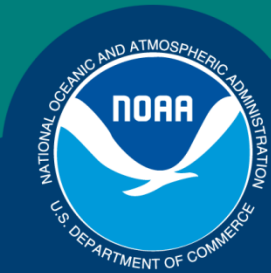


Science, Service, Stewardship

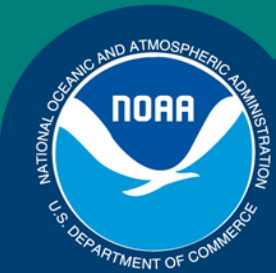


FINDING COMMON THREADS FOR RESTORING THE COLUMBIA RIVER ECOSYSTEM THROUGH SALMON AND STEELHEAD RECOVERY

National Conference on Ecosystem Restoration
July 29, 2013

Elizabeth Holmes Gaar
NOAA Fisheries, NW Region

**NOAA
FISHERIES
SERVICE**



Presentation Outline

- Columbia Basin overview
- Endangered Species Act salmon and steelhead recovery plans
- How recovery plans provide common threads for basin-wide ecosystem restoration
- Tools to share
- Summary of Common Threads

Columbia River Basin



Columbia River:

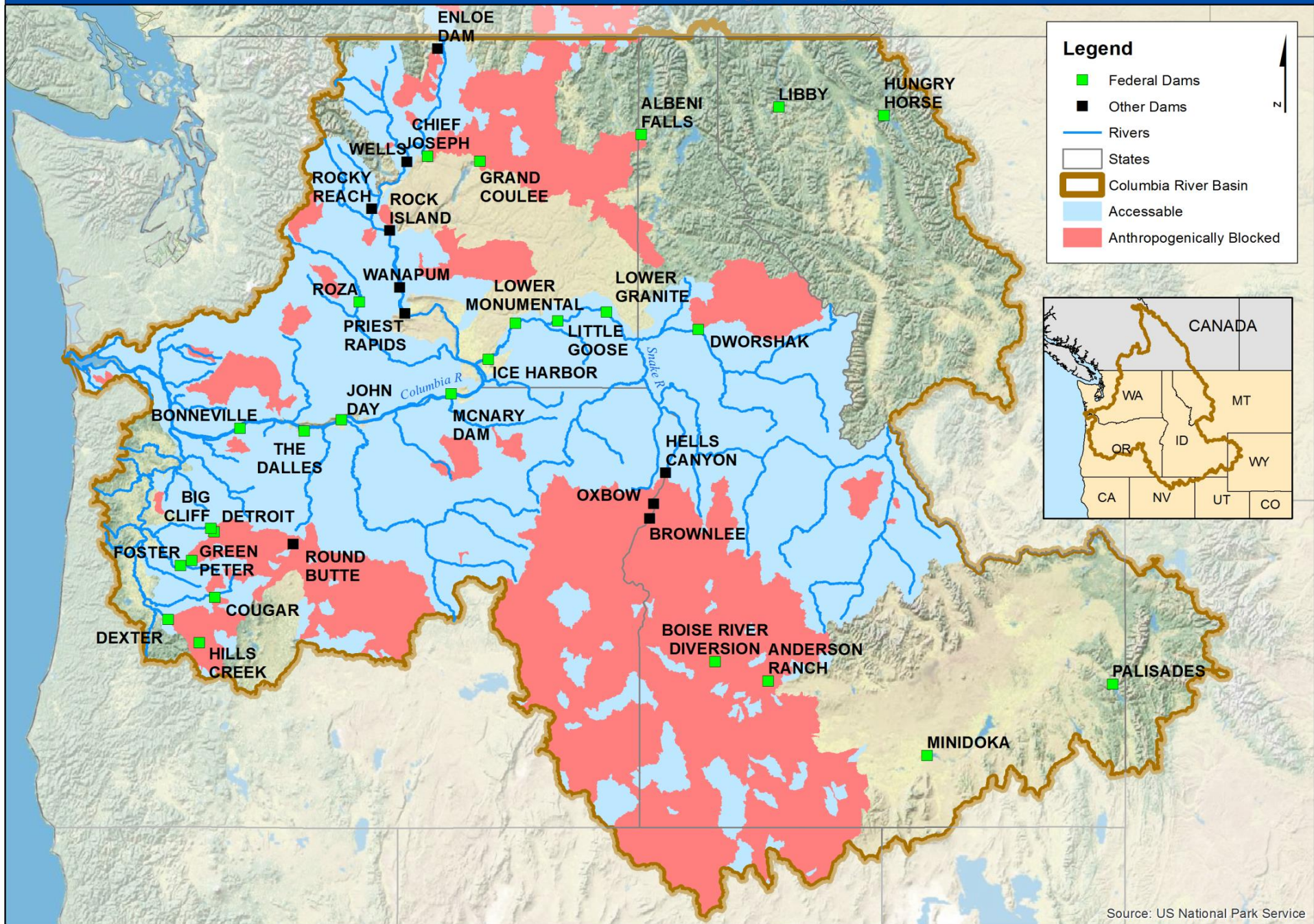
- ~ 258,000 square miles
- About the size of France
- Length over 1,200 miles
- Mean Flow: ~256,000 cfs
- 4th largest River by Volume in North America



Columbia River Basin Hydropower



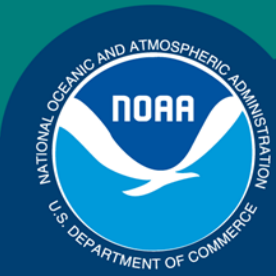
Columbia River Basin Major Hydro Facilities





Harvest

Science, Service, Stewardship

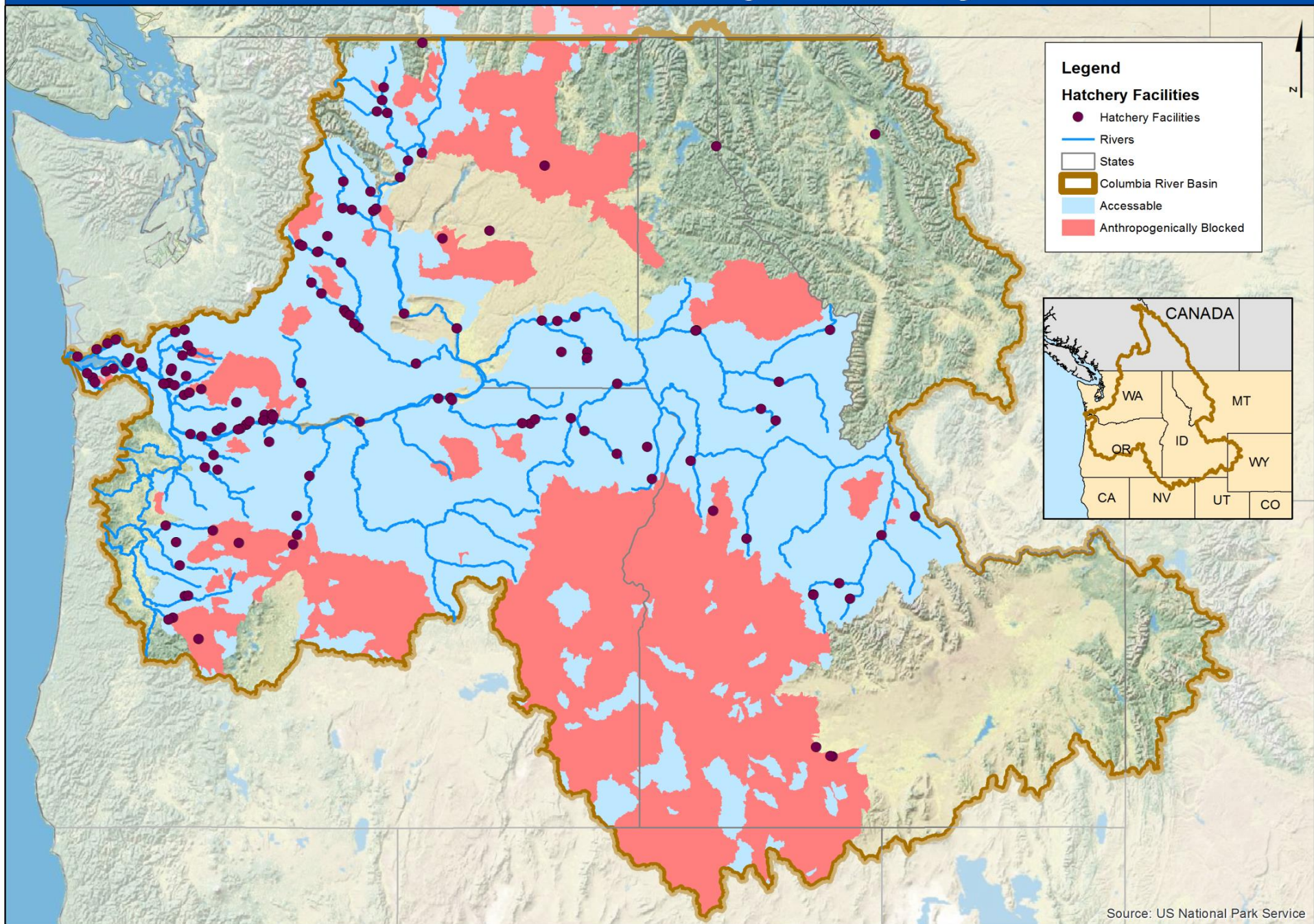




Hatcheries



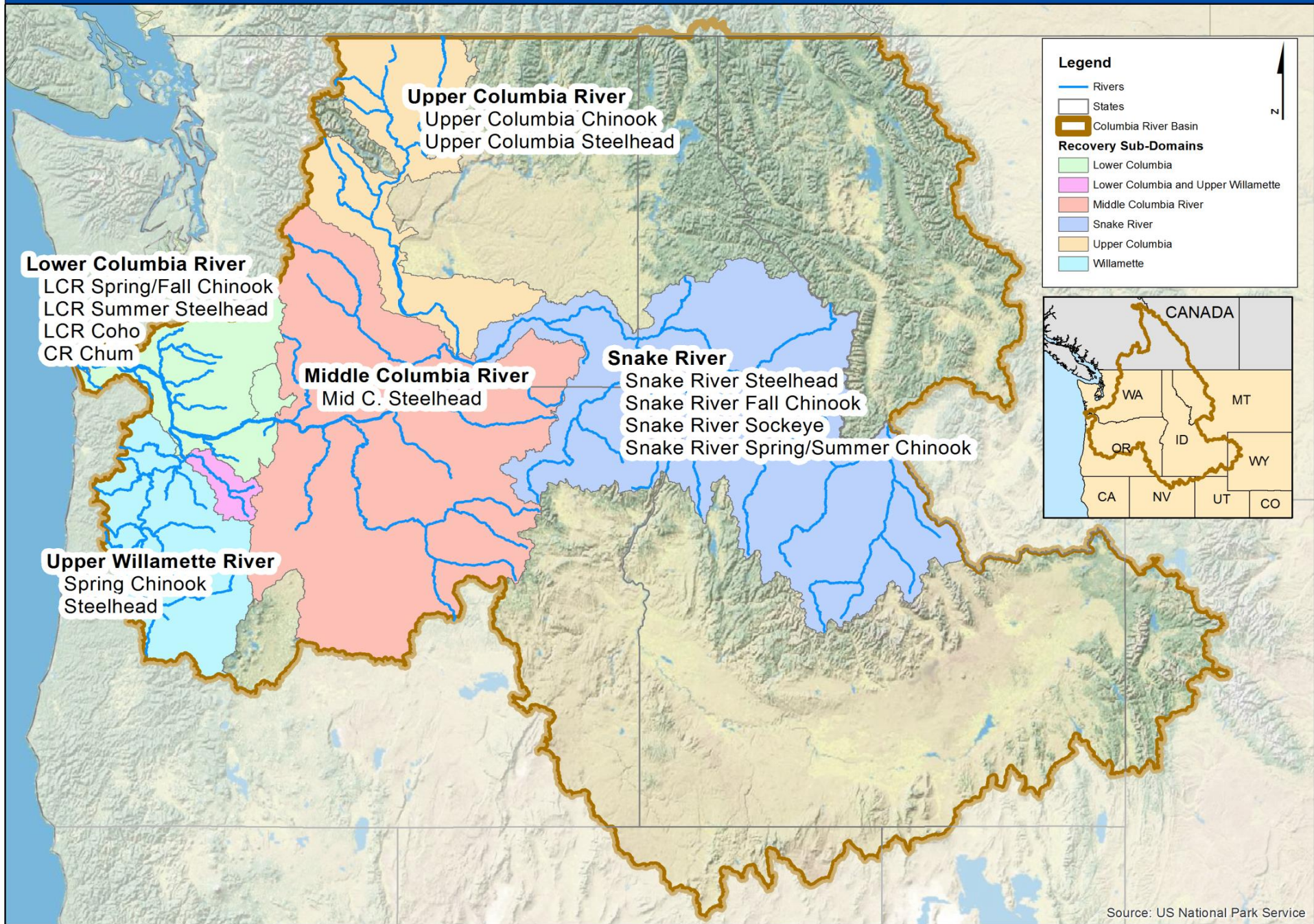
Columbia River Basin Major Hatchery Facilities

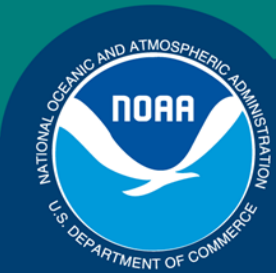




Habitat

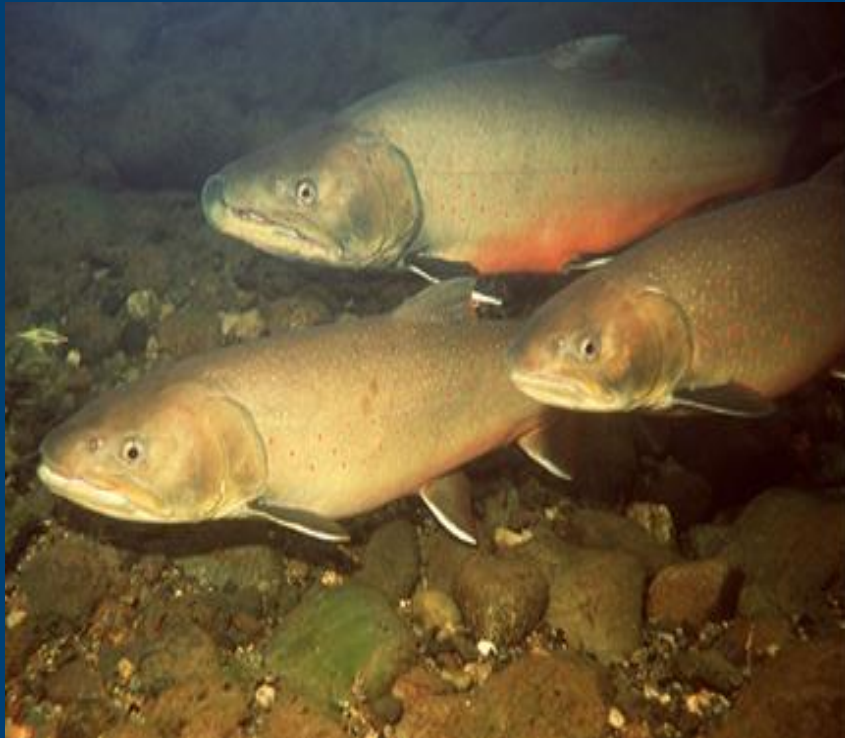
Columbia River Basin Listed Salmon and Steelhead





Endangered Species Act

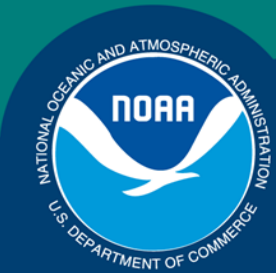
Established in 1973



Purpose:

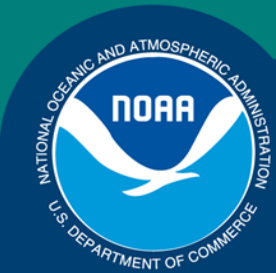
Conserve the ecosystems upon which endangered and threatened species depend

Provide a program to conserve endangered and threatened species



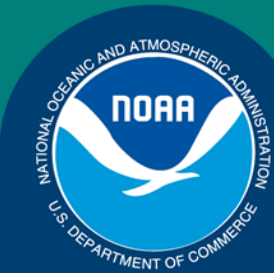
Recovery Plans

- Provide a roadmap to conservation and delisting
- Are not Regulatory
- However, provide context for regulatory decisions – i.e.
 - Consultations and permits,
 - conservation rules
 - delisting decisions



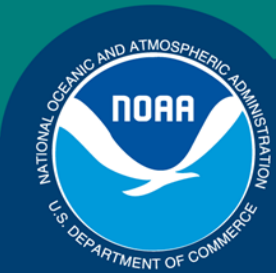
What's in a Recovery Plan?

- Recovery goals & criteria (viability & threats)
- Current status, limiting factors & threats
- Site-specific actions and implementation schedules
- Estimates of time & costs to recovery
- Research, monitoring & evaluation to track progress
- Adaptive management built into implementation systems



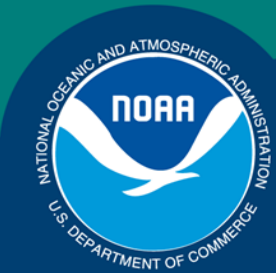
How Recovery Plans Thread through the Columbia

- 1.** Science foundation
- 2.** Ecosystem approach
- 3.** Buy in and collaboration at multiple scales
- 4.** Common Tools for implementation, reporting, and monitoring



Science Foundation

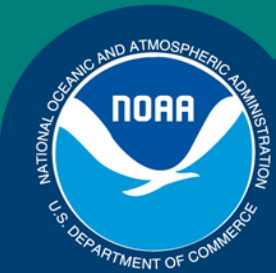
- Viability objectives and criteria
- Status and gaps
- Priority concerns (limiting factors)
- Priority actions
- Fish status surveys and evaluations
- Effectiveness monitoring and critical uncertainties



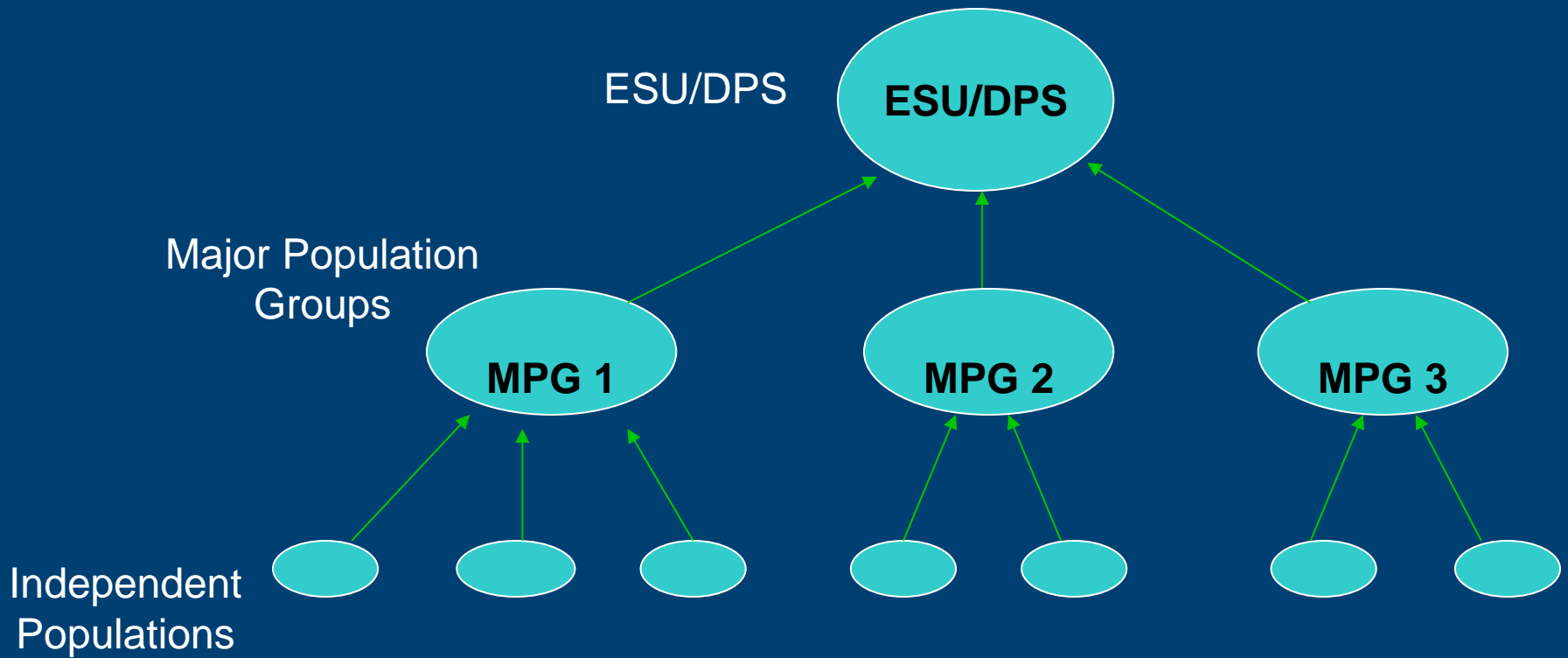
Science Foundation: Viability Objectives

(*Viable Salmonid Populations*, McElhaney et al. 2007)

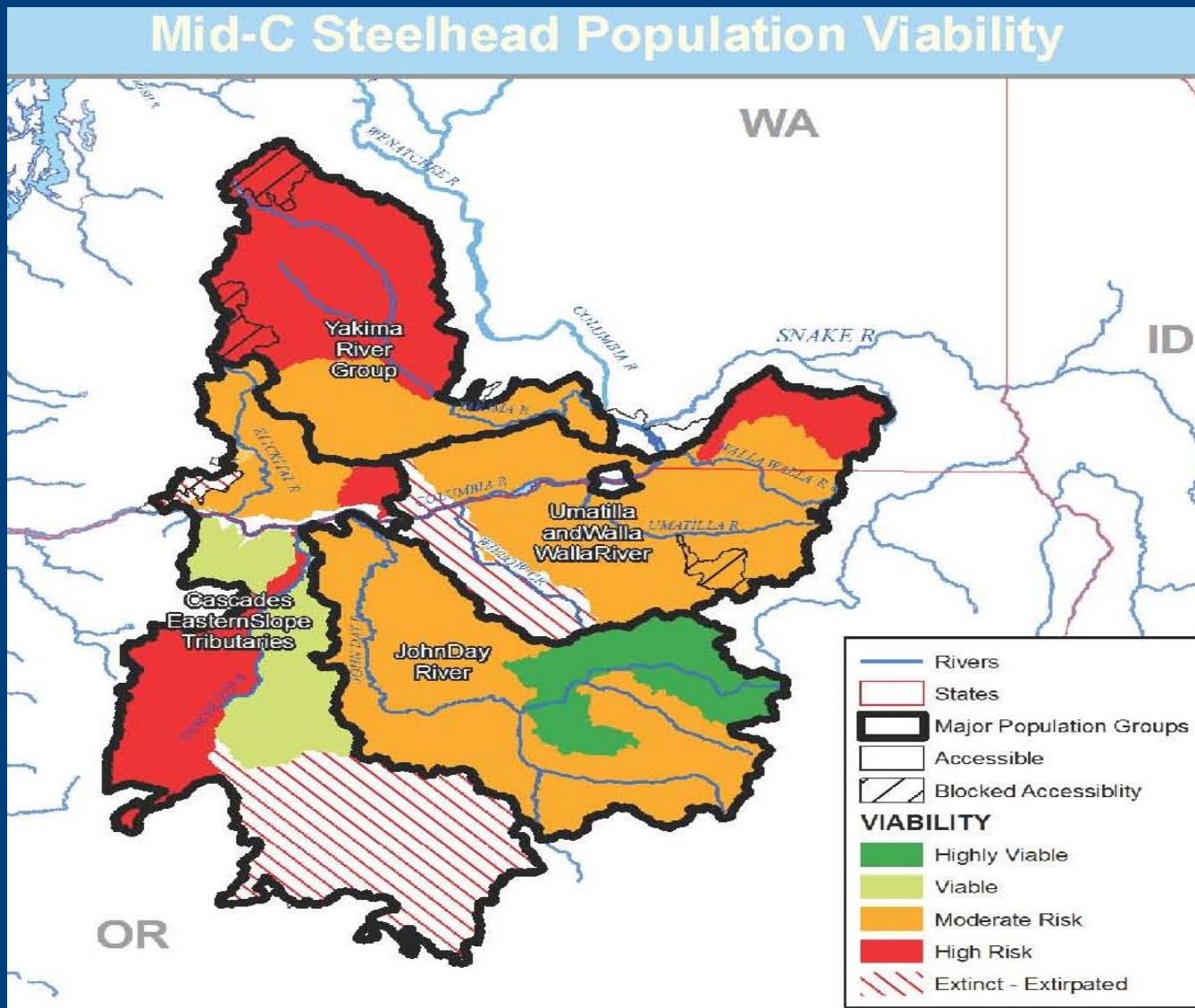
- **Abundance and productivity** combinations sufficient to maintain genetic, life history and spatial diversity and exhibit demographic resilience to environmental perturbations.
- **Spatial structure** such that the species is distributed in a manner that insulates against loss from a local catastrophic event and provides for recolonization if such an event occurs.
- **Diversity** such that natural production will be sustained across a range of conditions, allowing for adaptation to changing environmental conditions.



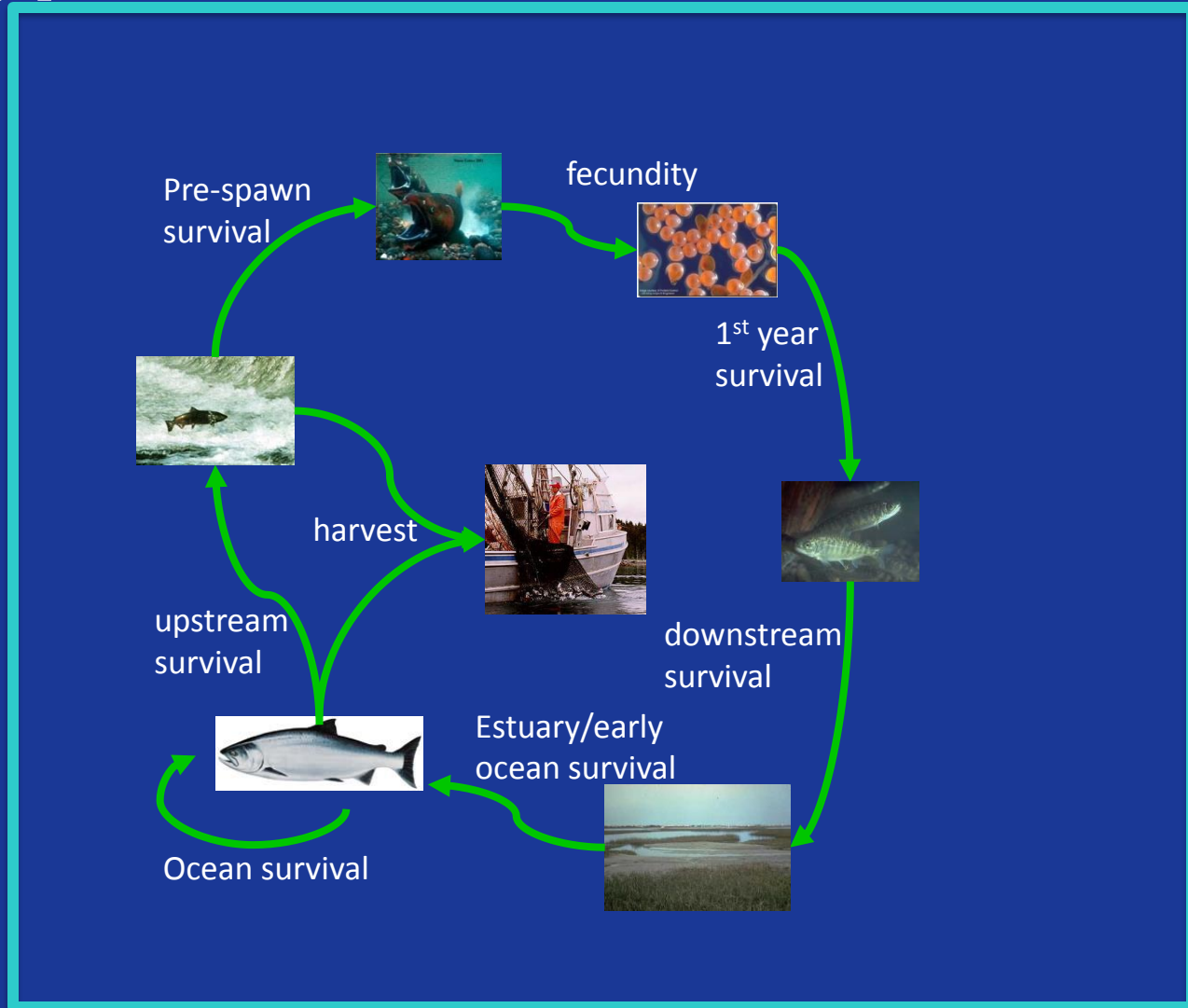
Hierarchy in Salmonid Population Structure



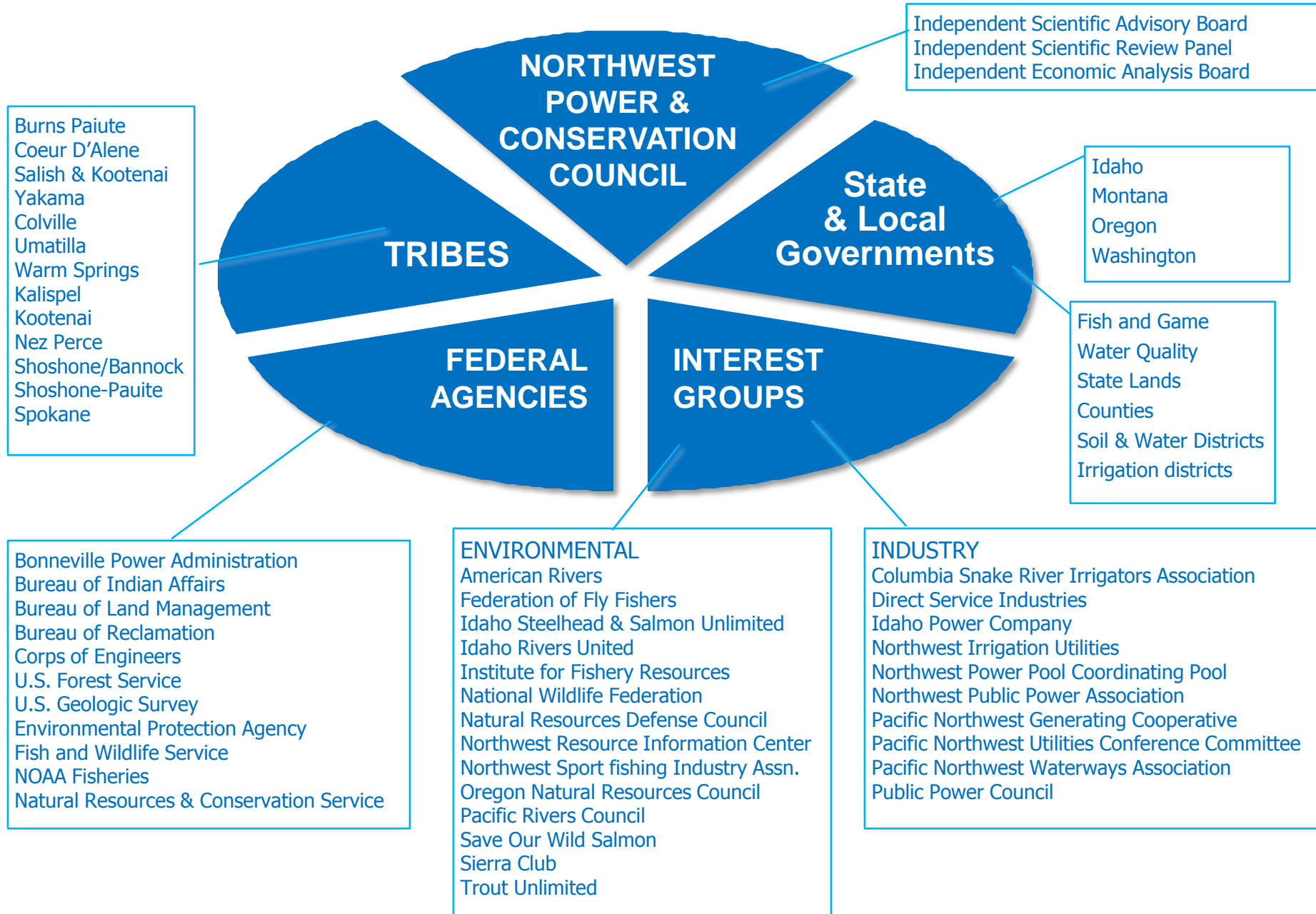
Science Foundation: Status



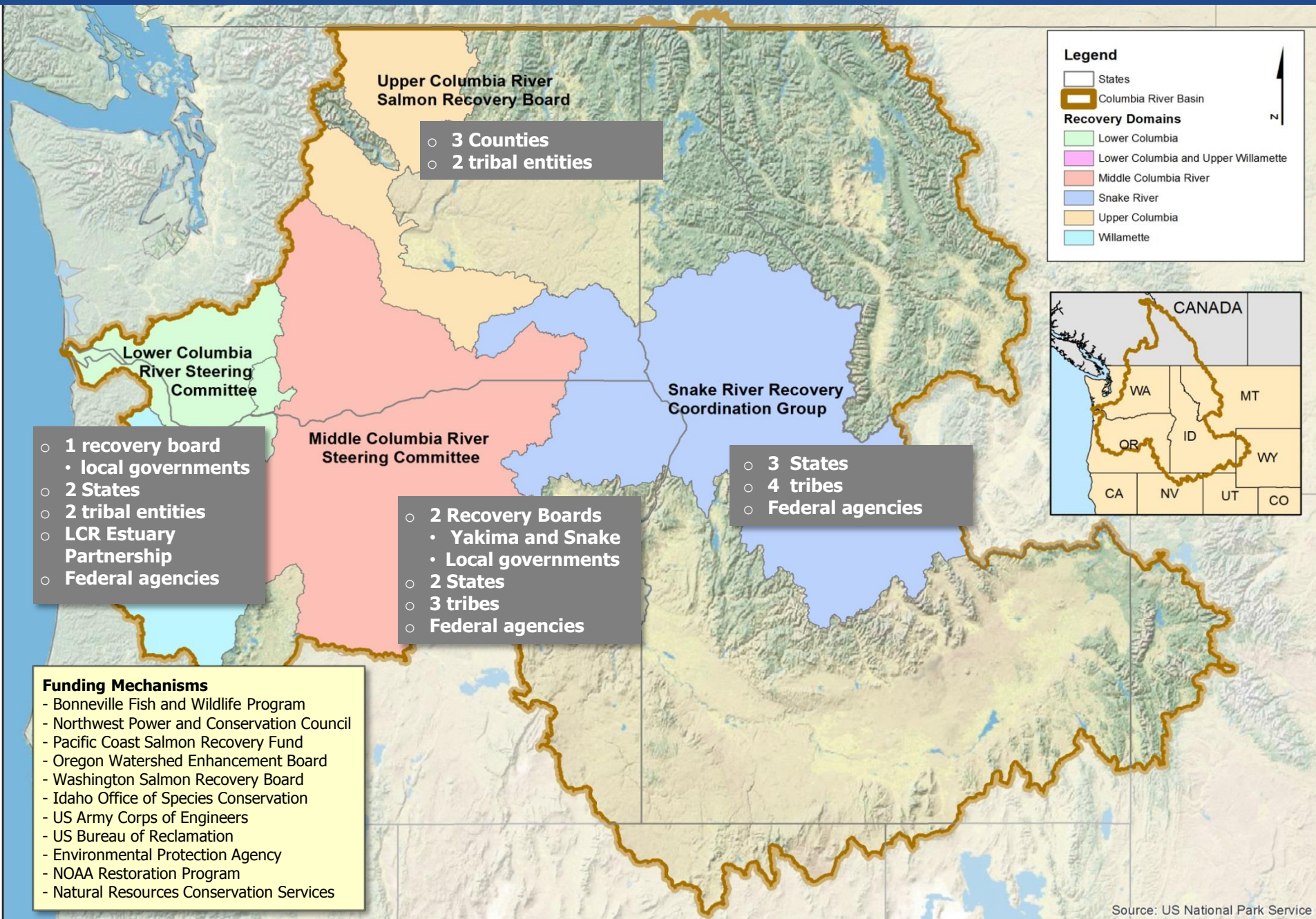
Ecosystem Approach/Life Cycle Approach



Collaboration? Columbia River Salmon Stakeholders

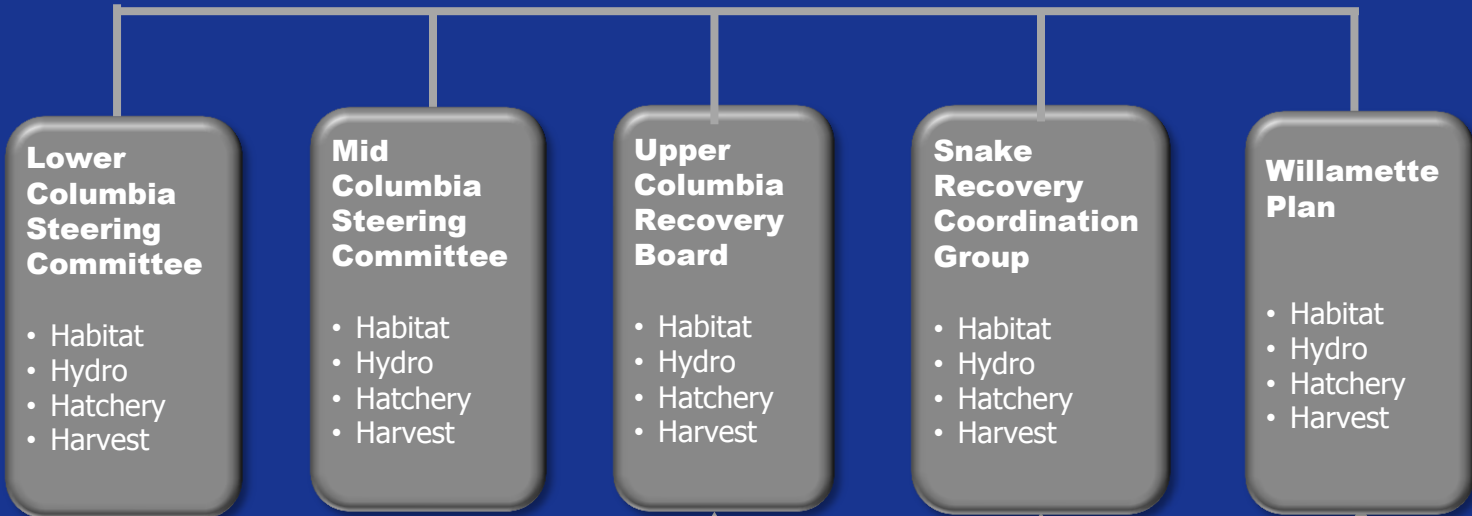


Collaboration! Columbia Recovery Implementation



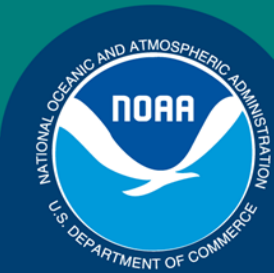
Collaboration: Columbia River Salmon Recovery Infrastructure

Local Influence



Basin-Wide and More





Tool: Data Dictionary provides consistent language for limiting factors

Consistent language (Ecological Concerns) – Data Dictionary

Development and Evaluation of a Data Dictionary to Standardize Salmonid Habitat Assessments in the Pacific Northwest

David E. Hamm

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ABSTRACT: *Restoration ecology and conservation biology have increasingly recognized the need for a common language to facilitate the combining of data sets to help identify threats, degraded habitat, and appropriate restoration response. However, to date no tool exists that can standardize language for*

Desarrollo y evaluación de un diccionario de datos para estandarizar las evaluaciones de hábitat de salmónidos en el Pacífico noroeste

RESUMEN: *Tanto la ecología de la restauración como la biología de la conservación han reconocido la necesidad de contar con un lenguaje común que facilite la combinación de bases de datos para ayudar a identificar amenazas,*

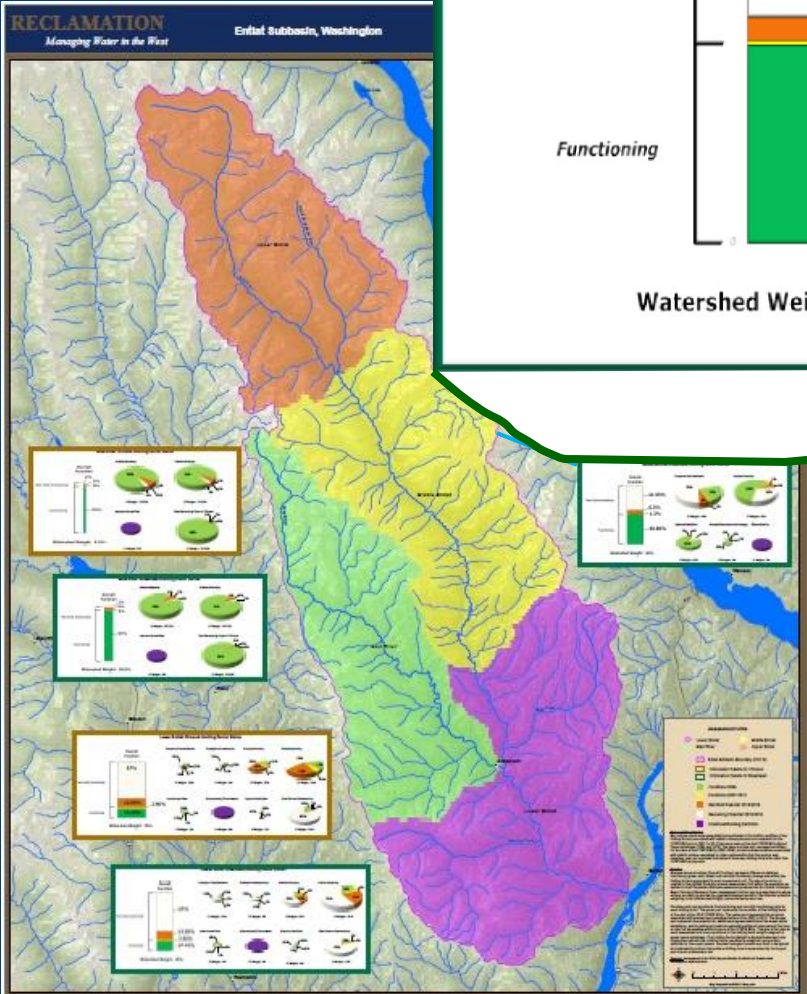
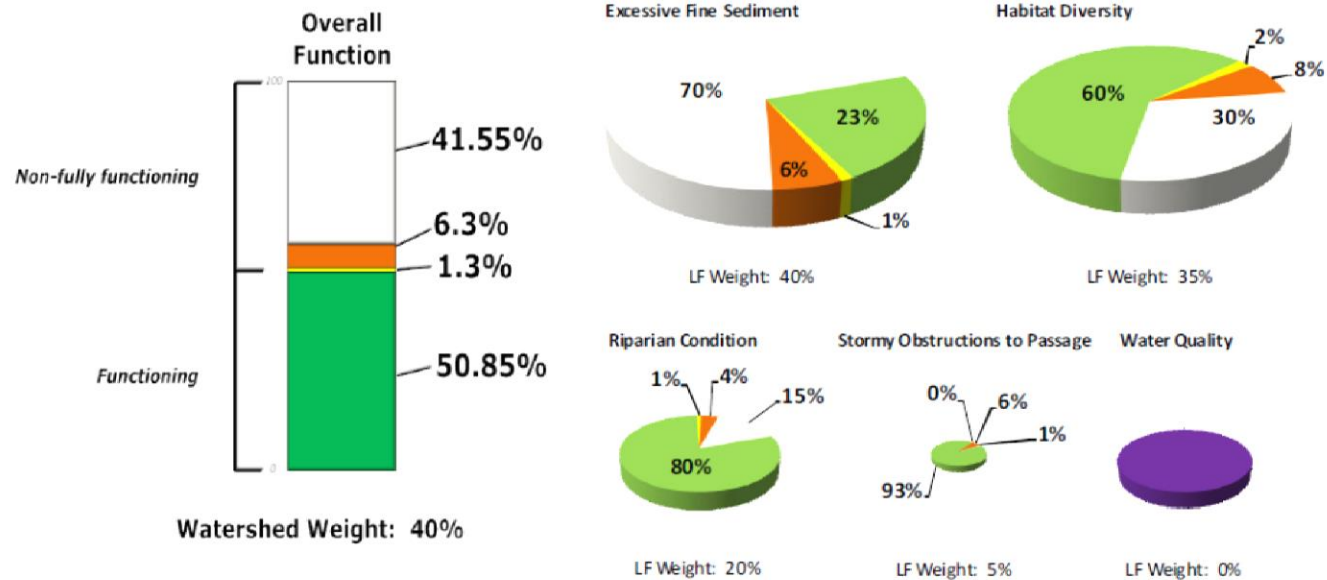
Tools: Data Dictionary

ID	Ecological Concern	Definition	Included Categories	ID	Ecological Concern-Sub Category	Definition	Included Categories
5	Peripheral and Transitional Habitats	Loss and/or degradation of the peripheral habitat of streams and rivers, including standing water, connected channels and areas that are periodically inundated during high flows.	High quality over-winter rearing habitat, Summer rearing habitat, Peripheral Habitat, Habitat Diversity, (Key) Habitat Quantity/Quality, Refugia Habitat	5.1	Side Channel and Wetland Conditions	Degradation, elimination and loss of access to peripheral freshwater habitat, including side-channels and freshwater wetlands.	Side Channels, Loss of peripheral habitat, Freshwater Wetlands, Swamp, Oxbows, Ponds, Alcoves
				5.2	Floodplain Condition	Degradation, elimination and loss of access to the over or beyond bank habitat, of streams and rivers that is periodically inundated during high flows.	Floodplain, Bank condition, Overbank area, Diking
				5.3	Estuary Conditions	Loss and degradation of saltwater transition zone	Estuary, Salt-water transition zone, Lagoon, Estuary plume, Delta, Slough, Pocket estuary
				5.4	Nearshore Conditions	Loss and degradation of shallow water nearshore habitat	Beaches, Tidal flats, Eelgrass beds, Eelgrass meadows, Kelp forest, Baitfish spawning grounds

<https://www.webapps.nwfsc.noaa.gov/pnshp/>

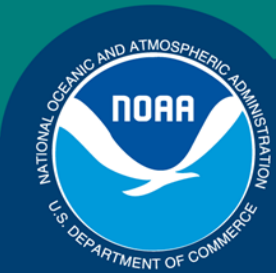
(Hamm, 2012)

Middle Entiat Steelhead Limiting Factor Status



Tools: Salmonid Habitat Limiting Factor Condition Assessment Unit Maps

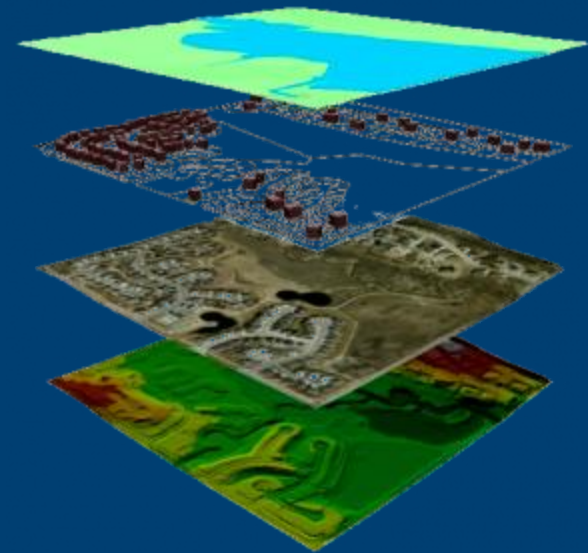
Federal Columbia River Power System Biological Opinion
www.salmonrecovery.gov

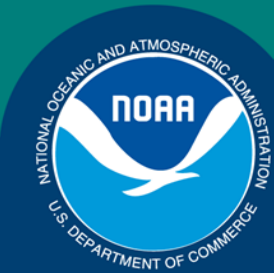


Tools: Recovery Action Mapping Tool

West Coast Salmon & Steelhead Recovery Action Mapping Tool

- **Spatially-explicit tracking system**
- **Uses existing data systems**
- **Public system with interactive tools for custom displays, queries, exports, and reports**
- **NOAA system-of-record for reporting to Congress and OMB**
- **Data entry and editing tools**
- **Will be live soon**

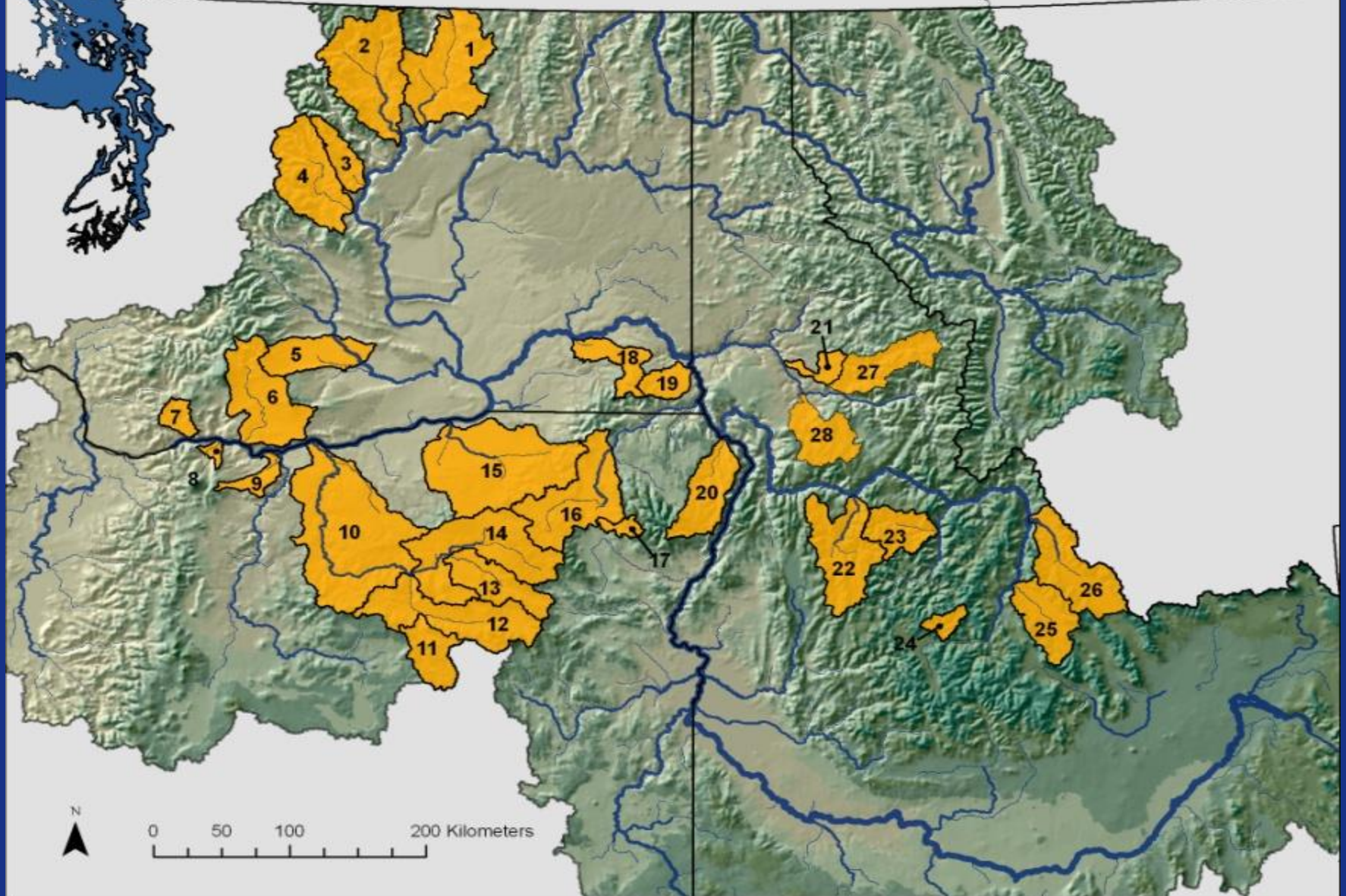


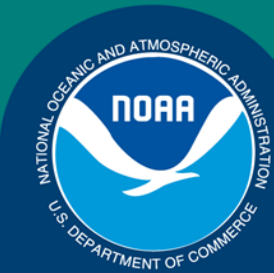


Tool: Evaluating Habitat Status & Trend & Fish Response

- Columbia Habitat Monitoring Program (CHaMP)
 - Describes fish habitat for 26 salmon population watersheds in the Columbia Basin.
 - Generates and implements a standard set of fish habitat monitoring (status and trend) methods
www.champmonitoring.org
- Intensively Monitored Watersheds
 - <http://www.pnamp.org/project/3133>

CHaMP Watersheds





Closing Thoughts

- Recovery plans are voluntary but work in part due to regulatory setting.
- Science foundation must be peer reviewed, understandable, communicated repeatedly.
- Buy in is essential, No shelf art. This takes time, patience, dedicated effort.
- Implementation needs long term dedication to coordination and regular reporting within and across multiple scales.
- Homemade cookies always help.

Questions?

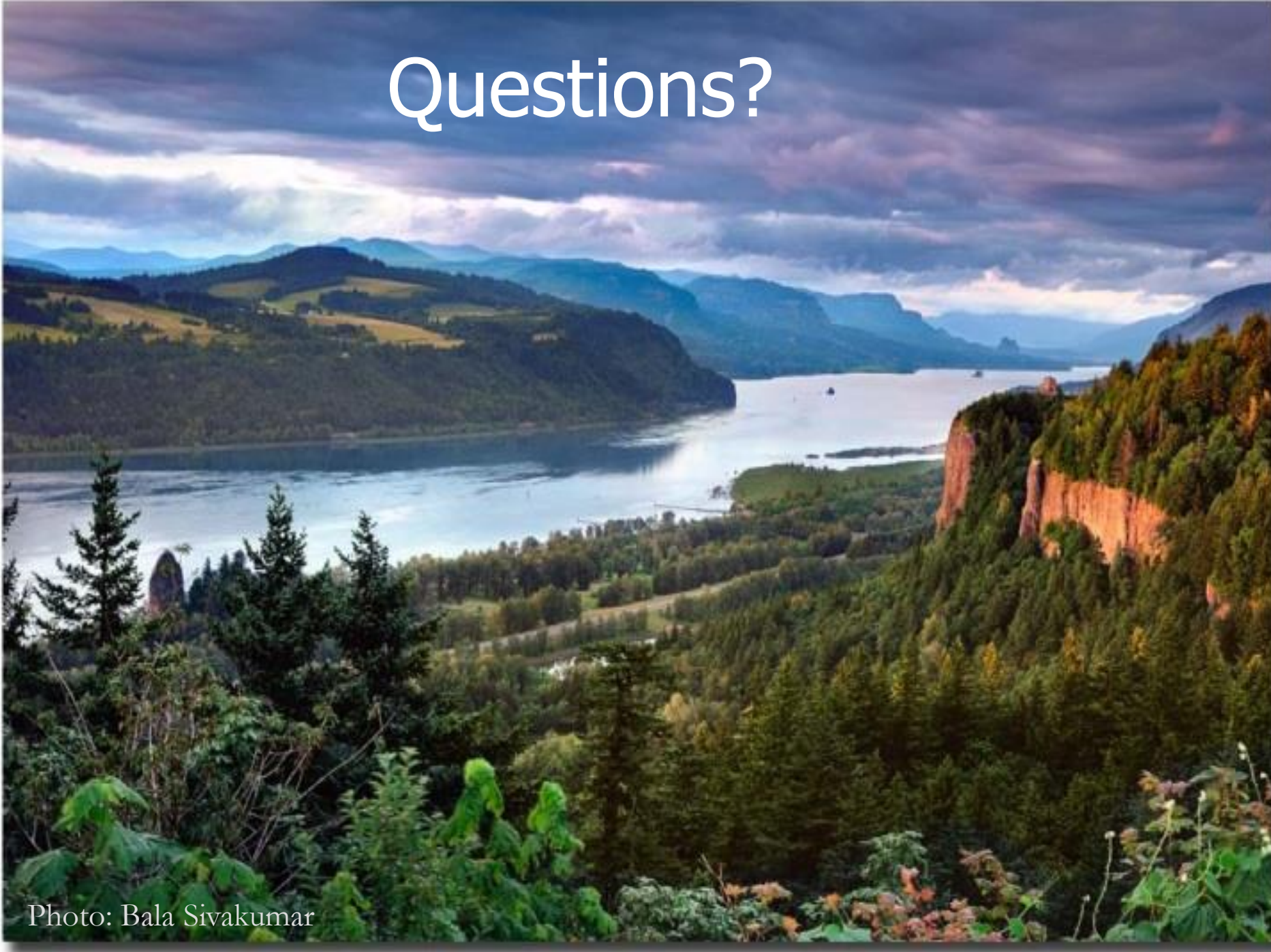


Photo: Bala Sivakumar