



Snohomish Basin Salmon Conservation Plan

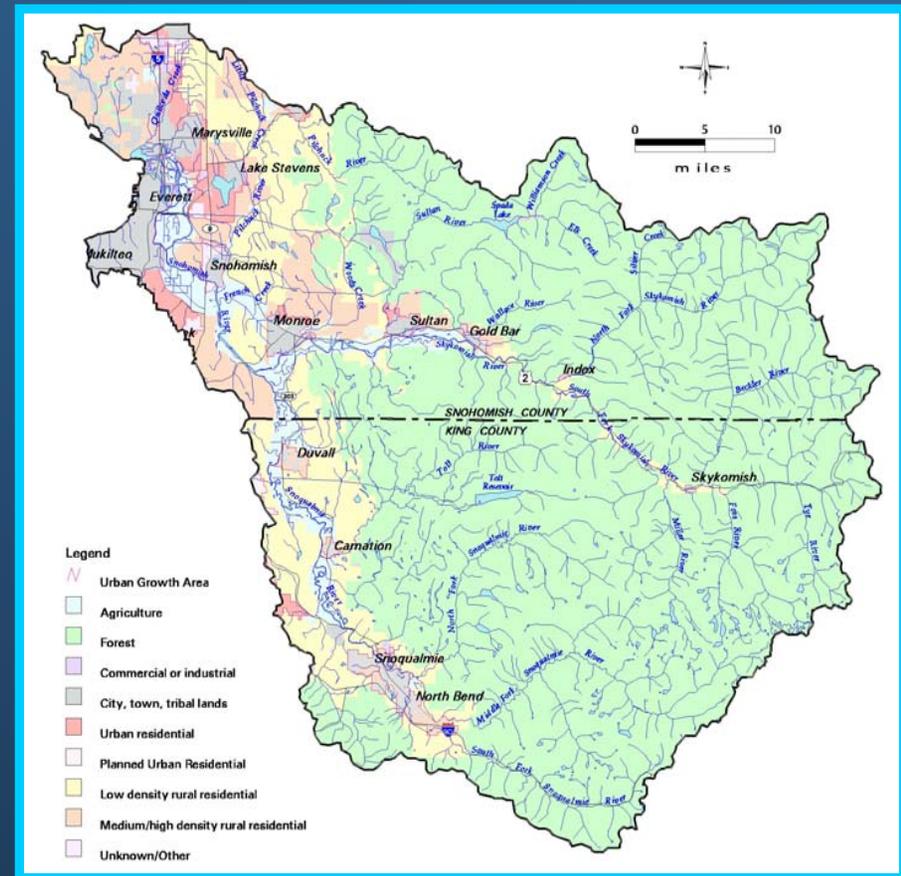
WLRD Science Seminar
May 25, 2005

Presentation Overview

- What makes the Snohomish River Basin unique?
- Why a salmon conservation plan?
- Who is the Forum?
- What is the science behind the plan?
- What are the plan's key components?
- When and how will the plan be implemented?

Snohomish River Basin

- Second largest basin in Puget Sound
- Nine salmonid species
- Two ESA listed species
- Critical basin for Chinook recovery
- 25-50% of wild coho in Puget Sound



Shared Strategy Planning Targets

Population	Mean spawner abundance for 1996-2000	Low productivity ¹		High productivity ²
		Planning Range for Abundance	Planning targets for abundance (w/productivity in parentheses)	
NF Nooksack	120	16,000 – 26,000 (1.0)	16,000 (1.0)	3,800 (3.4)
SF Nooksack	200	9,100 – 13,000 (1.0)	9,100 (1.0)	2,000 (3.6)
Lower Skagit	2,300	16,000 – 22,000 (1.0)	16,000 (1.0)	3,900 (3.0)
Upper Skagit	8,920	17,000 – 35,000 (1.0)	26,000 (1.0)	5,380 (3.8)
Upper Cascade	330	1,200 – 1,700 (1.0)	1,200 (1.0)	290 (3.0)
Lower Sauk	660	5,600 – 7,800 (1.0)	5,600 (1.0)	1,400 (3.0)
Upper Sauk	370	3,000 – 4,200 (1.0)	3,030 (1.0)	750 (3.0)
Suiattle	420	600 – 800 (1.0)	610 (1.0)	160 (2.8)
NF Stillaguamish	660	18,000 – 24,000 (1.0)	18,000 (1.0)	4,000 (3.4)
SF Stillaguamish	240	15,000 – 20,000 (1.0)	15,000 (1.0)	3,600 (3.3)
Skykomish	1,700	17,000 – 51,000 (1.0)	39,000 (1.0)	8,700 (3.4)
Snoqualmie	1,200	17,000 – 33,000 (1.0)	25,000 (1.0)	5,500 (3.6)
NL Washington	194*			
Cedar	398*			
Green	7,191*			
White	329*			
Puyallup	2,400	17,000 – 33,000 (1.0)	18,000 (1.0)	5,300 (2.3)
Nisqually	890	13,000 – 17,000 (1.0)	13,000 (1.0)	3,400 (3.0)
Skokomish	1,500*			
Dosewallips	No data yet	3,000 – 4,700 (1.0)		
Dungeness	123*	4,700 – 8,100 (1.0)		
Elwha	1,319*			

Some Basin Challenges



- Urbanizing
- Water supply for over 1 million people
- Changing economic base and land uses
- Existing development in key habitat areas

Snohomish Basin Salmon Recovery Forum

39 Members

- Local governments (2 counties, 14 cities)
- Tulalip Tribes
- 7 Special purpose districts
- 11 Interests/groups
- 3 Citizens
- WDFW "ex officio"

Activities

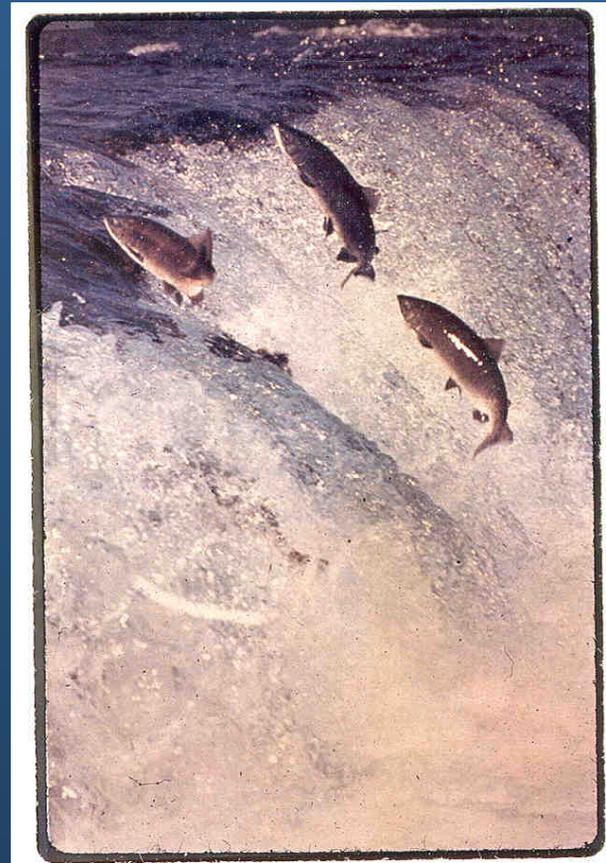
- Prioritize habitat projects for SRF Board
- Develop salmon conservation plan
- Adaptively manage plan
- Discuss differing viewpoints, coordinate local action

Forum Guidance for Plan

- Direct efforts to where they will make the most difference
- Equity: All areas play a role
- Tailor solutions for different groups and areas
- Practical and readable
- Include capital projects, incentives, and policy
- Incorporate community values
- Multi-salmon species
- Follow state and regional guidance
- Strong scientific foundation

Ecological Analysis for Salmon Conservation

- Integrated technical work in basin
- Formulated hypotheses, strategy and recovery actions
- Assisted development and evaluation of plan alternatives



Step 1: Where are the fish currently?



- 5-year average of escapement data



- Relative comparison of abundance among subbasins

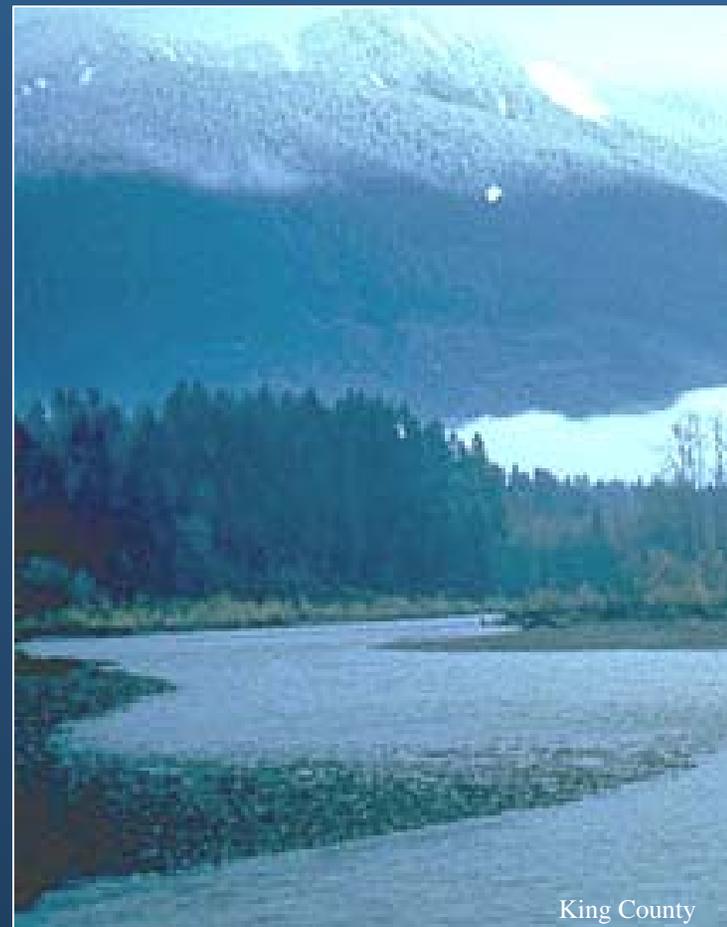
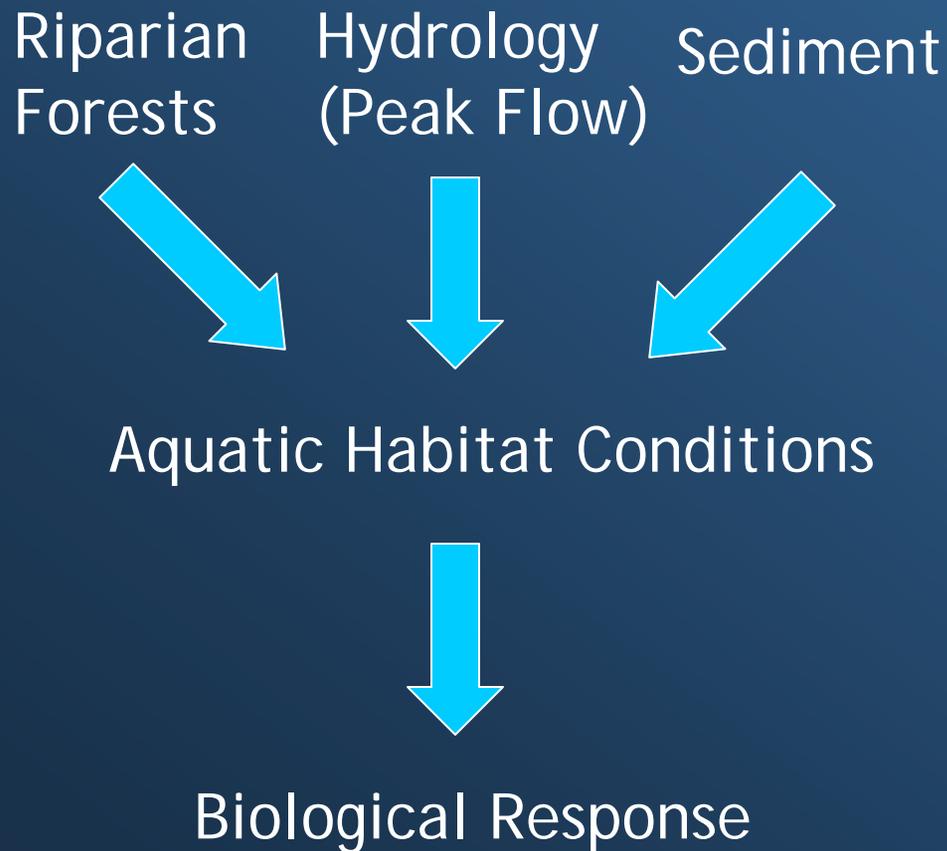
Step 2: What is the current condition of aquatic habitat?

- Combine data from Snohomish habitat inventory reports



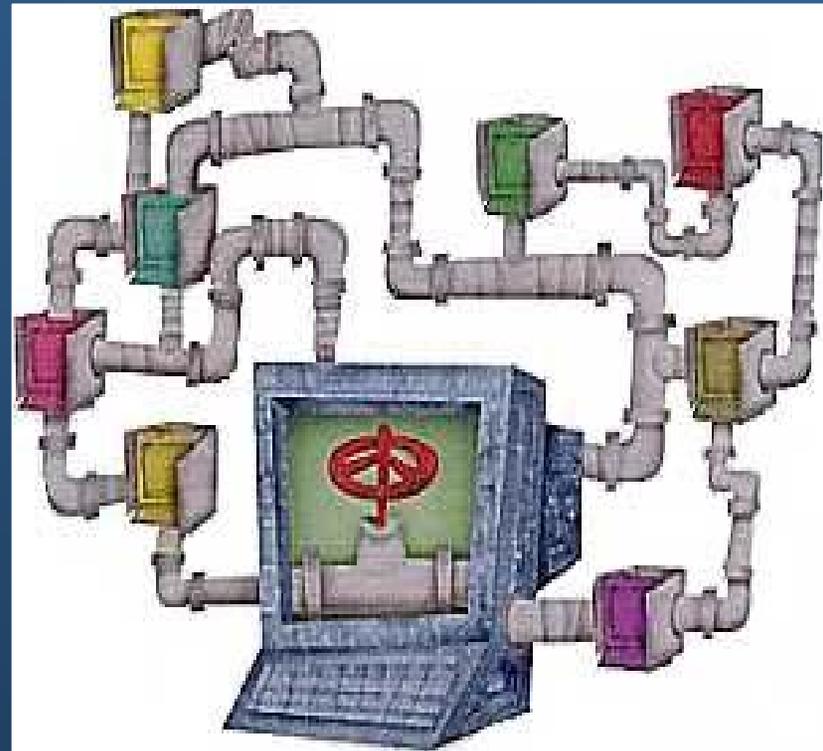
- Identify a level of certainty rating for each data input
- Documentation for models

Step 3: What are the current conditions of watershed processes?



Step 4: What is the difference between current and historical habitat potential to produce Chinook?

- Diagnosis step of Ecosystem Diagnosis and Treatment (EDT)
- Potential Capacity Model
- Context for what is possible
- Where are the greatest risks and opportunities ?



Step 5: Salmon Use and Potential Synthesis

- Identify areas with high current use and/or potential use
- Focus of actions for a long-term strategy to recover salmonids



Step 6: Strategy Development

- Integrate results from all previous analyses
- Develop basin hypothesis
- Identify sub-basin strategy groupings and hypotheses
- Identify actions within individual subbasins

Chinook Actions Needed

- Improve juvenile chinook survival
- Key actions: connect rivers and floodplain and increase “habitat complexity”
- Nearshore, estuary, and river mainstems are key recovery areas



Bull Trout Actions Needed

- Chinook actions also benefit bull trout foraging, migration and over-wintering
- Bull trout spawn in only three sub-basins. Protection strategy is critical (USFS).



Coho Actions Needed

- Improve rearing habitat
- Retain forest cover and limit impervious surface
- Maintain and restore access to small, low gradient streams



Steps 7: Develop Alternatives

- Forum Needs:
 - Recovery approach - Where to focus
 - How much to do
 - Project priorities
- Technical Guidance:
 - Develop and model the recovery test case
 - Respond to Forum



Plan Recovery Approach

- Capital projects
 - ~ 80% in the nearshore, estuary, and mainstems
 - ~ 15% in lowland tributaries
 - ~ 5% in headwaters
- Habitat protection
 - Basin wide
- Programs and technical assistance
 - Targeted and basinwide

How much to do: Alternatives

Major Improvement	Significant improvement	Moderate improvement	Modest improvement
High end of Shared Strategy planning range. High abundance, productivity, diversity, and spatial structure for all salmon populations	10 year milestone calculated from current path +75% of the difference between current path and test case targets over 50 years	10 year milestone calculated from current path +50% of the difference between current path and test case targets over 50 years	10 year milestone calculated from current path +35% of the difference between current path and test case targets over 50 years

Step 8: Evaluate Alternatives

- Biological Evaluation:
SHIRAZ and EDT
- Socio-economic Evaluation:
 - Long-term flexibility
 - Estimated cost
 - Estimated shared benefit
 - Ability to implement



EDT Results: What gains could be achieved by reaching the 10-year habitat milestones?

	Skykomish Population	Snoqualmie Population
Abundance gains over current path	36%	79%
Productivity gains	16%	50%
Diversity gains	1%	9%

- Substantial gains in VSP for both populations, with a greater increase in the Snoqualmie
- Increase in rearing capacity is critical, particularly in the estuary
- Substantial benefits from riparian planting, dike setbacks and ELJ construction

Step 8 Part II: Forum Evaluation of alternatives

Direct Ranking of Options (1 = most preferred option, 4= least preferred option)

	Options	1	2	3	4
	Participants	Major Improvement	Significant Improvement	Moderate Improvement	Modest Improvement
1	King Conservation Dist	2	3	1	4
2	Cascade Land Conservancy	1	2	3	4
3	Snohomish County PUD	1	2	3	4
4	WDFW	1	2	3	4
5	City of Snohomish	4	1	2	3
6	Town of Index	1	2	3	4
7	King County	1	2	3	4
8	Snohomish Conservation Dist.	2	1	3	4
9	Master Builders Assoc.	4	2	1	3
10	Recreation - Trout Unlimited	2	1	3	4
11	Stilly-Sno Task Force	1	2	3	4
12	City of Duvall	4	2	1	3
13	East King County RWA	4	3	1	2
14	Cross Valley Water Dist.	3	1	2	4
15	Coordinated Diking Council	3	1	2	4
16	Tulalip Tribes	1	2	X	X
17	City of North Bend	2	1	3	4
18	King County Agriculture	3	1	2	4
19	City of Seattle	1	2	3	4
20	City of Everett	4	3	1	2
21	Snohomish Co. Agriculture (DR)	3	1	2	4
22	Snohomish Co. Agriculture (AW)	4	2	1	3
23	Snohomish Co. Sportsmens Assoc.	3	1	2	4
24	Boeing Company	4	3	1	2
25	Pilchuck Audubon Society	2	1	3	4
	Number of Times Ranked #1	8	10	7	0
	Average Rank (#1 being most preferred)	2.4	1.8	2.2	3.6
	Percentage	32%	40%	28%	0%

What's in the Final Plan?

Vision for Recovery

- Working towards co-manager's targets for long term recovery (~50 years)
- Targeted 10-year approach in highest-priority areas
- 10-year milestones for habitat condition improvements
- Recognition of past accomplishments



10-Year Habitat Condition Milestones: Key Areas

Sub-basin Strategy Group and habitat condition	Current Intact	Needed gain in next 10 years (including current path gains)	Total needed at Year 2015
Nearshore beaches and shoreline	8.4 miles	At least 1 mile	At least 9.4 miles
Estuary: Tidal Marsh	1,483 acres	1237 acres	2,720 acres
Mainstem Primary Restoration:			
Restored Edge Habitat	236 miles	10.4 miles	246.4 miles
Restored Riparian Habitat	5,991 acres	256 acres	6,247 acres
Restored Off-Channel Habitat	350 acres	167 acres	517 acres
Large Woody Debris	N/A	41 new log jams	

10-Year Milestones: Basin Wide

- Culverts – Address 60 blockages
- Forest roads – Decrease overall length
- Forest cover – Minimize losses and make gains outside Urban Growth Areas
- Riparian areas – Make habitat gains
- Impervious surfaces – Minimize net gains outside Urban Growth Areas
- Water quality – Improve

Recommended Approaches for Land Uses

- Agriculture
- Roads and Utilities
- Rural Residential
- Urban
- Forestry



Example: Recommended Approach for Working with Agriculture

- Cooperative
- Keep farming viable
- Focus on:
 - Technical assistance
 - Incentives
 - On-the-ground projects
- Demonstration projects



Basin-Wide Tools

- Regulatory and programmatic actions
- Mitigation funding, noxious weeds
- Stewardship and implementation capacity
- Technical assistance
- Incentives and innovation
- Compliance

Geographic Recommendations

- Estuary
- Nearshore
- Mainstems
- Tributaries
- Headwaters



Example: Mainstem Recommendations



Lower
Snohomish
River



Snoqualmie River



Lower Skykomish River

Harvest, Hatchery and Integration

- Hypotheses developed, summaries
- Harvest – Puget Sound Chinook Harvest Management Plan
- Hatchery –HSRG recommendations
- Integration – actions are interdependent with habitat improvements



Science and Policy: Monitoring, Evaluation, and Adaptive Management

4 Levels

- Implementation
- Project Effectiveness
- Cumulative Effectiveness
- Validation

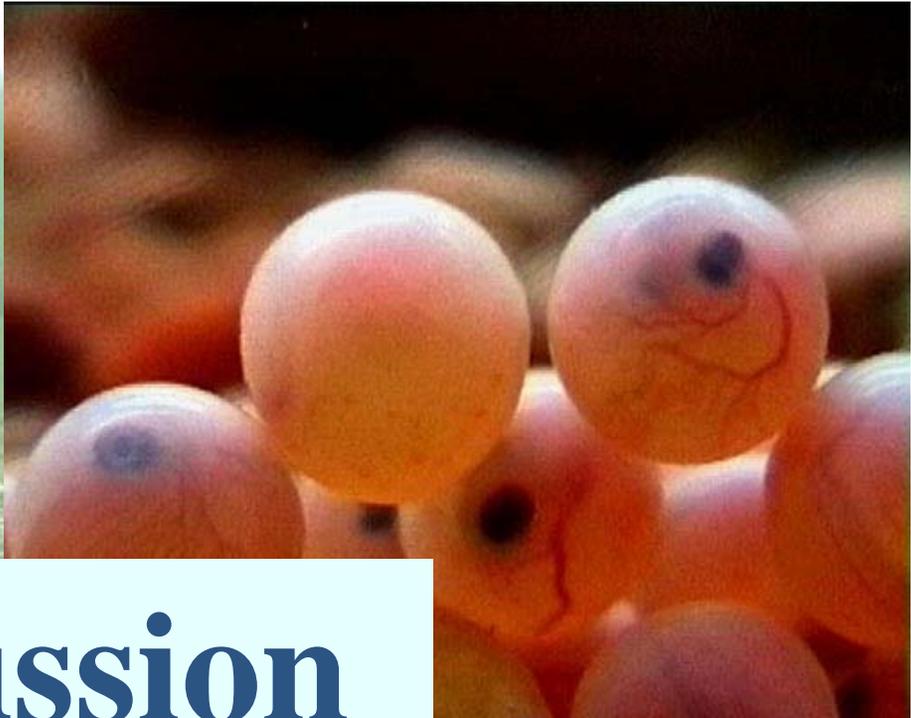
Aspects

- Ecological
- Socio-economic
 - Monitoring
 - Evaluation
 - Adjustment

Implementation Strategy

- 10-year estimate cost: Plan \$133.6 Million
 - \$92.9 M Capital
 - \$15.7 M Acquisition
 - \$25 M Non-Capital (\$5.6 M for monitoring and adaptive management and \$1.0 M data gaps)
- Actions for the future
- Funding policies
- Implementation commitments





Discussion

