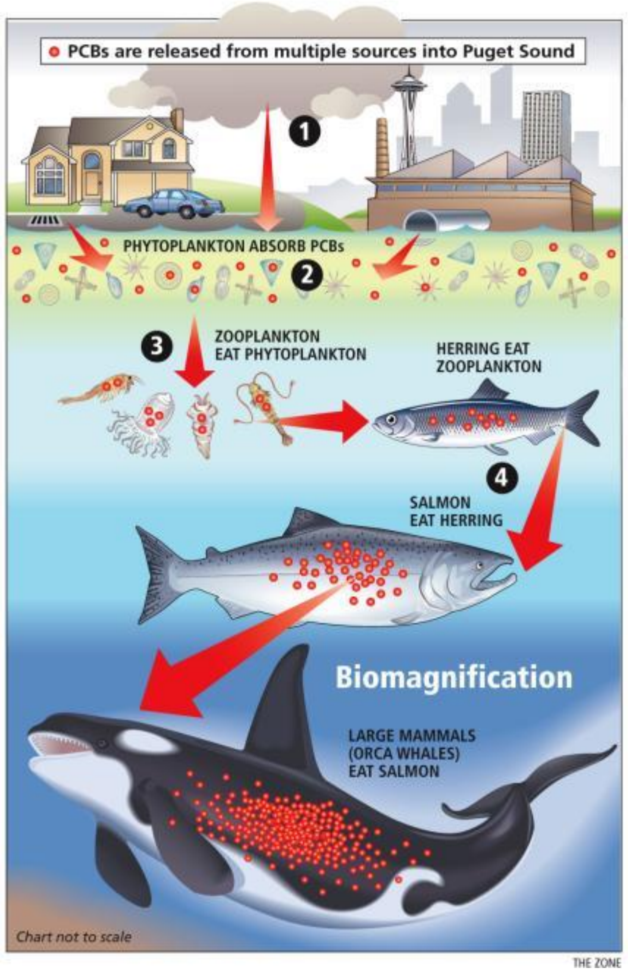
Compliance with the culvert injunction

Reintroduction in the Upper Columbia

Statewide Fish Passage Strategy

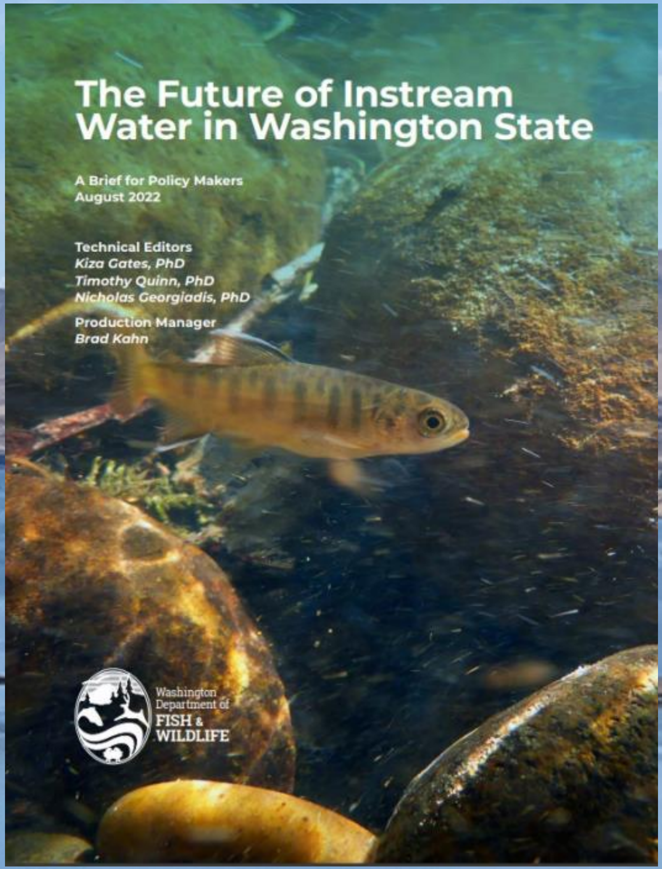
Invest in Clean Water Infrastructure

- Where are toxics affecting salmon and salmon habitat?
- How well are remediation efforts working?
- What are the effects on salmon population viability?



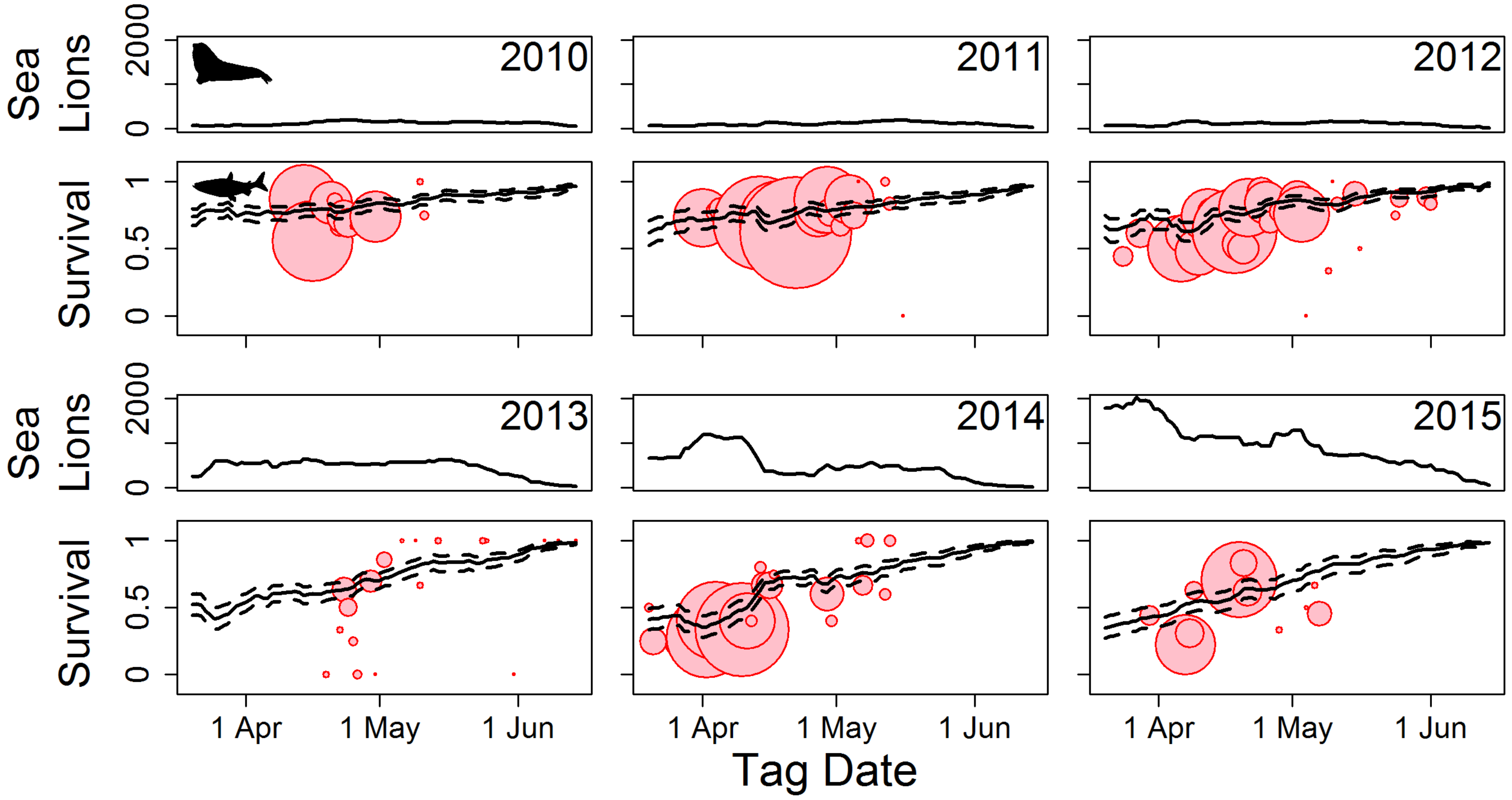
Build Climate Resiliency

- Restore streamflow
- Drought response preparedness
- Climate resilient hatcheries
- Climate resilient watersheds

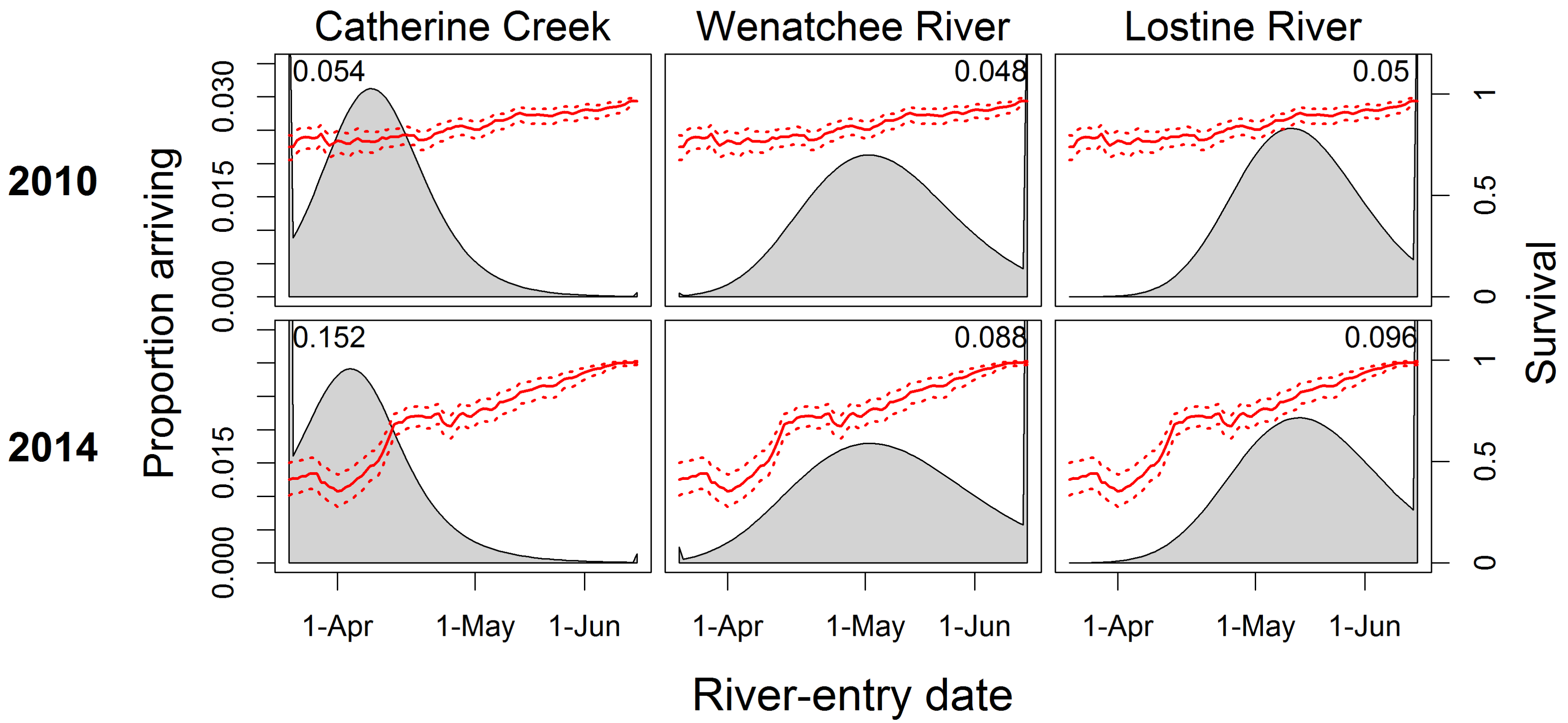


Address Predation and Food Web Issues

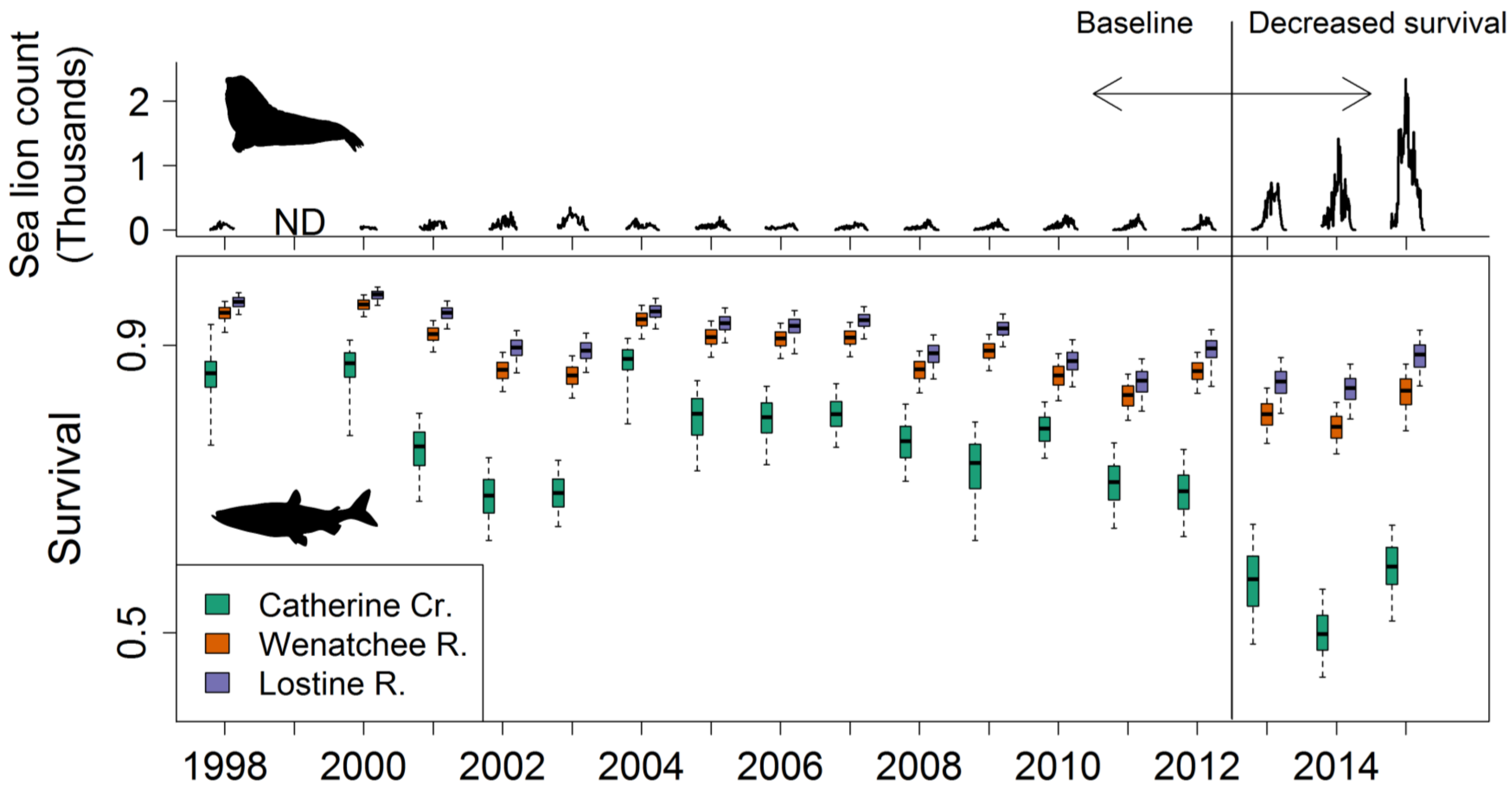
Survival of adult spring-summer Chinook upstream from Astoria to passing Bonneville 2010–2015



Assessing how population-specific migration timing affects survival



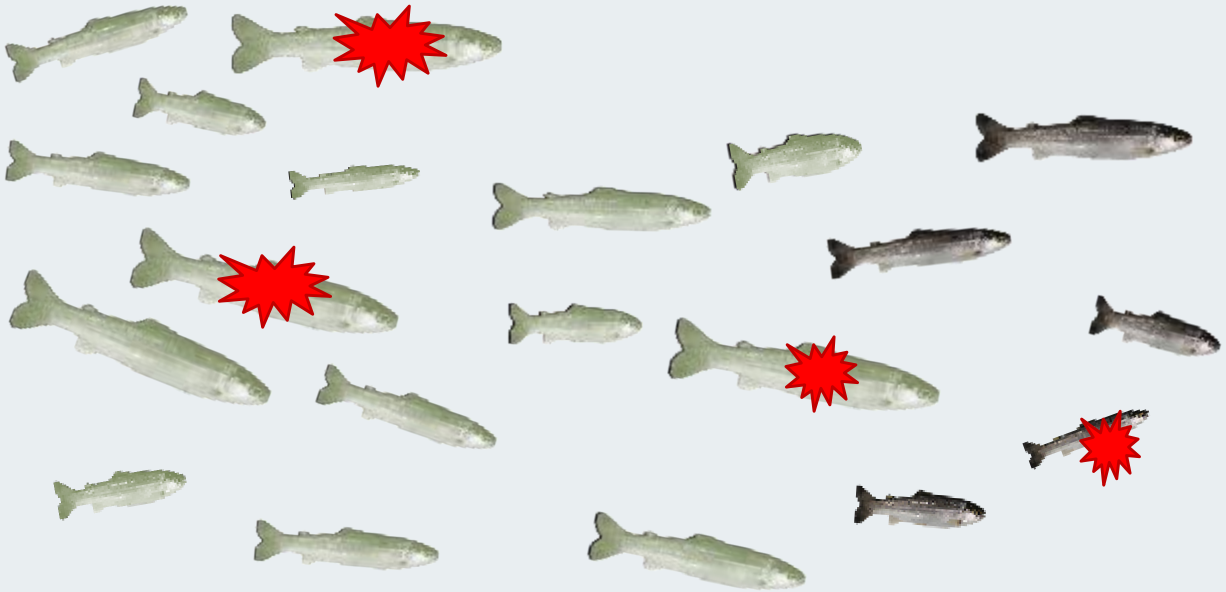
Predicted population-specific annual survival



Compensatory vs. Additive Mortality

What proportion would have died anyway

- Assume:
  - 20 STHD released from RIS
  - Without terns, 25% will survive
  - Breeding terns need 4 fish (i.e. 25%)
    - Target fish more or less at random => partially additive (a=0.25)
- With a "random sample" survival rate = additivity rate
- On a long enough timeline, additivity necessarily goes to zero



THAT SALMON YOU'RE EATING MAY BE COMING OFF SOMEONE ELSE'S PLATE...