Executive Summary

- Water quality and quantity are important to humans and wildlife.
- Salmon are valuable to us but are in danger of being lost forever in 3/4 of the state.
- Habitat is the largest limiting factor.
- Salmon need cold, clean, clear, complex, and connected water in which to develop.
- Land use policy decisions could play a larger role in protecting existing habitat, restoration of lost habitat, and preservation of water conditions crucial to salmon.
- Public compensation for private landowner losses and regulation are often necessary to achieve conservation goals.
- Recovery plans and solutions exist but are failing to meet their goals due to resource limitations and lack of policy support.
What is the Problem?
Salmon runs are a fraction of historic levels and populations throughout the state continue to decline.

What is the Cause of the Problem?
The problem is primarily diminished and degraded habitat—the fish do not have safe places to live and grow.

What Happened to the Habitat?
Development and growth from humans has occurred in areas critical for salmon. Barriers to fish passage have increased. Traditional strategies for enhancing drainage and reducing flood risk have changed the way rivers function and altered salmon habitat. Excess nutrients and contaminants in our waterways have also degraded water quality.

Why is that a Problem?
Salmon are an integral part of Washington’s ecology, economy, recreation, and culture. They are an indicator of other problems, such as habitat loss and degraded water quality.

What is the Solution?
First, there needs to be awareness of the severity of the problem, its causes, and the solutions.
Second, there needs to be a collaborative effort to implement restoration projects that benefit landowners, salmon, and environmental health. A number of innovative, voluntary compliance incentive programs and market-based solutions have enabled recovery groups to work together with agriculture, forestry, and private landowners.

How Can You Help?
Support and defend salmon recovery for its merits—recovery efforts create jobs, reduce flood risk, improve habitat for fish and wildlife, and improve the value of land. Support policies and budgets that will improve water quality, habitat diversity, and the health of our watersheds.
Watershed

A watershed is a basin-shaped area that drains to a central point where it enters a river, lake or ocean. It can include surface water, groundwater, and salt water like Puget Sound. Watersheds can encompass small areas draining to a stream and also be part of much larger areas, spanning multiple counties, like the Lake Washington/Cedar/Sammamish Watershed.

What happens on the land in a watershed, especially human activities, dictates the health of the aggregate waterbodies within that larger watershed. Every single activity that takes place in a watershed affects the health—good or bad—of all the water downstream. Contaminated stormwater can significantly affect watershed health and salmon. **Stormwater** is water that runs off impervious surfaces, such as roads, rooftops, parking lots, etc., when the rainwater cannot be absorbed into the built environment. This water collects whatever is in the watershed, and carries it all, via storm drains, directly into nearby waterbodies often **without treatment.**
Salmon Habitat Requirements

Salmon need water that is:

**Clean:** Pollution and other contaminants can harm salmon and other aquatic life

**Clear:** Water that is too turbid, or has too many suspended solids, is detrimental to salmon, particularly juveniles

**Cold:** Salmon are cold-blooded and need cold water to function properly; water that is too warm will kill them

**Connected:** Fish passage barriers, like culverts, dams, poorly made bridges, and other human infrastructure can prevent salmon from reaching their spawning streams

**Complex:** Properly functioning riparian habitats have diverse native tree and shrub species; natural river meanders, side channels, wetlands, and oxbows; and contain rocks and log jams to provide in-stream habitat for salmon during all stages of their life cycle
Salmon Biology
Pacific Salmon Species

There are five species of Pacific salmon, and each species has multiple common names. They are all anadromous, hatching out of eggs in freshwater, migrating to saltwater to grow, then returning as an adult to their natal stream to create the next generation. There are also three species of Pacific trout that are very closely related to the five salmon species, and are also anadromous. All of these salmonid species are in the genus Oncorhynchus, which means hooked nose.

Species of Pacific Salmon (the two most often used common names):

1. Chum = Dog
2. Sockeye = Red
3. Chinook = King (Puget Sound population is threatened)
4. Coho = Silver (Puget Sound population is a species of concern)
5. Pink = Humpie

Species of Pacific Trout:

6. Cutthroat Trout
7. Steelhead (Puget Sound population is threatened)
8. Bull Trout (Puget Sound population is threatened)
Life Cycle

Pacific Anadromous Salmonids

- Salmon move from freshwater streams, out to sea, and return back to the same freshwater system to spawn over a period of 2-8 years depending on the species. Species that move from freshwater, to saltwater, and back to fresh are called anadromous.
- Salmon spend the first part of their lives in freshwater. Pink and Chum remain in freshwater only a few days before going to the estuary, where they remain for longer; estuary and nearshore habitats are crucial for these species.
- Chinook, Coho, Sockeye, Steelhead, Cutthroat, and Bull Trout rear in freshwater for much longer amounts of time. They are more sensitive to poor water quality and degraded freshwater habitat. The populations of these salmonid species are struggling more, likely due to river conditions that are unfavorable for salmon.

<table>
<thead>
<tr>
<th>Life Stage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Egg</td>
<td>Fertilized egg develops and incubates under gravel.</td>
</tr>
<tr>
<td>Alevin</td>
<td>Egg hatches, alevin lives under gravel and continues to develop by consuming yolk sack.</td>
</tr>
<tr>
<td>Fry</td>
<td>Juvenile emerges from gravel when the yolk sack is consumed, and looks for insects to eat. Some species remain in freshwater, others head to the estuary, feeding and hiding from predators. Have parr markings, the stripes/dashes along the spine.</td>
</tr>
</tbody>
</table>
| Smolt            | Once in the estuary, the body of the fish goes through smoltification to be able to live in salt water. Very vulnerable stage.  
After smoltification, fish swims out to the ocean to eat and grow for 1 to 7 years (varies by species & population). |
| Ocean Rearing/Adult | After growing is complete, salmon heads back to the stream where it was born (natal stream). Salmon do not eat during this phase. |
| Migrating Adult  | After growing is complete, salmon heads back to the stream where it was born (natal stream). Salmon do not eat during this phase. |
| Spawner          | Fish find a mate(s), spawn, and die, starting the cycle once again and providing marine derived nutrients into the freshwater ecosystem. |

Life Cycle Stages

- Egg: 6-12 weeks
- Alevin: 2 months
- Fry: 1-2 years
- Smolt: 1-3 months
- Spawner: 1-2 years
- Ocean Adult: up to 6 years
- Migrating Adult: weeks
Why are salmon an Indicator Species?

They:
• Require clean, cool water to survive
• Have relationships with 137 other species
• Are a “canary in a coal mine” for a healthy watershed and related species

And they:
• Are an icon of the region
• Are important to many residents
• Are important to Washington’s economy

Role of Salmon in Ecosystems

Keystone Species
• Play a critical role in maintaining the structure of ecological communities
• Contributions are large compared to species prevalence in the habitat
• Disappearance would start a domino effect with other species in the habitat subsequently disappearing and becoming extinct.

How are the salmon runs doing?

In Washington

- Salmon across ¾ of the state are in danger of being lost forever.¹
- In 1999, salmon in Washington were already extinct in as much as 40% of their former spawning areas.¹
- Some threatened fish populations are increasing but most populations are decreasing or experiencing no change.

In Lake Washington/Cedar/Sammamish Watershed (WRIA 8)

- **Fish** - Abundance of adult Chinook salmon in Cedar and Sammamish watersheds showing signs of improvement but still below 50 yr goals for the watershed.²
- 50 yr goal for **juvenile** productivity is partly being met.²
- **Water quality** continues to be a concern, especially summer stream temperatures.²
- **Wood volume** continues to be poor.²

¹ Washington State Recreation and Conservation Office 2012 State of Salmon Report
How has land use changed the landscape?

Housing is one land use affecting water quality and quantity in neighboring streams.

Development reduces tree cover and increases polluted stormwater.

Population of the Puget Sound Region is expected to reach 5 million by 2040.

Using Low Impact Development (LID) techniques, adverse effects can be reduced.

Areas of rapid urban growth tend to occur near water resources. A high value is placed on land with proximity to water resources and the terrain is easier to develop.

These lowland areas provide a majority of the freshwater and marine/estuarine habitat available to salmonids.

Development in these areas can result in a dramatic loss of habitat.
### What are the impacts of urban development?

<table>
<thead>
<tr>
<th>Impact</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>road building and culverts</td>
<td>passable culverts</td>
</tr>
<tr>
<td>absent and/or decreased buffers</td>
<td>permit adequate buffers, urban forestry</td>
</tr>
<tr>
<td>stormwater runoff</td>
<td>Low impact development (LID), other Best management practices (BMP)</td>
</tr>
<tr>
<td>shoreline armoring</td>
<td>bulkhead removal</td>
</tr>
<tr>
<td>decreased tree canopy</td>
<td>tree ordinances, urban forestry</td>
</tr>
<tr>
<td>warmer surface water &amp; land temps</td>
<td>urban forestry</td>
</tr>
<tr>
<td>illegal dumping</td>
<td>culverts</td>
</tr>
<tr>
<td>dominance of impervious surfaces</td>
<td>LID, urban forestry, buffers</td>
</tr>
<tr>
<td>marinas</td>
<td>salmon safe certification</td>
</tr>
</tbody>
</table>

### What are the impacts of stormwater runoff?

<table>
<thead>
<tr>
<th>Impact</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>impervious surfaces greatly increase stormwater runoff</td>
<td>LID, pervious pavement, adequate vegetative buffers (“green infrastructure”)</td>
</tr>
<tr>
<td>combined sewer outflows (CSO's)</td>
<td>LID, water conservation, re-direction outflows &amp; pipes to stormwater management areas</td>
</tr>
<tr>
<td>heavy metals, oil, &amp; other pollutants in watersheds</td>
<td>natural yardcare, car maintenance, pick up pet waste, reduce use of fertilizers and pesticides at home</td>
</tr>
<tr>
<td>malfunctioning septic</td>
<td>repair assistance, incentive programs</td>
</tr>
<tr>
<td>bank erosion</td>
<td>vegetative buffers, LID</td>
</tr>
<tr>
<td>loss of stream habitat</td>
<td>buffers, urban forestry (conservation vs. reforestation)</td>
</tr>
</tbody>
</table>
### What are the impacts of shoreline development?

<table>
<thead>
<tr>
<th>Impact</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>malfunctioning septic tanks</td>
<td>repair assistance</td>
</tr>
<tr>
<td>increased stormwater runoff</td>
<td>LID, public education, incentive programs</td>
</tr>
<tr>
<td>decreased habitat for forage fish &amp; other wildlife</td>
<td>full or partial bulkhead removal, natural shoreline installation (“soft shore protection”)</td>
</tr>
<tr>
<td>decreased buffers</td>
<td>planting and restoration</td>
</tr>
<tr>
<td>feeder bluff sediment transport blockage</td>
<td>bulkhead removal, beach nourishment</td>
</tr>
<tr>
<td>shoreline railroads</td>
<td>beach nourishment</td>
</tr>
<tr>
<td>marinas</td>
<td>salmon safe certification</td>
</tr>
</tbody>
</table>

### What are the impacts of fishing industry?

<table>
<thead>
<tr>
<th>Impact</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>overharvest</td>
<td>population-based catch limits</td>
</tr>
<tr>
<td>bycatch</td>
<td>ethical fishing methods (pole caught)</td>
</tr>
<tr>
<td>illegal fishing</td>
<td>stricter enforcement, public education</td>
</tr>
<tr>
<td>Tribal fishing rights</td>
<td>public education</td>
</tr>
<tr>
<td>loss of jobs with declining fish stocks</td>
<td>conservation jobs</td>
</tr>
<tr>
<td>fish farms</td>
<td>focus on sustainable wild populations</td>
</tr>
</tbody>
</table>
Clean Water Act

- Enacted in 1972 by bipartisan majority in Congress after a massive oil spill at sea and a river caught fire in Ohio.

- Goal: to “restore and maintain chemical, physical and biological integrity of the Nation’s waters.”

How it works

- Washington State administers National Pollution Discharge Elimination System (NPDES) Permits to limit discharge of 126 priority pollutants.

- Phase I and Phase II local governments must obtain/renew NPDES Permits every 5 years.

- Point sources now responsible for only 10% of violations, non-point (such as stormwater) 47%.

- NPDES Stormwater Permits mandate pollution prevention plans including public education and outreach, maintenance and inspection.

- WA Dept. of Ecology monitors water quality and requires local government to do more to address other hydrologic changes caused by land development.

- If a water quality standard is not met, Ecology must set allowable limits for discharge of that pollutant into the waterbody.

1. US EPA 2006 Introduction to the Clean Water Act
Endangered Species Act

- In 1973, a nearly unanimous Congress passed the ESA because “[existing laws] did not provide the kind of management tools needed to act early enough to save a vanishing species.” -Richard M. Nixon

- Goal is to eliminate risk of extinction for listed species (111 fish species listed as endangered in the US).

How it works

Conservation through:

- Listings
- Critical habitat conservation
- Recovery plans
- Species recovery grants
  (e.g., Salmon Recovery Funding Board, Puget Sound Acquisition and Restoration Fund, Pacific Coastal Salmon Recovery Fund)

Recovery plans for all 5 endangered and 23 threatened distinct population segments of salmonids

Habitat conservation required under ESA implementation
Growth Management Act

1990 Law responding to loss of natural resources due to difficulty controlling urban sprawl.

Requires local governments to create and follow consistent comprehensive plans to address 14 areas:

1. Urban Growth
2. Reduced Sprawl
3. Housing
4. Public Facilities
5. Citizen Involvement
6. Regional Transportation
7. Economic Development
8. Property Rights
9. Permits
10. Natural Resource Industries
11. Historic Preservation
12. Environment
13. Open Space and Recreation
14. Shoreline Management

How it works

- Encourages dense development within defined urban growth boundaries
- Requires designation and regulations for critical areas and resource lands based on “best available science.”
- Authorizes excise taxes and impact fees
- Noncompliance can result in loss of revenue from state sources

Importance of GMA to salmon

As human population grows, critical areas and supporting natural resource lands are conserved to promote water quality and provide the resources salmon and other aquatic life require.
Treaty Rights

Point No Point and Point Elliot Treaties

Under the 1855 treaties of Point No Point and Point Elliot, tribes ceded ownership of land in exchange for small reservations and hunting and fishing rights. “The right of taking fish at all usual and accustomed grounds and stations is further secured to said Indians, in common with all citizens of the United States.”

Boldt Decision

- In the 1974 landmark Boldt Decision, Judge George Hugo Boldt interpreted “in common with all citizens of the United States” to mean a right to 50% of the harvestable catch
- Established tribes as “co-managers” of all fishing resources including those outside of reservations
- Upheld by U.S. Supreme Court in 1979
- This right is subverted if stocks dwindle
- In 1994 treaty harvest right extended to public and private tidelands except for shellfish contained in artificial beds. Upheld by U.S. Supreme Court in 1999
- The tribes believe their rights are still at risk due to federal inaction on recovery

**Forest Practices Act**

- Passed in 1974 to **protect fish, wildlife** and **clean water** on 9.3M acres of state and private forest land and 60,000 miles of streams.
- In 1987, a **collaborative process** led to the Timber Fish and Wildlife agreement, and again, in 1999, the Forest and Fish Law. Both were incorporated into the Forest Practices Act.
- The act demonstrated that collaborative regulatory processes between industry, government, tribal and environmental stakeholders are more productive than litigation.
- A similar process has not been undertaken for agriculture.

**How it works**

Forestry operations require a permit and must adhere to **Best Management Practices** such as:

- Forested buffers along streams and wetlands
- Improved road construction and maintenance
- Other harvest, planting and maintenance practices

**Goals of the Forest and Fish Law:**

- Compliance with Federal Endangered Species Act
- Restore and maintain fish habitat to support harvestable supply of fish
- Meet requirements of Federal Clean Water Act
- Keep the industry economically viable
Critical Areas Ordinance

- Under the Growth Management Act, all cities and counties in Washington State are required to identify, designate, and protect critical areas found in their local area.

- Once lost, the functions and values of critical areas can be costly or even impossible to replace.

- Critical areas include but are not limited to fish and wildlife habitat conservation areas, wetlands and frequently flooded areas.

How it works

- Designed to protect functions and values of critical areas.

- Required to include best available science in developing policies and development regulations.

- No net loss:

  Local governments have discretion to adopt critical areas regulations that may result in local impacts upon some critical areas, or even the loss of some critical areas—but there must be no net loss of the structure, value, and functions of the natural systems constituting the protected critical areas.
Hydraulic Project Approval (HPA)

- Passed in 1943 by the Washington State Legislature, the Hydraulic Code was specifically designed to protect fish life. Any form of work that uses, diverts, obstructs, or changes the natural flow or bed of any fresh water or saltwater of the state requires a Hydraulic Project Approval (HPA).

- Washington Department of Fish and Wildlife (WDFW) administers HPA program under state Hydraulic Code

How it works

- Any person, organization, or government agency planning certain construction projects or activities in or near state waters is required to obtain an HPA permit

- Examples of activities HPA’s are issued for include work on bulkheads, piers, docks, culverts, bridges and sediment dredging projects

- Prevents fish habitat being damaged or destroyed

- Ensures projects meet state conservation standards for fish and their aquatic habitat

- WDFW habitat biologists available to assist with application process
Shoreline Management Act (SMA)

• Passed by the State Legislature in 1971

• Three basic policy areas:
  shoreline use, environmental protection, and public access

• Goal is to prevent inherent harm in an uncoordinated and piecemeal development of state’s shorelines

How it works

Shoreline Master Program (SMP)

• Each city and county with “shorelines of the state” must prepare and adopt a Shoreline Master Program, a shoreline-specific combined comprehensive plan, zoning ordinance, and development permit system

• Local governments may amend SMP’s to reflect changing local circumstances, new information, or improved shoreline management approaches and are effective after Ecology approval

• No net loss: WAC 173-26-186(8) directs that master programs “include policies and regulations to achieve no net loss of those ecological functions”

• No net loss standard designed to halt the introduction of new impacts to shoreline ecological functions resulting from new development
State Environmental Policy Act (SEPA)

- Enacted in 1971, SEPA helps state and local agencies in Washington identify possible environmental impacts that could result from governmental decisions such as:
  - issuing permits for private projects
  - construction of public facilities
  - adopting regulations, policies, or plans

How it works:

- Project proponents usually asked to complete environmental checklist
- Checklist asks questions about the proposal and its potential impacts on the environment
- Lead agency issues a determination of non-significance (DNS) or requires that a third party prepare an environmental impact statement (EIS)
- EIS needs to include evaluation of alternatives to the proposal and measures that would reduce or eliminate likely environmental impacts
- SEPA gives state and local agencies the authority to require conditions to offset any identified adverse environmental impacts
The Road to Recovery
Recovery

*What does the term “Recovery” mean?*

“A regaining of something lost; a return to health; a regaining of balance, etc.”

Webster’s New World Dictionary

*What does recovery look like?*

- Self-sustaining levels of Puget Sound Chinook numbers, distribution, and diversity
- Agriculture, development and aquatic life coexist with functioning buffers
- Water is clean, cool and sufficient for people and aquatic life
- Flood damage is reduced
- Parents can take their children to see the salmon return
- Improved bird watching opportunities
- Aesthetically pleasing connected green belts
Protection
maintains the status of a functioning ecosystem

Restoration
seeks to restore functions that once existed
Pressures on Recovery

The 4 H’s

Salmon need rivers that are cool, clear, clean, connected, and complex. Impaired habitat can cause salmon eggs, juveniles, and even spawning adults to perish. Urban and rural development put high pressure on riparian ecosystems.

Commercial, recreational, and tribal fishers must harvest salmon in a manner that allows salmon to reproduce at a rate to increase—not decrease—populations. Salmon stocks continue to decline despite harvest regulations.

Hatcheries can support salmon recovery by producing juvenile fish at a higher volume than would occur in the wild. However, genetic diversity is decreased, and hatchery-raised salmon also cannot survive without adequate habitat. Overreliance on hatcheries has negative repercussions on wild fish.

Dams inhibit migration of anadromous fish both to and from spawning grounds. Juveniles are blocked by dams and killed by turbines and higher water temperatures in reservoir lakes.
## Key Challenges to Salmon Recovery in WRIA 8

<table>
<thead>
<tr>
<th>Key Challenges</th>
<th>Explanation</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population growth and land use pressure</td>
<td>By 2040, King and Snohomish Counties are projected to be home to an additional 404,000 and 244,000 people respectively. As population grows, land use pressures continue to threaten quality and function of remaining salmon habitat.</td>
<td>Urban planning, Growth Management Act, transfer of development rights, mitigation banking, easements, Expansion of programs and incentives for developers that reward use of sustainable materials, reduced water use, and innovative stormwater management.</td>
</tr>
<tr>
<td>Stormwater management</td>
<td>Stormwater has been directly linked to salmon mortality. 75% of toxic chemicals entering Puget Sound are from stormwater.</td>
<td>Through the National Pollutant Discharge Elimination System (NPDES) permit requirements, local governments are taking actions to manage stormwater more effectively. Stormwater managers should give greater consideration to salmon recovery objectives in their management decisions. Low impact development solutions such as rain gardens, permeable pavement, rain barrels, and filtration wetlands are examples of methods that directly address stormwater.</td>
</tr>
<tr>
<td>Lack of awareness about water quality and salmon</td>
<td>Personal behaviors can negatively impact water quality.</td>
<td>Education and outreach, school programs, community engagement.</td>
</tr>
<tr>
<td>Climate change</td>
<td>Anticipated effects of climate change include reduced stream and river flows and increased water temperatures.</td>
<td>Healthy functioning ecosystems are more resilient to climate change, hence the importance of WRIA 8 strategies of habitat protection and restoration, including restoring stream corridors and lakeshores and reconnecting floodplains. Better understanding and assessment coupled with adaptive management will be needed to address anticipated effects of climate change.</td>
</tr>
<tr>
<td>Funding</td>
<td>Maintaining long term support for salmon recovery funding.</td>
<td>Support from local leaders, state, and federal lawmakers in championing restoration and protection projects. Grant based work has proven successful in implementing projects. Supporting an increase in funding from grant programs including Washington State Salmon Recovery Funding Board (SRFB), Pacific Coastal Salmon Recovery Fund (PCSRF), and Puget Sound Acquisition and Restoration (PSAR).</td>
</tr>
</tbody>
</table>
When Chinook salmon were listed as threatened under the Endangered Species Act (ESA) in 1999, Federal, state, tribal and local governments, along with various industries collaborated to develop a long-term plan for salmon recovery in Puget Sound. 14 watershed councils, each serving a specific Watershed Resource Inventory Area (WRIA), were tasked with creating Chinook Recovery Plans.

The plans:
- Reviews properties of the watershed
- Analyzes Chinook populations and factors affecting them
- Defines recovery targets
- Lays out strategies for improving negative factors
- Sets measurable goals
- Defines monitoring and adaptive management strategy

Watershed Recovery Plans

In 1999 the Washington State Salmon Recovery Act (RCW 77.85) established 25 “lead entities,” including 14 in Puget Sound. Lead entities perform an essential role in salmon recovery in Washington State. They are local and watershed-based. They develop local salmon habitat recovery strategies and then recruit organizations to do habitat protection and restoration projects that will implement the strategies.

Lead Entities consist of:
- A coordinator (usually a county, conservation district or tribe)
- A committee of local, technical experts
- A committee of local citizens
- A grant administrator (usually county, conservation district, tribe, or regional organization)

Science-based and citizen-supported, lead entities identify salmon recovery projects, develop strategies that guide where state and federal money will be spent, and prioritize projects to maximize the public’s investment.
How is the WRIA 8 Salmon Recovery Plan doing (2006-2015)?

The plan’s focus:
habitat protection and restoration, land use and planning, outreach and education.

- 24% of habitat and restoration projects on the Ten-Year Start List were completed in the first ten years, an additional 33% began advancing towards implementation.¹
- Implementation has proceeded more slowly than envisioned largely due to inadequate funding and complexities of implementing habitat protection and restoration projects, especially in an urbanized watershed.¹
- Property acquisition still a priority, now focused on streamside parcels with efforts to reconnect rivers and streams to floodplains.¹
- Example project: Rainbow Bend - Levee Removal and Floodplain Restoration along the Cedar River.

Since 2005:

1,547 acres 76.6 acres
protected through acquisition, conservation easement, or some other protective mechanism

11.8 miles 0.9 miles
of streambank protected of levee removed or set back

6,580 linear feet
of lakeshore armoring removed

510 acres
of riparian areas treated for invasive species removal

Direct and Indirect Benefits of Salmon Recovery Funding

Salmon Recovery Funding Board - created in 1999 by the Washington State Legislature, disperses grant funding for salmon recovery projects throughout Washington state.

Some accomplishments from investments from 1999-2012 include:

- Restored 446 miles of habitat, and nearly 14,000 miles of river bank
- Removed 466 barriers preventing fish from migrating
- Restored more than 3,500 acres of estuarine and wetland habitat
- Conserved more than 34,000 acres of critical salmon habitat

$219M
Funding recipients contributing $219M of matching funds

$641M
Has been invested in recovery (including $261M in state funding)

$1M
Spent on restoration results in:
- 15-33 new or sustained jobs
- $2.2-$2.5 million in total economic activity generated

90%
Money invested into restoration stays local – 90% of funds stay within the state, 80% stay within the county where a project is located

3.2x
Money invested into restoration creates 3.2x more jobs than money invested into the oil and gas sector.

16,374 JOBS
Commercial and recreational fishing in Washington supports 16,374 jobs and produces $540M in personal income annually

Accessed 11/3/14
2. NOAA. Table 2: Job Creation per $1 million dollar investment, http://www.habitat.noaa.gov/abouthabitat/habitatconservationjobs.html
Accessed 11/3/14
Accessed 11/3/14
Regional Fisheries Enhancement Groups (RFEG’s)

- A statewide network of 14 non-profit community-based enhancement organizations
- Program created in 1990 by Washington State Legislature to involve local communities, citizen volunteers, and landowners in the state’s salmon recovery efforts
- RFEG’s share unique role of working within their own communities to recover salmon
- Create dynamic partnerships with local, state and federal agencies, Native American tribes, local businesses, landowners, and community members
- Help lead their communities in successful restoration, education, and monitoring projects
- Today RFEG projects are often large-scale, complex projects involving multiple private landowners and intergovernmental relationships on public lands

OUR 25 -YEAR IMPACT

7:1

“Boots on the ground model” stretches every dollar of public investment. Over the last 25 yrs RFEG’s have leveraged base funding at a rate of at least 7:1

3,831 salmon projects completed
661 miles of habitat restored
1,118 Miles of stream reopened
856 fish passage projects completed
78,025,471 fish released

How do we ensure private property rights are protected?

Considerations:
- Private property rights are guaranteed by the U.S. Constitution and other laws
- The results of conservation benefit everyone
- The costs fall unduly on some landowners
- Many landowners are unaware of land-use restrictions
- Critical Areas are sometimes misidentified

Solutions:
- Landowner and regulator education
- Partner with willing landowners on stewardship projects
- Acquire lands for protection or restoration
- Public compensation for lost commercial value of private land
- Conservation Reserve Enhancement Program (CREP)
- Market-based programs
  - Transfer of Development Rights
  - Purchase of Development Rights
  - Mitigation Banking

Floodplains by Design (FbD)

- Public/private collaborative partnership integrating flood risk reduction with habitat protection and restoration.
- Multiple benefits driven approach with longer design time that will:
  - Reduce flood hazards
  - Restore salmon populations
  - Increase agricultural viability
  - Improve water quality
  - Enhance outdoor recreation
- Washington State Legislature provided nearly $80M to support 29 FbD project in three years.
- WRA 8 project funded in 2013 - Lower Cedar River Integrated Floodplain Restoration
Low Impact Development & Green Infrastructure

Low Impact Development (LID) is an approach to land development (or re-development) that works with nature to manage stormwater as close to its source as possible.

LID serves two main purposes:
1. reduces the quantity of runoff
2. improves the water quality of runoff

Green Infrastructure (GI) refers to the management of wet weather flows using LID techniques.

LID employs principles such as preserving and recreating natural landscape features and minimizing impervious surfaces to improve drainage.

Implementing LID is a requirement (where feasible) of the new NPDES stormwater permits in Western Washington.

Examples of LID
- Rain Gardens
- Pervious Pavement
- Green Roofs
- Rain Water Harvesting

Benefits of LID
- Reduces flashy storm events and subsequent flood risk
- Reduces costs of stormwater management and flood control
- Improves water quality
- Improves ground water recharge resulting in higher midsummer river flows
- Visually attractive, so increases property values

1. EPA http://www.ecy.wa.gov/polwaste/green/index.cfm
Trees & Water Quality

Trees:

- **provide shade** keeping water cool
- **reduce erosion** - roots hold soil in place. Less erosion results in clearer and colder water
- **provide leaf litter input** - leaf litter supports stream bugs and the fish that feed on those bugs
- **provides woody debris** - by eventually falling into the river, **woody debris** creates complexity in streams by creating deep pools and places for rearing salmon to avoid predators

Trees Further Away From Streams

Functioning forest areas create water quality benefits as well.

In a functioning forest more water is absorbed and recharges aquifers than in other landscapes.

Aquifers feed streams in late summer helping keep flow levels up and streams cool at a critical period for fish rearing.
Mitigation Banking

Mitigation banking is an innovative, market-based solution that assists developers and replaces impacted habitat with high-quality habitat.

Example:

1. A restoration company constructs a 200 acre wetland on their property in the Snoqualmie valley.

2. A developer wants to build a housing development in Everett that impacts 10 acres of wetlands. They are required to find a way to mitigate for the impacts of construction in order to build.

3. The restoration company offers credits for sale through the mitigation bank.

4. The developer buys a 10 acre wetland credit from the mitigation bank to offset their impact.

5. As a result, the new development does not cause a net loss of habitat quality or quantity.

Benefits of Mitigation Banking:

- Allows developers to easily offset their impacts on habitat by purchasing credits.
- Does not necessarily require public funding.
- Banking systems can be set up so that development increases the overall amount of habitat.
- Mitigation habitat created by banks is higher quality and provides more water quality benefits than mitigation projects created by developers.
- Mitigation wetlands can be created preemptively and start providing benefits before their mitigation credits are sold.
- Associated negative consequence: bank can be in a different basin. This allows some areas to deteriorate to the benefit of other areas.
How it works:

- A developer can purchase development rights from agricultural lands and working forests. These rights permit the developer to build to greater intensity.
- In return, a conservation easement is placed on the areas selling the development rights. The landowner retains ownership and resource uses, but the land cannot be developed or subdivided.

Benefits of TDR:

TDR is good for:

- developers, because they are able to achieve more value from projects.
- landowners, because it respects property rights and puts money in their pockets now while allowing them to continue farming or forestry.
- the community, because it is a market-based solution which does not require public funding.
- the community, because the conservation easements placed on properties ensure that lands critical for properly functioning watersheds and ecosystems are protected. The easement also works to maintain local agriculture, forestry, or habitat.
Resources for Continued Salmon Recovery

- **Sustainable Funding:** The long-term nature of salmon recovery requires dedicated, predictable funding.

- **Increased Funding for Grant Based Work:** Grants are a key funding source for habitat protection and restoration projects. Local, state, and federal grants are vital sources of funds but none are guaranteed. Support for grant funding programs is essential. Local jurisdictions can use utility and surface water management fees to leverage grants.

- **Adequate Staffing:** Need to appropriately build human infrastructure that supports effective project development and management. Many local governments and other partners lack capacity to develop projects when funding opportunities arise.

- **Measuring Success:** To support and inform project implementation and incorporate lessons learned, monitoring project effectiveness and trends in salmon and habitat health are essential.

- **Communicating Regional Benefits:** Education and outreach programs that demonstrate the connection between salmon recovery benefits and other regional priorities and that promote habitat restoration are vital.
Conclusion

- 86% of Puget Sound residents agree that clean up and protection of Puget Sound is an appropriate use of tax dollars.
- Salmon are valuable to us but are already in danger of being lost forever across 3/4 of the state.
- Diminished and degraded habitat, water quality and quantity are the primary limiting factors for salmon recovery.
- Awareness of the severity of the problem and its causes is essential in working towards solutions.

- Collaborative efforts implementing restoration projects benefit landowners, salmon, human and environmental health.
- Recovery efforts create jobs, reduce flood risk, improve habitat for fish, wildlife and humans, and improve land value.
- Recovery plans and solutions exist but are failing to meet their goals due to resource limitations and lack of policy support.
- Land use policy decisions could play a larger role in protecting existing habitat, restoration of lost habitat, and preservation of water conditions crucial to salmon.
## WRIA 8 Salmon Recovery Council Membership 2017

<table>
<thead>
<tr>
<th>Organization</th>
<th>Name</th>
<th>Title</th>
<th>Email/Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>City of Bellevue</td>
<td>John Stokes, Vice-Chair, Delegate</td>
<td>Mayor</td>
<td><a href="mailto:jstokes@bellevuewa.gov">jstokes@bellevuewa.gov</a></td>
</tr>
<tr>
<td>City of Kirkland</td>
<td>Jay Arnold, Delegate</td>
<td>Deputy Mayor/Staff Advisor</td>
<td><a href="mailto:jarnold@kirklandwa.gov">jarnold@kirklandwa.gov</a></td>
</tr>
<tr>
<td>City of Kenmore</td>
<td>Allan VanNort, Delegate/Alternate</td>
<td>Councilmember</td>
<td><a href="mailto:avannort@kenmoregov.org">avannort@kenmoregov.org</a></td>
</tr>
<tr>
<td>City of Kent</td>
<td>Vacant, Delegate</td>
<td>Councilmember/Environmental Engineer/Manager</td>
<td>/253-856-5000</td>
</tr>
<tr>
<td>King County</td>
<td>Rod Dombrowski, Delegate/Alternate</td>
<td>Councilmember/Legislative Aide</td>
<td><a href="mailto:roddombrowski@kingcounty.gov">roddombrowski@kingcounty.gov</a>/Joana.Kohl-Belfoli@kingcounty.gov</td>
</tr>
<tr>
<td>City of Kirkland</td>
<td>Jay Arnold, Delegate</td>
<td>Deputy Mayor</td>
<td><a href="mailto:jarnold@kirklandwa.gov">jarnold@kirklandwa.gov</a></td>
</tr>
<tr>
<td>City of Lake Forest Park</td>
<td>Mark Phillips, Delegate</td>
<td>Councilmember/Councilmember</td>
<td><a href="mailto:mphillips@ci.lfp.com">mphillips@ci.lfp.com</a>/jeff.holman@ci.lfp.com</td>
</tr>
<tr>
<td>City of Maple Valley</td>
<td>Dave Parnello, Delegate/Alternate</td>
<td>Councilmember</td>
<td><a href="mailto:dparnell@maplevalleywa.gov">dparnell@maplevalleywa.gov</a>/bill.allison@maplevalleywa.gov</td>
</tr>
<tr>
<td>City of Mukilch</td>
<td>Vacant, Delegate</td>
<td>Councilmember/Staff Advisor</td>
<td><a href="mailto:cmukilch@ci.mil.cwa.gov">cmukilch@ci.mil.cwa.gov</a></td>
</tr>
<tr>
<td>City of Mercer Island</td>
<td>Dave Wassenaar, City Council</td>
<td>Councilmember/Mayor</td>
<td><a href="mailto:dwassenaar@mercer.gov">dwassenaar@mercer.gov</a>/bruce.hasset@mercer.org</td>
</tr>
<tr>
<td>City of Mill Creek</td>
<td>Susan Kelly, Delegate/Alternate</td>
<td>Councilmember/Staff Advisor</td>
<td><a href="mailto:skelly@cityofmillcreek.com">skelly@cityofmillcreek.com</a>/vanoster@cityofmillcreek.com/marlo@ci.milcreek.com</td>
</tr>
<tr>
<td>City of Mountlake</td>
<td>Doug McCartney, Delegate</td>
<td>Councilmember</td>
<td><a href="mailto:dmcclint@ci.ml.wa.us">dmcclint@ci.ml.wa.us</a></td>
</tr>
<tr>
<td>City of Newcastle</td>
<td>Vacant, Delegate</td>
<td>Councilmember</td>
<td><a href="mailto:anburnett@ci.newcastle-wa.us">anburnett@ci.newcastle-wa.us</a>/auburn@ci.newcastle-wa.gov</td>
</tr>
<tr>
<td>City of Newcastle</td>
<td>Alix Davisman, Delegate/Alternate</td>
<td>Councilmember/Surface Water Program Manager</td>
<td><a href="mailto:audavisman@ci.newcastle-wa.us">audavisman@ci.newcastle-wa.us</a>/auburn@ci.newcastle-wa.gov</td>
</tr>
<tr>
<td>City of Sammamish</td>
<td>Yann Mok, Delegate</td>
<td>Councilmember/Mayor</td>
<td><a href="mailto:ymok@sammamish.us">ymok@sammamish.us</a>/ymok@sammamish.us</td>
</tr>
<tr>
<td>City of Seattle</td>
<td>Delegate/Alternate</td>
<td>Councilmember/Staff Advisor</td>
<td><a href="mailto:kshama.sarum@wattle.wa.gov">kshama.sarum@wattle.wa.gov</a>/ksarum@sammamish.us/ksarum@wattle.wa.gov</td>
</tr>
<tr>
<td>Snohomish County</td>
<td>Vacant, Delegate</td>
<td>Councilmember/Council Staff/Staff Advisor</td>
<td>Brian Sullivan</td>
</tr>
<tr>
<td>City of Woodinville</td>
<td>Paula Waters, Delegate/Alternate</td>
<td>Councilmember</td>
<td><a href="mailto:pwaters@ci.woodinville-wa.us">pwaters@ci.woodinville-wa.us</a>/obrandy-sanders@ci.woodinville-wa.us</td>
</tr>
<tr>
<td>City of Woodway</td>
<td>Carla Nichols, Delegate</td>
<td>Mayor</td>
<td><a href="mailto:cnichtol@townofwoodway.com">cnichtol@townofwoodway.com</a></td>
</tr>
<tr>
<td>Seattle Citystorm</td>
<td>Vacant, Delegate</td>
<td>Councilmember/Mayor</td>
<td><a href="mailto:miny@cityofseattle.gov">miny@cityofseattle.gov</a></td>
</tr>
<tr>
<td>Town of Woodway</td>
<td>Carla Nichols, Delegate</td>
<td>Mayor</td>
<td><a href="mailto:cnichtol@townofwoodway.com">cnichtol@townofwoodway.com</a></td>
</tr>
</tbody>
</table>

### WRIA 8 Membership Group

- **Mid Sound Fisheries Enhancement Group:**
  - N. G. Allan, Delegate/Alternate
  - T. Bell, Delegate

- **Sno-King Watershed Council:**
  - E. Almar, Delegate/Alternate
  - E. N. Anderson, Delegate/Alternate

- **U.S. Army Corp of Engineers (Corps):**
  - Vacant, Delegate
WRIA 8 Salmon Recovery Council Membership 2017

<table>
<thead>
<tr>
<th>Organization</th>
<th>Name</th>
<th>Title</th>
<th>Email/Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Washington Association of Sewer and Water Districts (WASWD)</td>
<td>Gary Schulz, Delegate</td>
<td>Commissioner, Skyway Water &amp; Sewer District</td>
<td><a href="mailto:staff@waswd.org">staff@waswd.org</a></td>
</tr>
<tr>
<td>WASWD</td>
<td>Joan Nolan, Delegate/Ralph Stevick, Alternate</td>
<td>Water Cleanup Specialist/Water Cleanup Specialist</td>
<td><a href="mailto:jnol461@ecy.wa.gov">jnol461@ecy.wa.gov</a>/trsvr461@ecy.wa.gov</td>
</tr>
<tr>
<td>WA State Department of Ecology</td>
<td>Stewart Reinbold, Delegate/Bob Everitt, Alternate</td>
<td>Southern District Team Supervisor/Regional Director</td>
<td><a href="mailto:Stewart.Reinbold@dfw.wa.gov">Stewart.Reinbold@dfw.wa.gov</a>/Bob.Everitt@dfw.wa.gov</td>
</tr>
<tr>
<td>WA State Department of Natural Resources</td>
<td>Vacant, Delegate</td>
<td>Representative</td>
<td></td>
</tr>
<tr>
<td>WA State Department of Natural Resources</td>
<td>Gary Smith, Delegate/Terry Lavender, Alternate</td>
<td>Representative/Citizen Representative</td>
<td></td>
</tr>
</tbody>
</table>

Glossary

Federal & State

**Glossary 1**

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUFFER</td>
<td>Vegetated strip of land separating land uses</td>
</tr>
<tr>
<td>CRITICAL AREA</td>
<td>An area requiring special protection under land use laws e.g., wetlands, habitat areas, geologically hazardous areas</td>
</tr>
<tr>
<td>ECO SYSTEM</td>
<td>An environment of physical characteristics and organisms occurring in a given area</td>
</tr>
<tr>
<td>ESTUARY</td>
<td>An ecosystem where fresh and salt water mix</td>
</tr>
<tr>
<td>INDICATOR SPECIES</td>
<td>A species whose presence reflects the health of its ecosystem</td>
</tr>
<tr>
<td>LID</td>
<td>Low Impact Development e.g., rain gardens, pervious surfaces</td>
</tr>
<tr>
<td>NON-POINT SOURCE</td>
<td>Pollution coming from a large number of locations e.g., automobiles</td>
</tr>
<tr>
<td>POINT SOURCE</td>
<td>Pollution coming from a single location e.g., effluent pipe from sewage treatment</td>
</tr>
<tr>
<td>PROTECTION</td>
<td>Maintaining a functioning ecosystem by restricting use</td>
</tr>
<tr>
<td>RESTORATION</td>
<td>Re-establishing the function of a non-functioning ecosystem</td>
</tr>
<tr>
<td>RIPARIAN ZONE</td>
<td>Areas bordering rivers and other bodies of surface water</td>
</tr>
</tbody>
</table>

**Glossary 2**

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUFFER</td>
<td>Vegetated strip of land separating land uses</td>
</tr>
<tr>
<td>CRITICAL AREA</td>
<td>An area requiring special protection under land use laws e.g., wetlands, habitat areas, geologically hazardous areas</td>
</tr>
<tr>
<td>ECO SYSTEM</td>
<td>An environment of physical characteristics and organisms occurring in a given area</td>
</tr>
<tr>
<td>ESTUARY</td>
<td>An ecosystem where fresh and salt water mix</td>
</tr>
<tr>
<td>INDICATOR SPECIES</td>
<td>A species whose presence reflects the health of its ecosystem</td>
</tr>
<tr>
<td>LID</td>
<td>Low Impact Development e.g., rain gardens, pervious surfaces</td>
</tr>
<tr>
<td>NON-POINT SOURCE</td>
<td>Pollution coming from a large number of locations e.g., automobiles</td>
</tr>
<tr>
<td>POINT SOURCE</td>
<td>Pollution coming from a single location e.g., effluent pipe from sewage treatment</td>
</tr>
<tr>
<td>PROTECTION</td>
<td>Maintaining a functioning ecosystem by restricting use</td>
</tr>
<tr>
<td>RESTORATION</td>
<td>Re-establishing the function of a non-functioning ecosystem</td>
</tr>
<tr>
<td>RIPARIAN ZONE</td>
<td>Areas bordering rivers and other bodies of surface water</td>
</tr>
</tbody>
</table>

Federal Regulatory

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOLDT DECISION</td>
<td>1974 federal court decision upholding tribal treaty rights</td>
</tr>
<tr>
<td>CWA</td>
<td>Clean Water Act</td>
</tr>
<tr>
<td>NPDES</td>
<td>National Pollution Discharge Elimination System</td>
</tr>
<tr>
<td>ESA</td>
<td>Endangered Species Act</td>
</tr>
</tbody>
</table>

State Regulatory

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOREST FISH LAW</td>
<td>Regulates private forest land</td>
</tr>
<tr>
<td>GMA</td>
<td>Growth Management Act</td>
</tr>
<tr>
<td>HPA</td>
<td>Hydraulic Project Approval</td>
</tr>
<tr>
<td>SEPA</td>
<td>State Environmental Policy Act</td>
</tr>
<tr>
<td>SMA</td>
<td>Shoreline Management Act</td>
</tr>
</tbody>
</table>