



State of Washington
Governor's
Salmon Recovery
Office

Statewide Strategy to Recover Salmon

RESPONDING TO FEDERAL
ENDANGERED SPECIES ACT LISTINGS
"THE WASHINGTON WAY"

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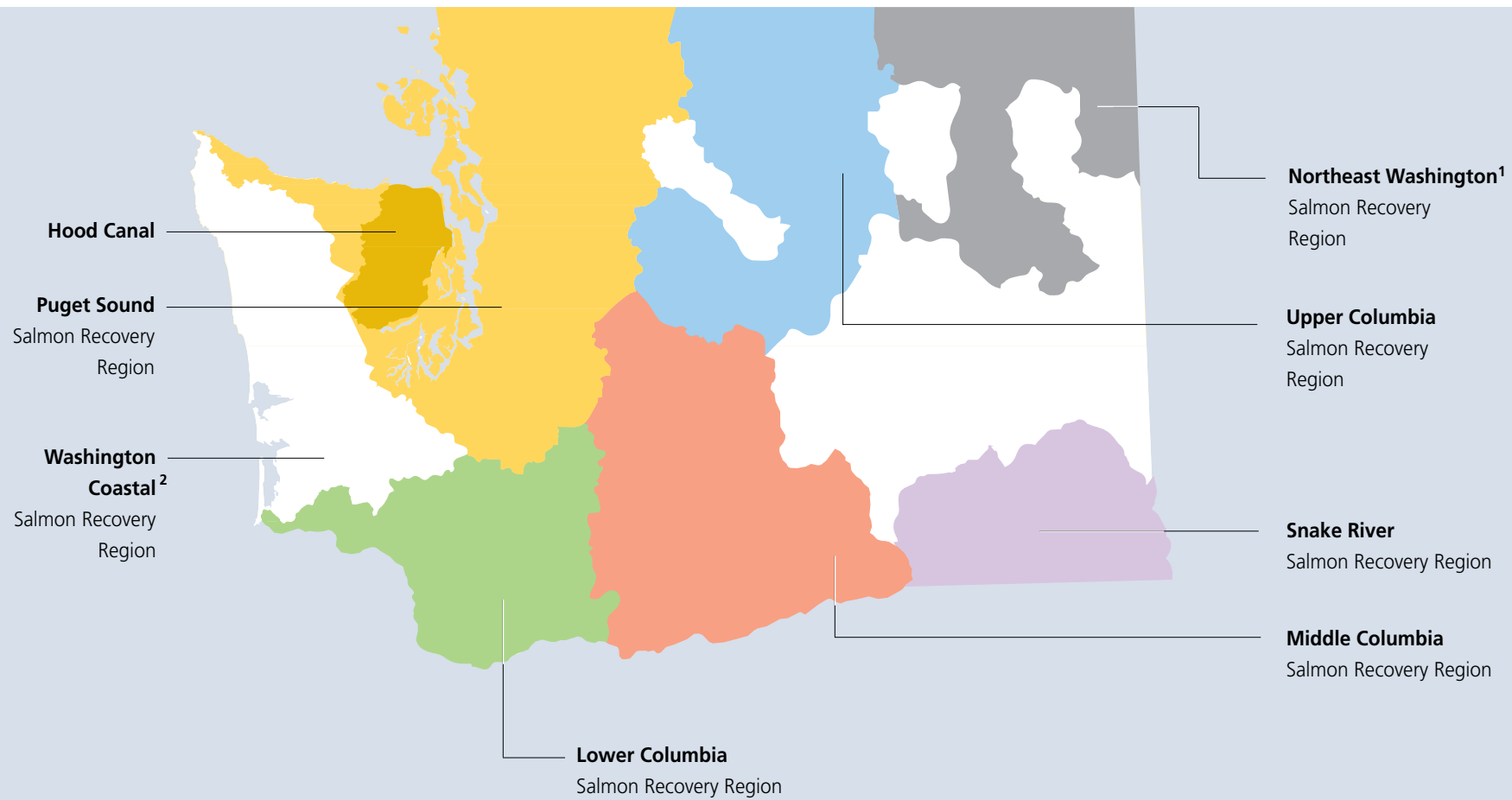
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Statewide Strategy to Recover Salmon

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"THE WASHINGTON WAY"

Salmon Recovery Regions



¹ Not developing salmon recovery plans at this time.

² Lake Ozette Steering Committee, under NMFS guidance, preparing Lake Ozette sockeye recovery plan.

Preface

Washington's Statewide Strategy to Recover Salmon — *Extinction is not an Option* — was published in 1999. It recognized strategic regional and watershed actions were essential to success. In consultation with the National Marine Fisheries Service, United States Fish and Wildlife Service, and Washington Department of Fish and Wildlife, the Governor's Salmon Recovery Office (GSRO) identified seven salmon recovery regions; subsequent to that time, these regions have evolved, and six self-created groups have developed plans that have been submitted jointly with GSRO to the federal agencies as recovery plans under the federal Endangered Species Act section 4(f). These plans also meet the requirement of Washington's Salmon Recovery Act RCW 77.85.030(1).

The Statewide Strategy set a standard for these recovery efforts. It says our vision is to "restore salmon, steelhead, and trout to healthy harvestable levels and improve habitats on which fish rely." The goals include an emphasis on wild productive and diverse populations, a commitment to ensuring our actions benefit salmon, and an approach that encourages participation from citizens and recovery partners. The GSRO approves regional plans that are submitted to the federal agencies, and all regional plans approved by the GSRO meet this standard.

These plans will certainly change as they are implemented. Our commitment to adaptive management requires we evaluate the effectiveness of our actions in accomplishing our goals, and we will adjust as information guides us on this long journey.

// The goals include an emphasis on wild productive and diverse populations, a commitment to ensuring our actions benefit salmon, and an approach that encourages participation from citizens and recovery partners. //

// Our approach must integrate economic and environmental concerns in a way that engenders a new kind of prosperity for our state, one that enriches today without impoverishing tomorrow. //

GOVERNOR
CHRISTINE GREGOIRE



A letter from the Governor

Dear Readers:

Our wild salmon are in trouble. Fifteen salmon species, dispersed throughout 75 percent of Washington State, are listed under the Endangered Species Act. While significant challenges are before us, I have hope for the future. Our state has a tradition of fighting to preserve its quality of life and a commitment to passing on a strong legacy of stewardship to future generations.

The key to creating the recovery plans summarized in this report, and to our success over the long-term, is collaboration. People throughout the state, representing agriculture and business, state and tribal governments, watershed coalitions, volunteer organizations, and other interested stakeholders have participated in a historic process that well may be unique within the United States. We did not wait for the federal government to tell us what to do; we rolled up our sleeves and got to work. We took our own initiative to develop salmon recovery plans that came from the bottom up, not the top down. As Governor, I am proud of this tradition and call it working together "The Washington Way."

Now, the real work begins. We need to implement these plans, translating them into real actions with real results that will benefit both human and fish populations in the generations to come.

We must leverage our resources and clearly demonstrate a good return on taxpayer dollars. Our approach must integrate economic and environmental concerns in a way that engenders a new kind of prosperity for our state, one that enriches today without impoverishing tomorrow.

This is not an easy task. The problems we must address were years in coming and they will take years to correct. But by working together in a spirit of cooperation, by bearing in mind that what we do will make a lasting difference in Washington State, and by renewing our commitment to creative problem solving, I have no doubt that we can get the job done.

Thank you for your interest in, and dedication to, protecting this important part of our shared heritage.

Sincerely,



CHRISTINE O. GREGOIRE
WASHINGTON STATE GOVERNOR
JANUARY 2006

The Endangered Species Act | Listing a Species



To appreciate Washington's recovery plans and get a good picture of what to expect from their implementation, we need first to understand the foundations for listing salmon and steelhead.

The federal government lists a species when it has determined there is sufficient scientific evidence to conclude there is a danger to the continued existence of the plant or animal throughout all or a significant portion of its range. The National Marine Fisheries Service (NMFS) made decisions about Washington's salmon on the basis of two aspects:

- ▶ The species' biological status, and
- ▶ Listing factors that contributed to the species' decline

These two aspects are addressed very specifically by NMFS when they list the species. Status is determined using technical viability criteria, and factors are determined using categories identified in the Endangered Species Act. These same factors must be evaluated when making the decision to de-list.

Biological Status: Viability Criteria

A viable salmonid population (VSP) is one that negligible risk of extinction over a 100-year time frame and supports a minimum number of fish defined by NMFS. NMFS will judge viability of the species, or Evolutionarily Significant Unit (ESU), based on abundance, productivity, distribution, and diversity.

Listing Factors

ESA requires that five criteria be evaluated when making a decision to list a species. These criteria, called "listing factors," are generally analyzed in terms of threats and factors that limit recovery. We usually refer to these threats as the "4 H's" and include habitat, harvest, hatcheries, and hydro, plus natural factors such as disease and predation. NMFS determines the impacts of these factors and what role they play in the decline, as well as protective efforts that may be occurring to ease their effect.

✚ ESA requires that five criteria be evaluated when making a decision to list a species. These criteria, called “listing factors,” are generally analyzed in terms of threats and factors that limit recovery.

Five General Listing Factors in the ESA

- ▶ Present or threatened destruction, modification, or curtailment of a species’ habitat or range
- ▶ Over-utilization for commercial, recreational, scientific, or educational purposes
- ▶ Disease or predation
- ▶ Inadequacy of existing regulatory mechanisms
- ▶ Other natural or human made factors affecting the species’ continued existence

Four Parameters Are Used by NMFS to Define Viability

Abundance This is the number of adults on the spawning grounds - the sizes of populations. NMFS considers abundance important because, all else being equal, smaller populations are at greater risk of extinction than large populations.

Productivity This is population growth rate; that is, over time for each fish that spawns, how many fish return. A population does not change if one fish returns for every fish that spawned. A population cannot persist when productivity is less than that, and grows when more fish return for each spawner.

Distribution This is the distribution of fish among and within habitats they use throughout their life cycle. Habitat is needed for all life stages in a distribution that reduces risk of mortality from catastrophic events, but close enough to allow fish to connect with one another.

Diversity This is variation and includes such things as genetics, life histories, physical traits of the fish (size, age, timing of the runs, migration patterns) and influences of hatchery fish. We need to avoid further reductions in natural diversity so that fish can survive short and long term changes in the environment.

Bull Trout on a Different Path

The US Fish and Wildlife Service listed bull trout in 2000. They drafted a recovery plan that was published for public comment in the Federal Register in 2004. They are currently doing their five-year review of the status of the species. When that is complete, they expect to resume the public process for completion of the recovery plan — likely some time in 2006. We have been assured materials produced in our regional recovery plans will be incorporated as their recovery plans progress.

The Endangered Species Act

Summary of Listing Criteria | Risk of Extinction

SALMON REC. REGION	ESU ¹	CURRENT LISTING ²	RISKS TO VIABILITY ³	LISTING FACTORS ⁴
SNAKE RIVER	Snake River Sockeye	Endangered	Extremely high for all 4 factors	Hydroelectric generation facilities and their operation; agriculture; logging; urbanization (including residential and industrial development); recreation, and harvest
	Snake River Spring/ Summer Chinook	Threatened	Moderately high for abundance and productivity, lower for spatial structure and diversity	
	Snake River Fall Chinook	Threatened	Moderately high for all 4 factors	
	Snake River Basin Steelhead	Threatened	Moderate for abundance, productivity, and diversity; higher for spatial structure	
UPPER COLUMBIA	Upper Columbia River Spring Chinook	Threatened	Strong concern for abundance and productivity, less concern for spatial structure and diversity	Degraded floodplain and channel structure; degraded riparian; impaired fish passage in tributaries; harvest-related adverse effects; mainstem hydro mortality and related effects
	Upper Columbia River Steelhead	Threatened	High for productivity, lower for abundance, diversity, and spatial structure	
MIDDLE COLUMBIA	Middle Columbia River Steelhead	Threatened	Moderate for productivity, spatial structure and diversity, greater for abundance	Harvest; irrigated agriculture (including storage dams, conveyance, and diversions); hydropower development; urbanization and rural development; forestry; road development

1 Evolutionarily Significant Unit. NMFS considers an ESU a “species” under the ESA.

2 As of June 28, 2005.

3 Also called Viable Salmonid Population (VSP) risks. NMFS assesses the risk to species and, hence, whether to list them under the ESA, by evaluating the viability of ESUs. For each ESU, the extinction risk for four factors — abundance, productivity, spatial distribution, and diversity — was assessed. These risks must be addressed to de-list the fish.

4 Listing factors are identified in the ESA and include present or threatened destruction or modification of habitat; over harvest; disease or predation; inadequacy of regulatory mechanisms; other natural or human factors. The effects of hatchery artificial propagation programs were evaluated on the basis of these factors, and for all ESUs the conclusion was that hatchery programs do not substantially reduce extinction risk.

SALMON REC. REGION	ESU ¹	CURRENT LISTING ²	RISKS TO VIABILITY ³	LISTING FACTORS ⁴
LOWER COLUMBIA	Lower Columbia River Chum	Endangered	High for all categories, particularly spatial structure and diversity	Habitat degradation, especially as a result from sedimentation, fragmentation, and loss; hydropower effects; hatchery effects; over harvest in commercial and recreational fisheries; disease and predation; inadequate regulatory mechanisms; non-native species effects
	Lower Columbia River Coho	Threatened	Extremely high for all 4 factors	
	Lower Columbia River Chinook	Threatened	Moderately high for all 4 factors	
	Lower Columbia River Steelhead	Threatened	Moderate for all 4 factors	
HOOD CANAL	Hood Canal Summer Chum	Threatened	High for all categories	Habitat loss, especially degradation and loss of lower floodplain, estuary, and nearshore marine; over-harvest; stream flow changes
PUGET SOUND	Puget Sound Chinook	Threatened	Moderately high for all 4 factors	Passage obstructions; forest management; agricultural practices; urban and rural development; stormwater; toxics; flow conditions; channel function; dredging in estuaries and lower mainstem; floodplain functions; nearshore processes; harvest; enforcement of existing regulations; hatcheries
	Puget Sound Steelhead	Currently under review	Under review	
COASTAL	Ozette Lake Sockeye	Threatened	Moderately high for all 4 factors	Stream and beach sedimentation; loss of riparian areas; loss of large woody debris

The Endangered Species Act | Recovery Plans

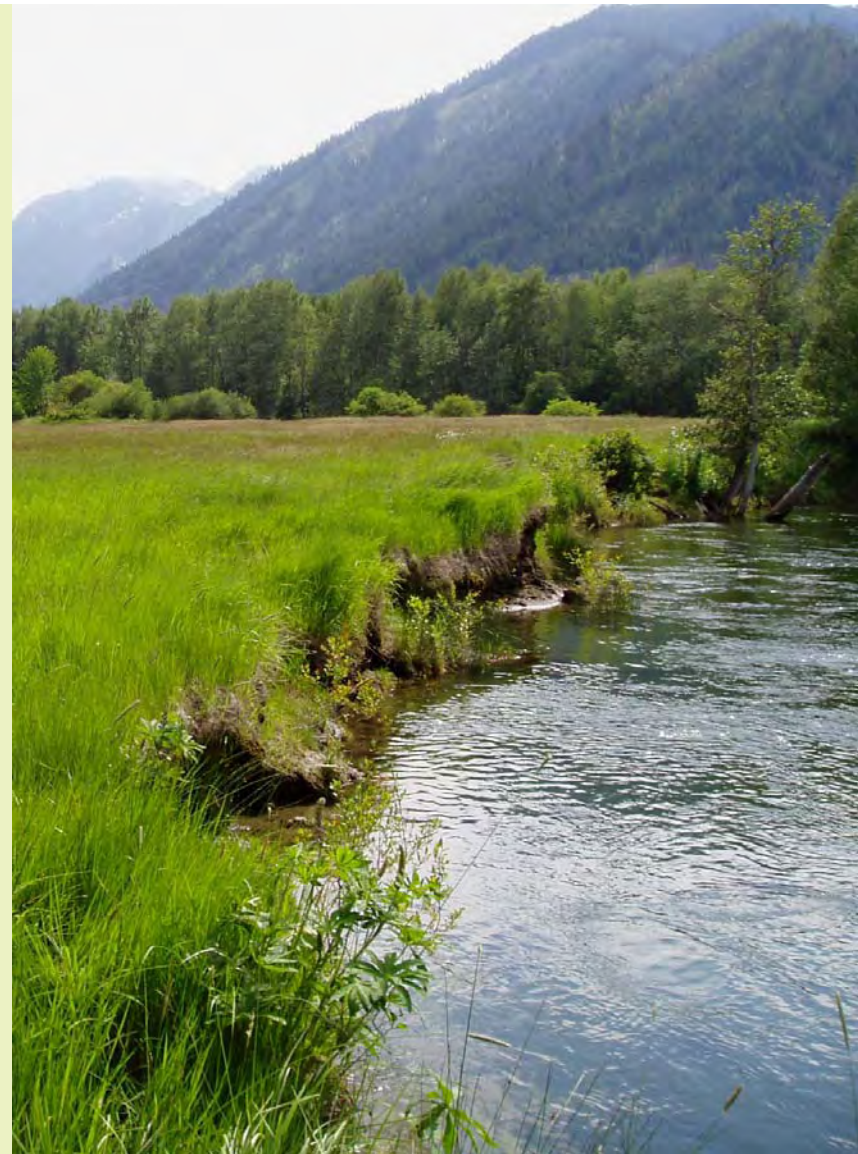
Six Washington salmon recovery organizations have completed draft recovery plans and submitted them to NMFS and USFWS.

Under ESA section 4(f) a recovery plan must include the following:

- ▶ Site-specific management actions necessary for the conservation and survival of the species,
- ▶ Objective, measurable criteria which, when met, would result in a determination that the species be removed from the list (i.e., de-listing), and
- ▶ Estimates of the time required and cost to carry out those measures needed to achieve recovery

In addition to the statutory requirements, NMFS requires that recovery plans contain a more general statement of goals and a recovery strategy that describes the overall approach to recovery for the species.

Washington's recovery plans follow an outline developed by the state and approved by NMFS, and meet criteria established in the ESA. The plans do not obligate any party other than NMFS, and are not enforceable or regulatory. They set goals and identify actions that would, if implemented, lead to recovery of the listed species. In developing these plans through local groups, we believe it is more likely that the actions identified reflect local circumstances and will be undertaken. Thus, we have a better chance of recovering species because of this local ownership.



The Endangered Species Act | De-listing a Species

ESA de-listings occur at a point when a listed species and its ecosystem are restored and the future is safeguarded so that protections under the ESA are no longer needed. Decisions to de-list are based on a species' biological status (the biological de-listing criteria) and on the status of the listing factors (both threats and limiting factors) to the species, as identified in ESA section 4(a)(1).

The ESA listing factors, and not recovery plans, are the legal basis upon which de-listing decisions will be made. These listing factors were published in the Federal Register on June 14, 2004 for all west coast salmonid ESUs. In this notice, NMFS described its process for making listing determinations, including scientific analyses that evaluated ESU viability, factors for decline, and efforts being made to protect the ESU.

NMFS must conduct status reviews of all listed ESUs at least once every 5 years to determine whether the ESUs should be removed from the list or changed in status.

Criteria for Review Include:

- ▶ **Technical analyses and recommendations regarding viability criteria, including**
 - ▶ Number of viable populations
 - ▶ Number and status of populations
 - ▶ Status of core populations
 - ▶ Distribution of viable populations relative to the range of historical conditions
 - ▶ Linkages and connectivity among viable populations
 - ▶ Diversity of life history and phenotypes expressed
 - ▶ Considerations regarding catastrophic risk
- ▶ **Any new information on population and ESU status and new advances in risk evaluation methodologies**
- ▶ **Analysis of listing factors (threats) criteria, including**
 - ▶ Present or threatened destruction, modification, or curtailment of a species' habitat or range
 - ▶ Over-utilization for commercial, recreational, or educational purposes
 - ▶ Disease or predation
 - ▶ Inadequacy of existing regulatory mechanisms
 - ▶ Other natural or man-made factors affecting continued existence

Fish Biological Factors

Do we know that the ESU is viable?

↓
In major groups of populations

- ▶ Abundance
- ▶ Productivity
- ▶ Distribution
- ▶ Diversity

↓
If yes

Human-Related Factors

Have we addressed the factors that lead to the listings?

↓
ESA listing factors (threats)

- ▶ Habitat
- ▶ Hydropower
- ▶ Harvest
- ▶ Disease / predation
- ▶ Regulatory mechanisms
- ▶ Hatcheries
- ▶ Natural threats

↓
If yes

↓
De-List

Puget Sound Salmon Recovery Region Plan Chinook



CHRIS DRIVDAHL

GOAL

To recover self-sustaining, harvestable salmon runs in a manner that contributes to the overall health of Puget Sound and its watersheds and allows us to enjoy and use this precious resource in concert with our region's economic vitality and prosperity.

// A fundamental assumption of this plan is that local watershed efforts are the engine that will lead the region to recovery. //

SHARED STRATEGY FOR
PUGET SOUND



Plan Timeframe
50 years



Estimated Cost
\$1.42 billion
for first 10 years



**Actions Identified
to Implement Plan**
More than 1000



Status
Harvest, hatchery,
habitat plan submitted
to NMFS 06/2005

**Human
Population**
4,093,500

Counties
All or parts of Whatcom,
Skagit, Island, San Juan,
Snohomish, King, Pierce,
Thurston, Mason, Kitsap,
Jefferson, and Clallam

Treaty Tribes
Lummi Nation, Nooksack,
Stillaguamish, Jamestown S'Klallam,
Muckleshoot, Nisqually, Port Gamble
S'Klallam, Lower Elwha S'Klallam,
Puyallup, Sauk-Suiattle, Skokomish,
Squaxin Island, Suquamish, Swinomish,
Tulalip, Upper Skagit

Listed Fish
Chinook, bull
trout¹

**Regional Recovery
Organization**
Puget Sound Shared
Strategy

MAJOR FACTORS LIMITING RECOVERY

- ▶ Degraded floodplain and in-river channel structure
- ▶ Degraded nearshore/marine and estuarine conditions and loss of associated habitat
- ▶ Riparian area degradation and loss of in-river large woody debris
- ▶ Excessive sediment in spawning gravels
- ▶ Degraded water quality and temperature
- ▶ Impaired instream flows
- ▶ Barriers to fish passage

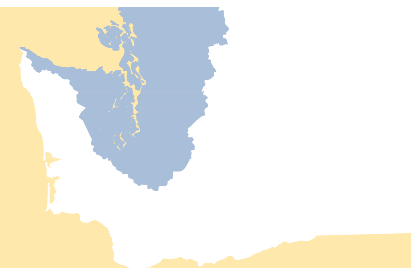
KEY ACTIONS RECOMMENDED TO RECOVER FISH

January 2006 to June 2007

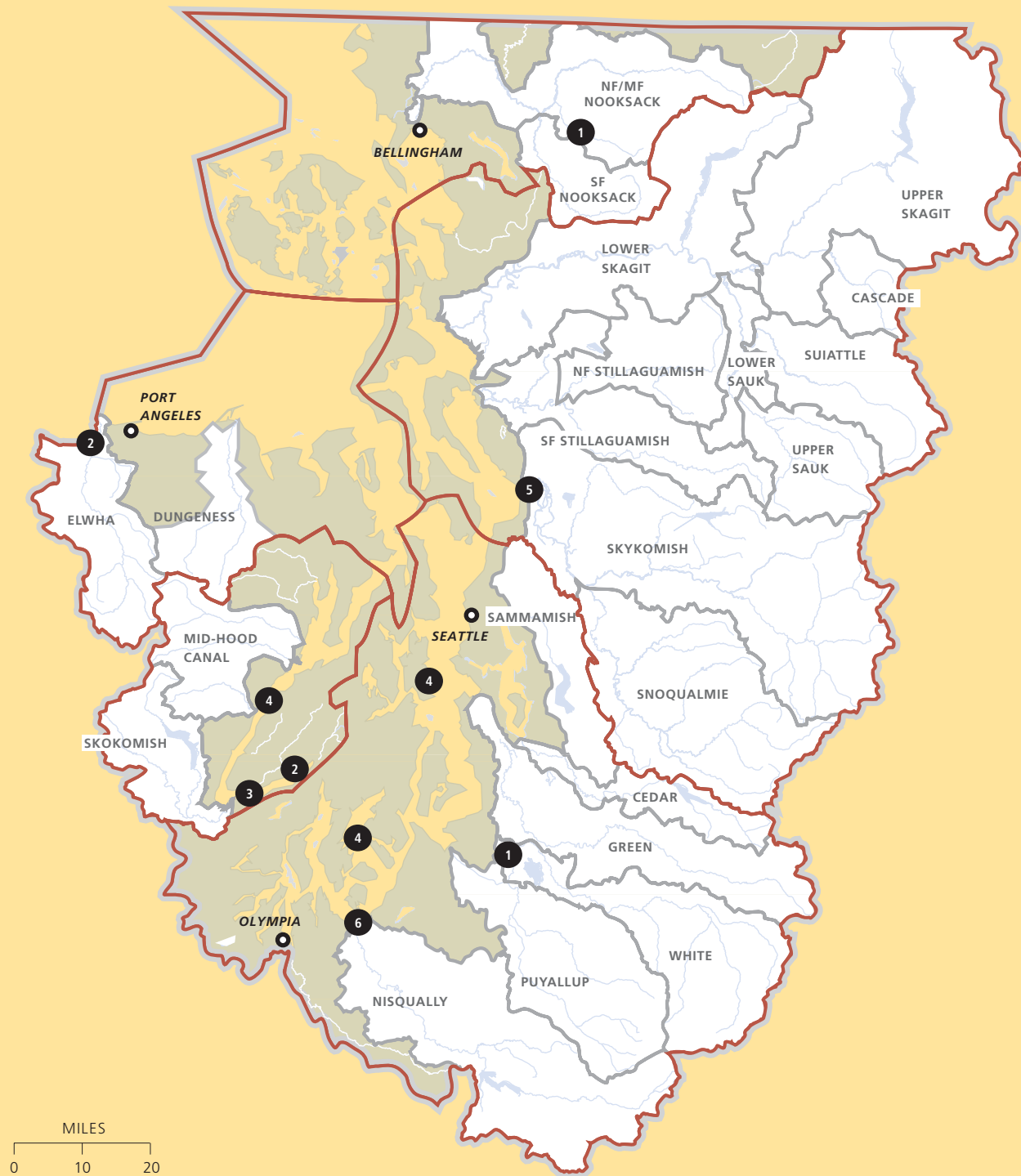
- ▶ Implement high priority habitat actions in estuaries, floodplains, and riparian areas
- ▶ Protect most seriously threatened habitats and processes and coordinate protection plans across watersheds
- ▶ Identify restoration and protection priorities for nearshore
- ▶ Initiate programs to help farmers and other landowners protect salmon on private lands
- ▶ Define watershed and regional adaptive management procedures
- ▶ Integrate habitat actions with co-manager harvest goals and all hatcheries

Long Term

- ▶ Protect functioning habitat and habitat-forming processes
- ▶ Implement habitat restoration actions according to key factors and threats limiting recovery
- ▶ Remove major fish barriers across region
- ▶ Coordinate adaptive management and monitoring programs at regional and watershed levels
- ▶ Manage hatcheries for benefit of wild fish
- ▶ Reduce harvest of listed fish
- ▶ Develop robust regulatory and incentive programs to improve habitat protection on private property



¹ USFWS previously published a bull trout recovery plan (2004). The status of bull trout is currently under review and is expected to be complete by early 2006. At that time, USFWS will work with the Regional Board, WDFW, GSRO to incorporate elements of the State's plan into the federal plan.



Chinook

Key Actions

Puget Sound Salmon Recovery Region

Although each watershed area has its own individualized, tailored plan, there are common types of actions that all watersheds included in their chapters. These actions are related to the threats or limiting factors affecting salmon.

1

Floodplain Reconnection

Reconnecting two oxbows in the White River (\$4.5M) will open over 100 acres of floodplain habitat to juvenile fish. Floodplain projects are one of the White's best chances at reducing the risk of extinction of early run Chinook, a population critical to regional success. Setting back dikes and levees to reconnect mainstem rivers with their floodplains is a priority in over half of the Puget Sound watersheds.

2

Fish Barriers

Removing the Middle Fork Diversion Dam on the Nooksack River (\$5M) will open up 16 miles of habitat and increase the North Fork Nooksack population by over 30%. Opening access for fish—from the Elwha Dam to hundreds of road culverts has immediate benefits and is an important short-term element of most Puget Sound strategies.

ALL PHOTOS COURTESY SHARED STRATEGY FOR PUGET SOUND



Landowner Incentives

Across the densely populated Puget Sound, watersheds will work to engage landowners and communities in restoring the resource. For example, Hood Canal stakeholders are developing a creative program that provides materials and support to nearshore landowners to improve habitat conditions and reduce nonpoint pollution.



Marine Shorelines

In the next few years, scientists will have assessed 2,500 miles of Puget Sound marine shoreline to identify the highest priority sites for restoration and protection. Soon stakeholders will begin implementing the top projects identified. Nearshore habitats that provide food and shelter to migrating salmon are a vital piece of the regional recovery strategy, and their protection requires close partnerships among agencies, tribes, nonprofits, and landowners.



Estuaries

Estuary restoration is one of the most important actions Sound-wide, with over 3/4 of the watersheds ranking it a top priority. Restoring and protecting 2,720 acres in Snohomish estuary (\$25M) will double the area of functioning habitat in the estuary, a key watershed priority for increasing survival rates of juvenile fish.



Habitat Protection

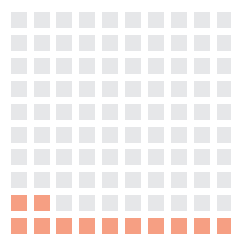
With a strategic combination of voluntary conservation easements, land acquisition, and regulatory approaches, the Nisqually watershed aims to achieve a formal commitment to protection in 95% of estuary habitat, 90% of mainstem river shoreline, and 85% of shorelines in two major tributaries. As the population of the region steadily increases, protecting functioning habitat and watershed processes will be a critical element of every watershed strategy.

Puget Sound Salmon Recovery Region Chinook

Chinook Spawner Abundance

Population	1996-2000	Low Productivity Target ¹	High Productivity Target ²
NF Nooksack	120	16,000	3,800
SF Nooksack	200	9,100	2,000
Lower Skagit	2,300	16,000	3,900
Upper Skagit	8,920	26,000	5,380
Upper Cascade	330	1,200	290
Lower Sauk	660	5,600	1,400
Upper Sauk	370	3,030	750
Suiattle	420	610	160
NF Stillaguamish	660	18,000	4,000
SF Stillaguamish	240	15,000	3,600
Skykomish	1,700	39,000	8,700
Snoqualmie	1,200	25,000	5,500
North Lake WA	194*	4,000	1,000
Cedar	398*	8,200	2,000
Green	7,191*	27,000	Unknown
White	329*	Unknown	Unknown
Puyallup	2,400	18,000	5,300
Nisqually	890	13,000	3,400
Skokomish	1,500*	Unknown	Unknown
Mid-Hood Canal	389	5,200	1,300
Dungeness	123*	4,700	1,200
Elwha	1,319*	17,000	6,900
Total	32,853	271,640	60,580

* DATA 1987-2001

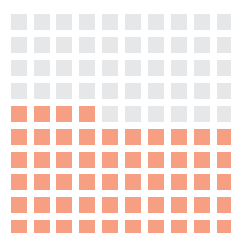


1 BOX = 1%

Total Abundance Low Productivity Target
271,640

Total Abundance 1996-2000
32,853 (12% of Goal)

¹ This is one adult fish returning from the ocean for each spawner.



Total Abundance High Productivity Target
60,580

Total Abundance 1996-2000
32,853 (54% of Goal)

² This is the number of spawners at the point where the population provides the highest sustainable yield for every spawner.

Chinook Productivity

Population	Present (Short Term Trend) ³	Goal
NF Nooksack	1.42	3.40
SF Nooksack	1.07	3.60
Lower Skagit	1.06	3.00
Upper Skagit	1.06	3.80
Upper Cascade	1.05	3.00
Lower Sauk	1.03	3.00
Upper Sauk	.97	3.00
Suiattle	1.00	2.80
NF Stillaguamish	1.06	3.40
SF Stillaguamish	1.00	3.30
Skykomish	1.07	3.40
Snoqualmie	1.10	3.60
North Lake WA	1.04	3.00
Cedar	.97	3.10
Green	1.05	Unknown
White	1.14	Unknown
Puyallup	.96	2.30
Nisqually	1.06	2.30
Skokomish	1.04	Unknown
Mid-Hood Canal	1.11	3.00
Dungeness	1.07	3.00
Elwha	.97	4.60

Abundance goal:

This is the number of adults needed on the spawning grounds to achieve recovery. Wherever possible it is expressed in natural spawner numbers.

Present abundance:

This is expressed as an average over a specified period of time.

Productivity:

Population growth rate. This is how many fish return for each fish that spawns. A population must have productivity greater than 1 to increase over time.

³ Calculated on all spawners.

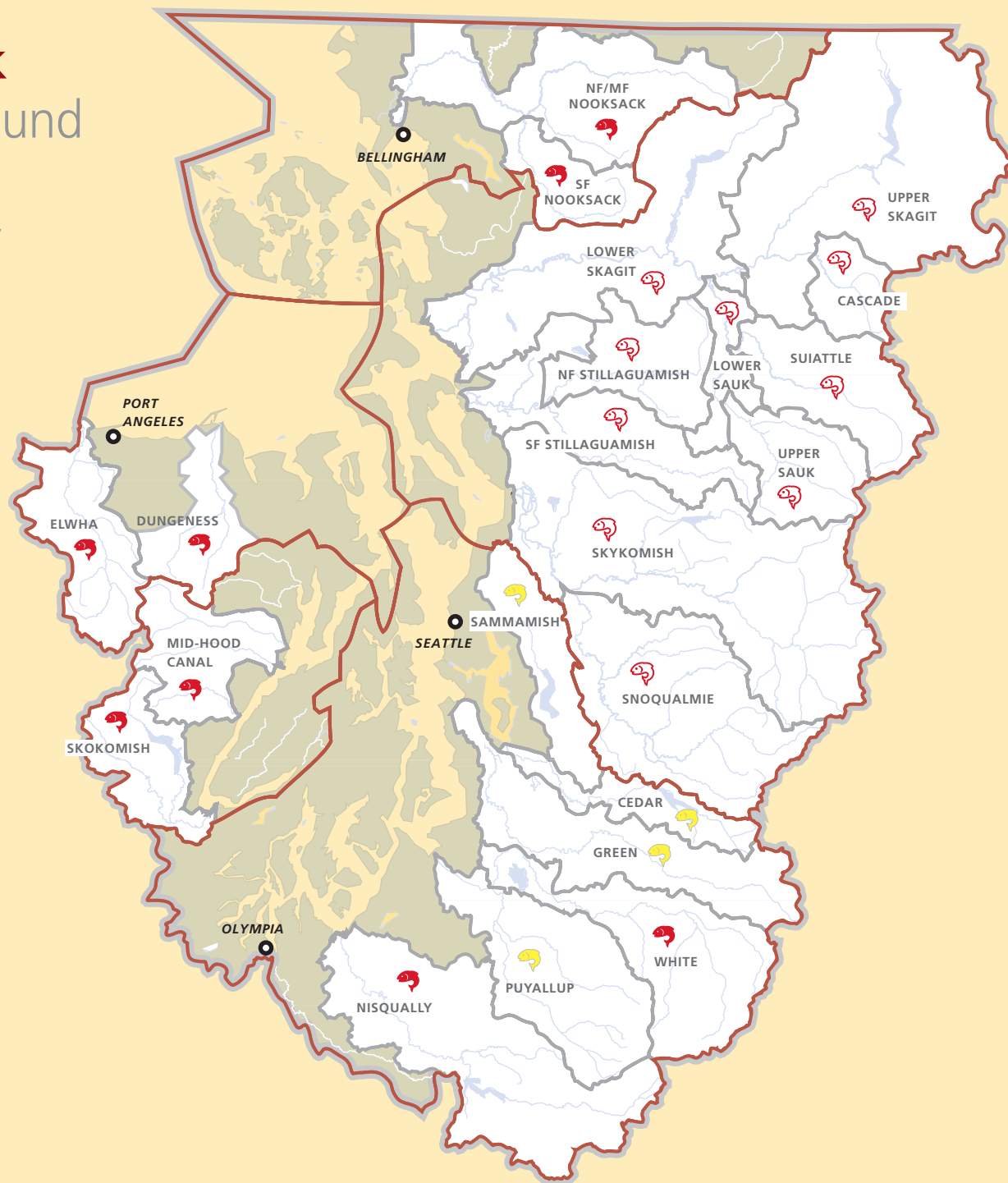
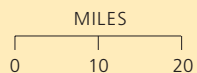
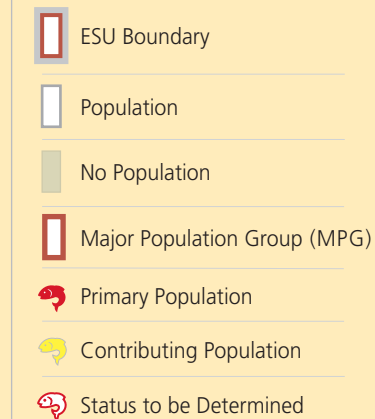


CHINOOK

Oncorhynchus tshawytscha

Live 3-6 years;
majority leave
freshwater during
their first year,
making extensive use
of protected estuary
and nearshore
habitats

Chinook Puget Sound Salmon Recovery Region



Puget Sound Salmon Recovery Region Plan

Hood Canal Summer Chum¹



CHRIS DRIVDAHL

GOAL

To protect, restore and enhance the productivity, production and diversity of Hood Canal/Eastern Strait of Juan de Fuca summer chum salmon and their ecosystems to provide surplus production sufficient to allow future directed and incidental harvests of summer chum salmon. The HCCC Board, in considering a recovery plan that can be implemented and meets the desires of the land-use (Counties) and Tribal authorities, further adds that a summer chum salmon recovery plan be designed to provide the Counties with as much certainty as is possible regarding development, growth and land use; as much certainty as is possible for Tribal goals and objectives; and as much certainty as is possible for private landowners.

// ...the Summer Chum Recovery Plan will provide a logic and rationale for recovery of summer chum salmon populations that can be understood by County Commissioners, Tribal governments, local and regional decision-makers and the public. //

HOOD CANAL
COORDINATING
COUNCIL



Plan Timeframe

Initial focus is
12 years



Estimated Cost

\$136.1 million



Actions Identified to Implement Plan

179



All H plan submitted
to NMFS 11/2005

**Human
Population**
71,391

Counties
Parts of Mason,
Kitsap, Jefferson,
and Clallam

Treaty Tribes
Skokomish,
Port Gamble S'Klallam,
Jamestown S'Klallam, Lower
Elwha Klallam, Suquamish

Listed Fish
summer chum,
bull trout,²
Chinook

**Regional Recovery
Organization**
Hood Canal Coordinating
Council

MAJOR FACTORS LIMITING RECOVERY

- ▶ Loss of estuary / nearshore/freshwater habitat
- ▶ Altered floodplain and channel morphology
- ▶ Sedimentation
- ▶ Riparian and instream degradation
- ▶ Altered hydrology due to habitat loss

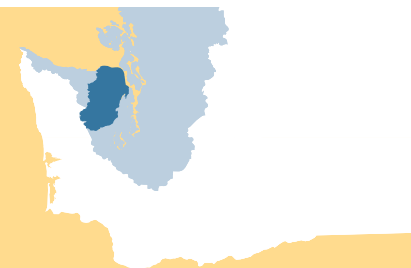
KEY ACTIONS RECOMMENDED TO RECOVER FISH

January 2006 to June 2007

- ▶ Riparian and estuary restoration
- ▶ County land use enforcement analysis/needs assessment
- ▶ Support zoning regulations that foster salmon recovery
- ▶ Floodplain comprehensive management plans
- ▶ Analysis of bulkheads regulations and alternative technologies
- ▶ Develop wetland rating system
- ▶ Develop public benefit rating system programs for counties
- ▶ Expand the geographic reach of the Community Nearshore Restoration Program

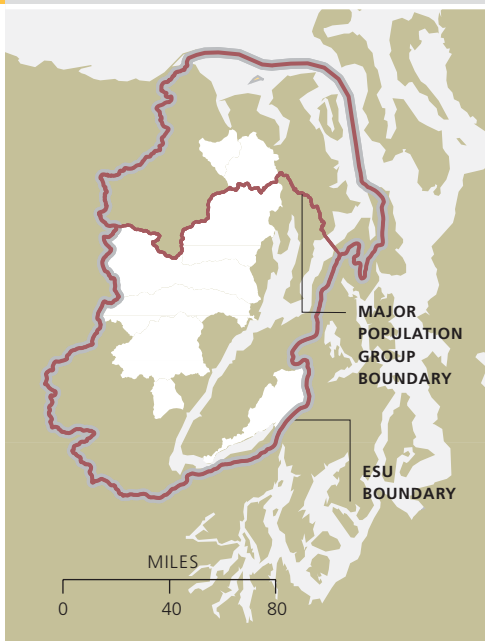
Long Term

- ▶ Address floodplain and estuarine habitat loss along Highway 101 and Seabeck Highway NW
- ▶ Implementation of US Forest Service road maintenance and road abandonment plan
- ▶ Voluntary actions to remove railroad grade, fill, dikes, and levees
- ▶ Expand geographic reach of the Community Nearshore Restoration Program throughout the ESU
- ▶ Support zoning regulations that foster salmon recovery
- ▶ Monitor effectiveness of actions to facilitate adaptive management



¹ Hood Canal Coordinating Council has asked that the summer Chum ESU be designated a salmon recovery region; the request is being evaluated by GSRO.
² USFWS previously published a bull trout recovery plan (2004). The status of bull trout is currently under review and is expected to be complete by early 2006. At that time, USFWS will work with the Regional Board, WDFW, GSRO to incorporate elements of the State's plan into the federal plan.

Puget Sound Salmon Recovery Region Hood Canal Summer Chum



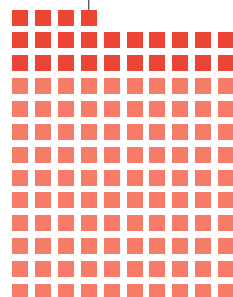
Hood Canal Summer Chum Evolutionarily Significant Unit (ESU) and Context Area

- ESU Boundary
- Major Population Group (MPG)

Summer Chum Spawner Abundance

Population	Present	Goal
Quilcene	8,059	2,860
Dosewallips	2,777	1,930
Duckabush	1,423	2,060
Hama Hama	792	3,790
Lilliwaup	229	1,960
Union	2,000	340
Salmon/Snow	2,159	970
Jimmycomelately	231	330
Total	17,670	14,240

**Total Spawner
Abundance Present**
17,670 (124% of Goal)



**Total Spawner
Abundance
Goal**
14,240

Present abundance
This is expressed as an average from 1993 to 2004.

Abundance goal
This is the number of adults needed on the spawning grounds to achieve recovery. Wherever possible it is expressed in natural spawner numbers.

Summer Chum Productivity

Population	Present*	Goal
Quilcene	Analyses in Progress	1.60
Dosewallips	Analyses in Progress	1.60
Duckabush	Analyses in Progress	1.60
Hama Hama	Analyses in Progress	1.60
Lilliwaup	Analyses in Progress	1.60
Union	Analyses in Progress	1.60
Salmon/Snow	Analyses in Progress	1.60
Jimmycomelately	Analyses in Progress	1.60
Total	Analyses in Progress	1.60

*Expected Summer 2006

Productivity: Population growth rate. This is how many fish return for each fish that spawns. A population must have productivity greater than 1 to increase over time.



Salmon Creek Channel Restoration



Chimacum Creek Monitoring and Assessment



Indian George Creek / Quilcene Bay Creosote and Fill Removal



CHUM

Oncorhynchus keta

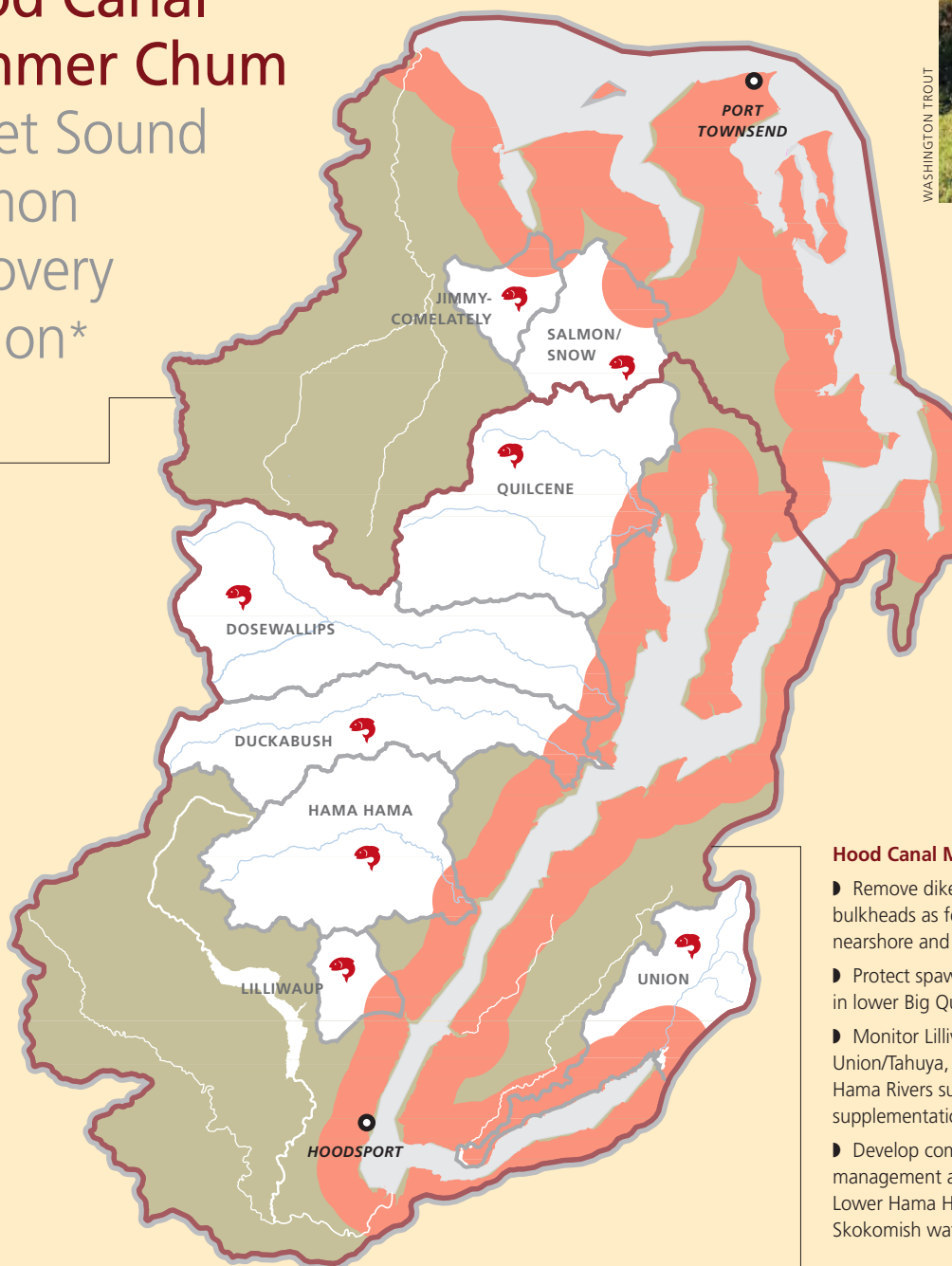
Live 3-5 years; spend more time in marine waters than any other Pacific salmon; form schools; redds usually dug in mainstem or side channels of low gradient streams, just above tidal influence

Hood Canal Summer Chum Puget Sound Salmon Recovery Region*

Eastern Strait of Juan de Fuca MPG Key Actions

- ▶ Restore Jimmycomelately Creek-Sequim Bay Estuary
- ▶ Enforce and monitor zoning for Jimmycomelately watershed
- ▶ Implement USFS road maintenance and abandonment plans
- ▶ Implement community nearshore restoration program for Discovery Bay
- ▶ Remove fill, levees along estuary and nearshore to restore marsh and tide flats
- ▶ Decommission USFS roads
- ▶ Purchase remaining estuary parcels, floodplain
- ▶ Restore nearshore and estuarine habitats
- ▶ Restore freshwater rearing and spawning habitats

* Hood Canal Coordinating Council has petitioned the Governor's Salmon Recovery Office for status as a region.



WASHINGTON TROUT



Dosewallips Saltmarsh Levee Restoration

- ESU Boundary
- Major Population Group (MPG)
- Population
- No Population
- Priority Habitat
- Primary Population

0 10 20
MILES

Hood Canal MPG Key Actions

- ▶ Remove dikes, landfill, and bulkheads as feasible and restore nearshore and estuarine habitats
- ▶ Protect spawning and rearing flows in lower Big Quilcene
- ▶ Monitor Lilliwaup Creek, Union/Tahuya, Quilcene and Hama Hama Rivers summer chum supplementation
- ▶ Develop comprehensive floodplain management and restoration plan for Lower Hama Hama, Duckabush, Skokomish watersheds

Lower Columbia Salmon Recovery Region Plan



CHRIS DRIVDAHL

GOAL

Washington lower Columbia salmon, steelhead, and bull trout are recovered to healthy, harvestable levels that will sustain productive sport, commercial, and tribal fisheries through the restoration and protection of the ecosystems upon which they depend and the implementation of supportive hatchery and harvest practices; and the health of other native fish and wildlife species in the lower Columbia will be enhanced and sustained through the protection of the ecosystems upon which they depend, the control of non-native species, and the restoration of balanced predator/prey relationships.

// The Lower Columbia Fish Recovery Board is committed to finding solutions that restore fish and provide for the needs of the citizens of the region. **//**

**LOWER COLUMBIA FISH
RECOVERY BOARD**



Plan Timeframe
25 years



Estimated Cost
Under development



**Actions Identified
to Implement Plan**
More than 650



Status
All H interim recovery
plan for Washington
adopted by NMFS
2/2006

**Human
Population**
544,500

Counties
Clark, Cowlitz,
Lewis, Skamania,
and Wahkiakum,
and portions
of Pacific and
Klickitat

Treaty Tribes
No Treaty Tribe Reservations
are present. Cowlitz Tribe is
federally recognized

Listed Fish
Chinook, chum,
coho, steelhead and
bull trout¹

**Regional Recovery
Organization**
Lower Columbia Fish
Recovery Board

MAJOR FACTORS LIMITING RECOVERY

- ▮ Degraded floodplain and channel structure
- ▮ Stream flows in tributaries altered
- ▮ Impaired passage in tributaries
- ▮ Excessive sediment and temperatures in tributaries
- ▮ Altered channel morphology
- ▮ Degraded riparian habitat
- ▮ Hatchery impacts
- ▮ Harvest impacts
- ▮ Predator harassment of spawners

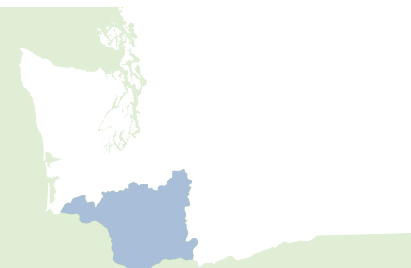
KEY ACTIONS RECOMMENDED TO RECOVER FISH

January 2006 to June 2007

- ▮ Update plan to address coho listing
- ▮ Develop and initiate research, monitoring, and adaptive management
- ▮ Implement regulations and programs to protect existing habitat
- ▮ Ensure harvest supports recovery
- ▮ Eliminate adverse impacts of hatcheries on wild fish
- ▮ Complete regional barrier inventory and prioritization
- ▮ Restore key reaches for primary and contributing populations
- ▮ Promote public participation in recovery

Long Term

- ▮ Establish regional priorities for habitat
- ▮ Correct fish passage to high quality habitat
- ▮ Rebuild listed populations with hatchery supplementation
- ▮ Implement harvest measures that ensure protection of listed fish
- ▮ Manage streamflow and water rights in priority reaches
- ▮ Monitor progress, effectiveness, and trends
- ▮ Promote public participation in recovery



¹ USFWS previously published a bull trout recovery plan (2002). The status of bull trout is currently under review and is expected to be complete by early 2006. At that time, USFWS will work with the Regional Board, WDFW, GSRO to incorporate elements of the State's plan into the federal plan.

Lower Columbia Salmon Recovery Region Chum

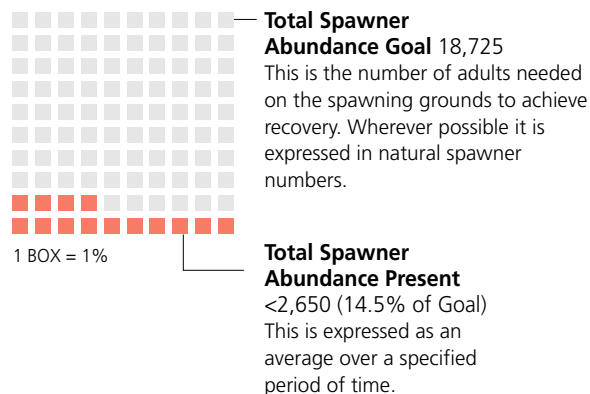


Lower Columbia River Chum Evolutionary Significant Unit (ESU) and Context Area

- ESU in Washington
- Major Population Group (MPG)
- ESU in Oregon

Chum Spawner Abundance

Population	Present	Goal
Grays/Chinook	960	6,000
Elochoman/Skamokawa	<150	1,100
Mill/Abernathy/Germany	<150	1,100
Cowlitz	<150	600
Kalama	<150	150
Lewis	<150	1,100
Salmon	<150	75
Washougal	<150	5,200
Lower Gorge	542	2,800
Upper Gorge	<100	600
Total	<2,650	18,725



Chum Productivity

Population	Present	Goal
Grays/Chinook	2.3	6.4
Elochoman/Skamokawa	1.9	2.7
Mill/Abernathy/Germany	1.8	2.7
Cowlitz	1.7	2.2
Kalama	1.9	1.9
Lewis	2.2	2.7
Salmon	<1.0	<1.0
Washougal	1.5	9.6
Lower Gorge	2.6	8.2
Upper Gorge	<1.0	1.9

Productivity:
Population growth rate. This is how many fish return for each fish that spawns. A population must have productivity greater than 1 to increase over time.



CHUM

Oncorhynchus keta

Live 3-5 years;
utilize lower reaches, slow-moving water, side channels of mainstem or tributaries; spawn mid fall to early spring; spend little time in freshwater after emerging from redds, but up to 4 months in estuaries

Chum Lower Columbia Salmon Recovery Region

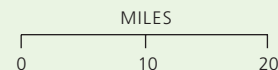
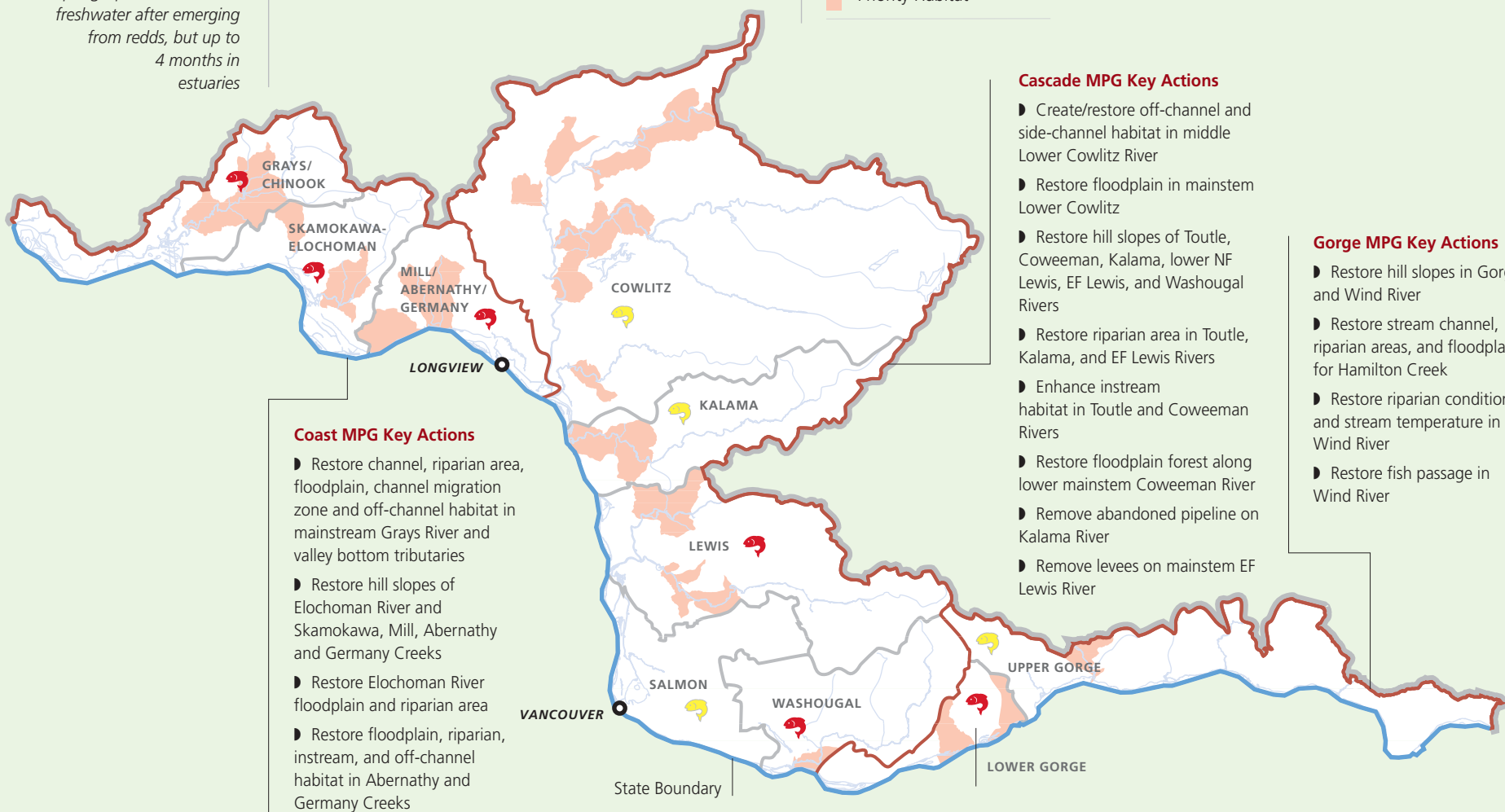
Lower Columbia River Chum

- ESU in Washington
- Major Population Group (MPG)
- Population
- Primary Population
- Contributing Population
- Priority Habitat

LOWER COLUMBIA FISH RECOVERY BOARD



Woods Landing Chum Spawning Area



Lower Columbia Salmon Recovery Region Steelhead

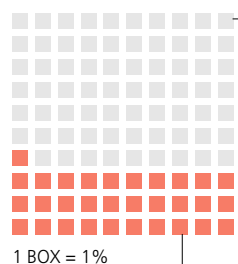


Lower Columbia River Steelhead Evolutionary Significant Unit (ESU) and Context Area

- ESU in Washington
- Not in ESU, but in Plan
- Major Population Group (MPG)
- ESU in Oregon

Steelhead Spawner Abundance

Population	Present	Goal
Grays/Chinook	150	600
Elochoman/Skamokawa	150	400
Mill/Abernathy/Germany	150	600
Lower Cowlitz	Unknown	300
Upper Cowlitz	0	300
Cispus	0	300
Tilton	0	150
SF Toutle	453	1,600
NF Toutle	176	700
Coweeman	228	800
Kalama	541	650
Kalama (Summer)	291	700
NF Lewis	Unknown	300
NF Lewis (Summer)	Unknown	75
EF Lewis	77	600
EF Lewis (Summer)	463	200
Salmon	Unknown	300
Washougal	421	500
Washougal (Summer)	136	700
Lower Gorge	Unknown	200
Upper Gorge	Unknown	50
Upper Gorge (Summer)	391	1,600
Total	3,627	11,625



1 BOX = 1%

Total Spawner Abundance Goal 11,625

This is the number of adults needed on the spawning grounds to achieve recovery. Wherever possible it is expressed in natural spawner numbers.

Total Spawner Abundance Present 3,627 (31%)

This is expressed as an average over a specified period of time.

Steelhead Productivity

Population	Present	Goal
Grays/Chinook	3.6	4.5
Elochoman/Skamokawa	3.4	3.8
Mill/Abernathy/Germany	4.1	5.2
Lower Cowlitz	1.7	1.8
Upper Cowlitz	<1.0	2.0
Cispus	<1.0	2.0
Tilton	<1.0	1.0
SF Toutle	2.9	8.5
NF Toutle	2.6	2.8
Coweeman	2.8	4.0
Kalama (Winter)	3.3	7.0
Kalama (Summer)	3.7	4.1
NF Lewis (Winter)	1.1	1.1
NF Lewis (Summer)	Not Determined (ND)	ND
EF Lewis	2.1	2.7
EF Lewis (Summer)	1.4	1.4
Salmon	1.7	1.7
Washougal (Winter)	2.2	2.2
Washougal (Summer)	2.9	5.1
Lower Gorge (Winter)	11.7	17.7
Upper Gorge (Winter)	2.6	2.6
Upper Gorge (Summer)	2.7	4.8

Productivity:

Population growth rate. This is how many fish return for each fish that spawns. A population must have productivity greater than 1 to increase over time.



STEELHEAD
Oncorhynchus mykiss

Live 4-7+ years;
typically spawn mid
winter to late spring in
rivers and tributaries in
upper watersheds;
spend 1-3 years in
freshwater river and
tributary main
channels.

Steelhead

Lower Columbia Salmon Recovery Region

Coast MPG Key Actions

- Restore channel, riparian, channel migration zone, and off-channel habitat in mainstem Grays River
- Restore hill slopes in Grays, and Elochoman Rivers, and Skamokawa, Mill, Abernathy, and Germany Creeks.

- Restore Elochoman River floodplain
- Restore floodplain, riparian, instream, and off-channel habitat in Abernathy and Germany Creeks

Cascade MPG Key Actions

- Restore floodplain in Upper Cowlitz and Cispus Rivers
- Restore watershed sediment supply and runoff conditions in Upper Cowlitz, Cispus, and Toutle Rivers.
- Restore riparian areas in Upper Cowlitz, Cispus, Toutle, Kalama, and Washougal Rivers, Upper NF Lewis mainstem tributaries, and Muddy River and tributaries
- Create/restore off-channel and side-channel habitat in middle Lower Cowlitz
- Restore floodplain in mainstem Lower Cowlitz

- Enhance instream habitat in Toutle and Coweeman Rivers, Upper NF Lewis mainstem tributaries, Muddy River and tributaries
- Restore hill slopes of Coweeman, Kalama, Upper and Lower NF Lewis, EF Lewis and Washougal Rivers
- Stabilize stream banks of upper NF Lewis mainstem tributaries
- Correct tributary passage barriers in Washougal River

Gorge MPG Key Actions

- Restore hill slopes of Gorge and Wind River
- Restore stream channel, riparian areas, and floodplain for Hamilton Creek
- Restore riparian conditions and stream temperatures in Wind River
- Restore fish passage at barriers in Wind River

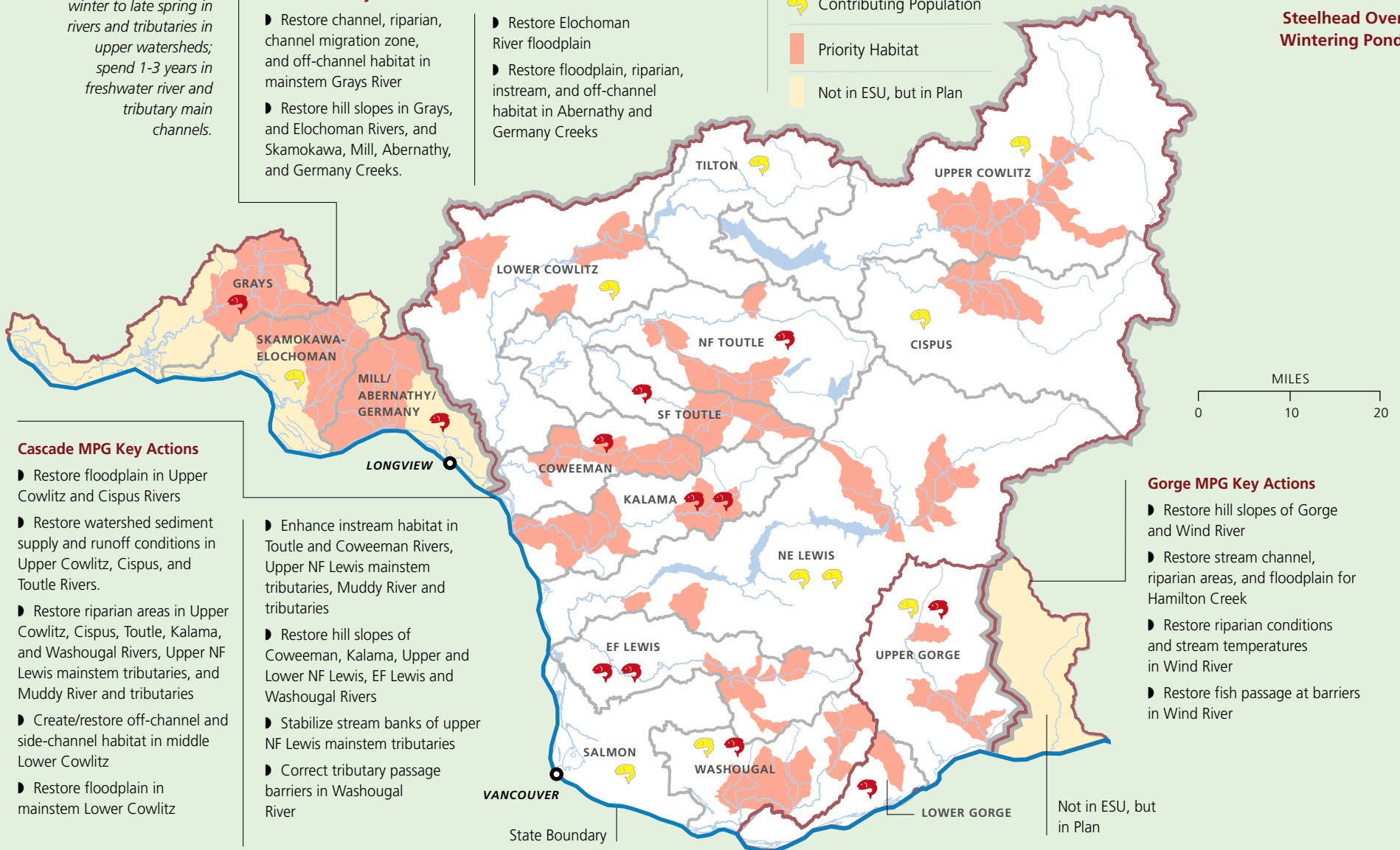
Lower Columbia Steelhead

- ESU in Washington
- Major Population Group (MPG)
- Population
- Primary Population
- Contributing Population
- Priority Habitat
- Not in ESU, but in Plan

LOWER COLUMBIA FISH RECOVERY BOARD




Steelhead Over Wintering Pond





















Lower Columbia Salmon Recovery Region Chinook

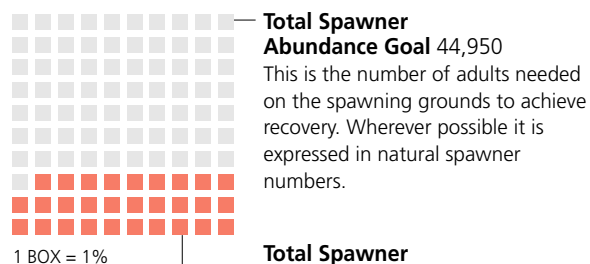


Lower Columbia River Chinook Evolutionarily Significant Unit (ESU) and Context Area

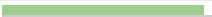

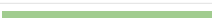

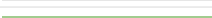
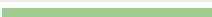





-  ESU in Washington
-  Major Population Group (MPG)
-  ESU in Oregon
-  Not in Plan, but in MPG and ESU

Chinook Spawner Abundance

Population	Present	Goal
Grays/Chinook	73 	1,400
Elochoman/Skamokawa	140 	1,400
Mill/Abernathy/Germany	250 	1,100
Lower Cowlitz	602 	2,300
Upper Cowlitz (Fall)	0	0
Upper Cowlitz (Spring)	365 	5,400
Cispus	150 	1,800
Tilton	150 	150
SF Toutle	150 	800
NF Toutle	1,000 	1,000
Coweeman	425 	3,600
Kalama (Fall)	1,192 	1,300
Kalama (Spring)	105 	1,400
NF Lewis (Late Fall)	6,493 	11,600
NF Lewis (Spring)	300 	2,200
Lewis/Salmon	235 	2,900
Washougal	1,225 	5,800
Lower Gorge	Unknown	700
Upper Gorge	138 	100
Total	12,993 	44,950



Chinook Productivity

Population	Present	Goal
Grays/Chinook	1.4 	1.6
Elochoman/Skamokawa	1.3 	1.4
Mill/Abernathy/Germany	1.4 	1.5
Lower Cowlitz	1.4 	1.5
Upper Cowlitz (Fall)	<1.0 	<1.0
Upper Cowlitz (Spring)	Unknown	Not Determined
Cispus	Unknown	Not Determined
Tilton	Unknown	Not Determined
SF Toutle	Unknown	Not Determined
NF Toutle	1.3 	1.3
Coweeman	1.7 	7.0
Kalama (Fall)	1.4 	1.5
Kalama (Spring)	Unknown	Not Determined
NF Lewis (Late Fall)	2.6 	11.4
NF Lewis (Spring)	Unknown	Not Determined
Lewis/Salmon	1.5 	5.9
Washougal	1.5 	1.6
Lower Gorge	Unknown	Not Determined
Upper Gorge	Unknown	Not Determined

Productivity:

Population growth rate. This is how many fish return for each fish that spawns. A population must have productivity greater than 1 to increase over time.



CHINOOK
Oncorhynchus tshawytscha

Live 3-6 years;
fall populations occur in
most tributaries and
spawn early fall to mid
winter; spring
populations spawn in
upstream tributaries of
large sub-basins in late
summer to early fall

Chinook

Lower Columbia Salmon Recovery Region

Coast MPG Key Actions

- Restore channel, riparian, floodplain, channel migration zone, and off-channel habitat in mainstem Grays River, Abernathy and Germany Creeks
- Restore hill slopes of Elochoman River, Skamokawa, Mill, and Germany Creeks
- Restore Elochoman River floodplain and riparian areas

Cascade MPG Key Actions

- Restore floodplain of Upper Cowlitz and Cispus Rivers
- Restore watershed sediment supply and runoff conditions in Upper Cowlitz and Cispus Rivers
- Restore riparian areas in Upper Cowlitz, Cispus, Toutle, Kalama, EF Lewis River (and remove bank riprap), and Washougal Rivers, Upper NF Lewis mainstem tributaries, and Muddy River and tributaries
- Create/restore off-channel and side-channel habitat in middle Lower Cowlitz River
- Restore floodplain of mainstem Lower Cowlitz.

- Restore hill slopes of Toutle, Coweeman, Kalama, upper and lower NF Lewis, EF Lewis, and Washougal Rivers
- Enhance instream habitat in Toutle, Coweeman Rivers, upper NF Lewis mainstem tributaries, Muddy River and tributaries
- Restore floodplain forest along lower mainstem Coweeman.
- Remove abandoned pipeline at Kalama River
- Stabilize stream banks of upper NF Lewis mainstem tributaries.

Lower Columbia River Chinook

- ESU in Washington
- Major Population Group (MPG)
- Population
- Primary Population
- Contributing Population
- Priority Habitat
- Not in Plan, but in MPG and ESU

LOWER COLUMBIA FISH RECOVERY BOARD

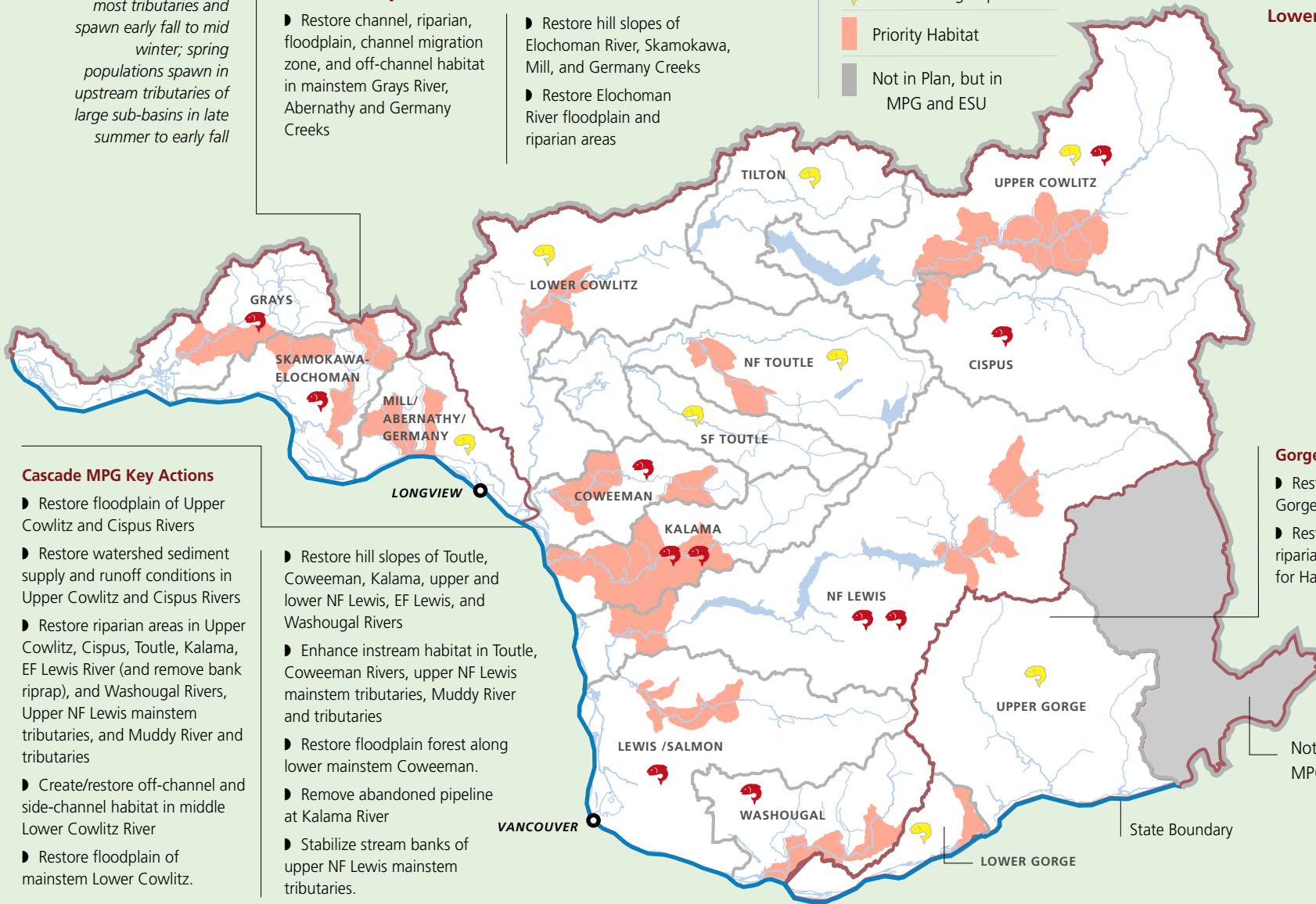


Lower Yellow Jacket Creek

Gorge MPG Key Actions

- Restore hill slopes of Gorge tributaries.
- Restore stream channel, riparian areas, and floodplain for Hamilton Creek.

Not in Plan, but in MPG and ESU



Lower Columbia Salmon Recovery Region Coho

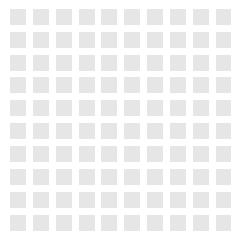


Lower Columbia River Coho Evolutionarily Significant Unit (ESU) and Context Area

- ESU in Washington
- Major Population Group (MPG)
- ESU in Oregon
- Not in Plan, but in MPG and ESU

Coho Spawner Abundance¹

Population	Present	Goal
Grays/Chinook	Unknown	600
Elochoman/Skamokawa	Unknown	600
Mill/Abernathy/Germany	Unknown	300
Lower Cowlitz	Unknown	600
Upper Cowlitz	Unknown	300
Cispus	Unknown	300
Tilton	Unknown	150
SF Toutle	Unknown	600
NF Toutle	Unknown	600
Coweeman	Unknown	600
Kalama	Unknown	300
NF Lewis	Unknown	600
EF Lewis	Unknown	600
Salmon	Unknown	75
Washougal	Unknown	300
Lower Gorge	Unknown	600
Upper Gorge	Unknown	600
Total	Unknown	7,725



1 BOX = 1%

Total Spawner Abundance Goal 7,725

This is the number of adults needed on the spawning grounds to achieve recovery. Wherever possible it is expressed in natural spawner numbers.

Total Spawner Abundance Present Unknown

¹ Lower Columbia Fish Recovery Board is working to supplement this information. Coho were listed after the plan was submitted to federal agencies.

Coho Productivity¹

Population	Present	Goal
Grays/Chinook	Unknown	Not Determined
Elochoman/Skamokawa	Unknown	Not Determined
Mill/Abernathy/Germany	Unknown	Not Determined
Lower Cowlitz	Unknown	Not Determined
Upper Cowlitz	Unknown	Not Determined
Cispus	Unknown	Not Determined
Tilton	Unknown	Not Determined
SF Toutle	Unknown	Not Determined
NF Toutle	Unknown	Not Determined
Coweeman	Unknown	Not Determined
Kalama	Unknown	Not Determined
NF Lewis	Unknown	Not Determined
EF Lewis	Unknown	Not Determined
Salmon	Unknown	Not Determined
Washougal	Unknown	Not Determined
Lower Gorge	Unknown	Not Determined
Upper Gorge	Unknown	Not Determined

Productivity:

Population growth rate. This is how many fish return for each fish that spawns. A population must have productivity greater than 1 to increase over time.



COHO
Oncorhynchus kisutch

Live 2-4 years; typically spawn mid-fall to mid winter in smaller streams; spend at least one winter in freshwater; associated with slow current, pool, and side channel habitat in rivers

Coho

Lower Columbia Salmon Recovery Region

Coast MPG Key Actions

- Restore channel, riparian, channel migration zone, and off-channel habitat in mainstem Grays River
- Restore hill slopes in Grays, and Elochoman Rivers, and Skamokawa, Mill, Abernathy, and Germany Creeks
- Restore Elochoman River floodplain and riparian area
- Restore floodplain, riparian, instream, instream structure and off-channel habitat in Abernathy and Germany Creeks

Cascade MPG Key Actions

- Restore floodplain in Upper Cowlitz and Cispus Rivers
- Restore watershed sediment supply and runoff conditions in Upper Cowlitz, Cispus, and Toutle Rivers
- Restore riparian areas in Upper Cowlitz, Cispus, Toutle, Kalama, Washougal, and EF Lewis Rivers (and remove bank riprap), and Muddy River and tributaries
- Create/restore off-channel and side-channel habitat in middle Lower Cowlitz River
- Restore floodplain in mainstem Lower Cowlitz

- Restore hill slopes of Coweeman, Kalama, upper and lower NF Lewis, EF Lewis, and Washougal Rivers
- Enhance instream habitat in Toutle, and Coweeman Rivers, and Muddy River and tributaries
- Restore floodplain forest along lower mainstem Coweeman
- Remove abandoned pipeline at Kalama River
- Remove levees on mainstem EF Lewis River
- Correct tributary passage barriers in Washougal River

Lower Columbia River Coho

- ESU in Washington
- Major Population Group (MPG)
- Population
- Primary Population
- Contributing Population
- Priority Habitat
- Not in Plan, but in MPG and ESU

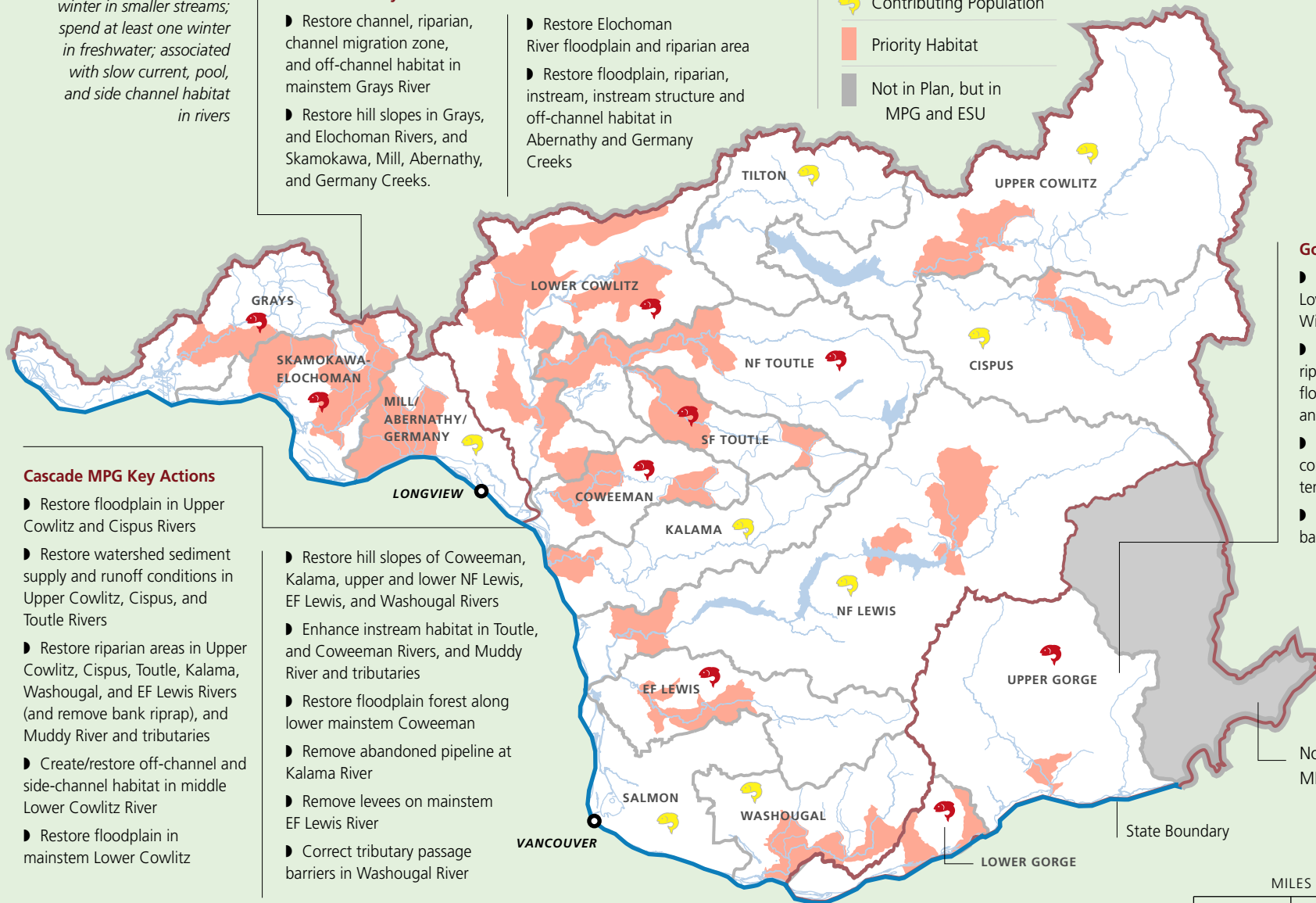
LOWER COLUMBIA FISH RECOVERY BOARD



Wildhorse Creek Restoration

Gorge MPG Key Actions

- Restore hill slopes in Lower Gorge and Wind River
- Restore stream channel, riparian areas, and floodplain for Hamilton and Duncan Creeks
- Restore riparian conditions and stream temperature in Wind River
- Restore fish passage at barriers in Wind River



Not in Plan, but in MPG and ESU

Mid-Columbia Salmon Recovery Region Plan¹



CHRIS DRIVDAHL

VISION

Yakima Basin communities have restored the Yakima River basin sufficiently to support self-sustaining and harvestable populations of indigenous fish and wildlife while enhancing the existing customs, cultures, and economies in the basin. Decisions that continuously improve the river basin ecosystems are made in an open and cooperative process that respects different points of view and varied statutory responsibilities and benefits current and future generations

GOAL

Ensure long-term persistence of viable populations of naturally produced steelhead and bull trout across their native range

// The Board's vision that implementing the plan will be inclusive, transparent, collaborative, cooperative, and voluntary, is borne of the conviction that only a process based on these attributes can be successful. **//**

**YAKIMA SUBBASIN FISH
AND WILDLIFE
PLANNING BOARD**



Plan Timeframe
10-30 years



Estimated Cost
\$160 million



**Actions Identified
to Implement Plan**
153



Status
Habitat portion of plan
submitted
to NMFS/USFWS
10/2005

Human Population 431,700	Counties Benton, Kittitas, Yakima, parts of Chelan and Klickitat	Treaty Tribes Yakama Nation	Listed Fish Steelhead and bull trout ²	Regional Recovery Organization Yakima Subbasin Fish and Wildlife Planning Board
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MAJOR FACTORS LIMITING RECOVERY

- ▶ Hydropower system mortality on Columbia River
- ▶ Reduced stream flows in tributaries
- ▶ Impaired passage in tributaries
- ▶ Excessive sediment
- ▶ Degraded water quality
- ▶ Altered channel morphology
- ▶ Degraded riparian habitat

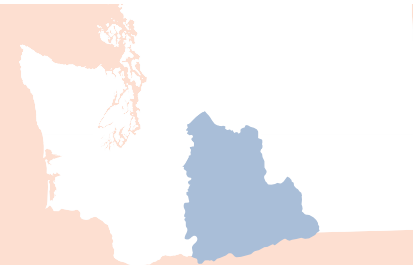
KEY ACTIONS RECOMMENDED TO RECOVER FISH

January 2006 to June 2007

- ▶ Improve fish passage
- ▶ Restore stream flows
- ▶ Restore habitat
- ▶ Reintroduce indigenous species
- ▶ Assess surface-ground-water connections
- ▶ Evaluate rainbow trout-steelhead interactions

Long Term

- ▶ Protect areas with high ecological integrity and natural ecosystem processes
- ▶ Maintain connectivity throughout range of listed fish
- ▶ Restore and maintain suitable stream flows
- ▶ Protect and restore water quality
- ▶ Monitor effectiveness of actions



¹ All H recovery plan integration is underway, including focus on out-of-sub-basin impacts. This process, involving the NMFS, Regional Board, WDFW, and GSRO is expected to be complete no later than June 2006. Roll up of entire ESU (Oregon portions) underway.

² USFWS previously published a bull trout recovery plan (2006). The status of bull trout is currently under review and is expected to be complete by early 2006. At that time, USFWS will work with the Regional Board, WDFW, GSRO to incorporate elements of the State's strategy and the Board's plan into the federal plan.

Mid-Columbia Salmon Recovery Region Steelhead



Mid-Columbia Region Steelhead Evolutionarily Significant Unit (ESU) and Context Area

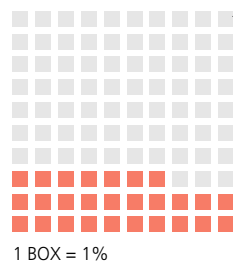
- ESU in Washington
- Major Population Group (MPG)
- In ESU, Not in Plan
- ESU in Oregon

Steelhead Spawner Abundance

Population	Present	Goal
Satus	454	1,000
Toppenish	549	1,000
Naches	412	1,500
Upper Yakima	83	2,250
Total	1,498	5,750

Total Spawner Abundance Goal 5,750 (100%)

This is the number of adults needed on the spawning grounds to achieve recovery. Wherever possible it is expressed in natural spawner numbers.



Total Spawner Abundance Present 1,498 (26% of Goal)

This is expressed as an average from 1993 to 2004.

Steelhead Productivity

Population	Present	Goal
Satus	1.0	1.3
Toppenish	.6	1.3
Naches	.6	1.2
Upper Yakima	.6	1.2

Productivity: Population growth rate. This is how many fish return for each fish that spawns. A population must have productivity greater than 1 to increase over time.



SALMON RECOVERY FUNDING BOARD

Coleman Creek Fish Barrier Removal and Bridge Installation



Steelhead

Mid-Columbia

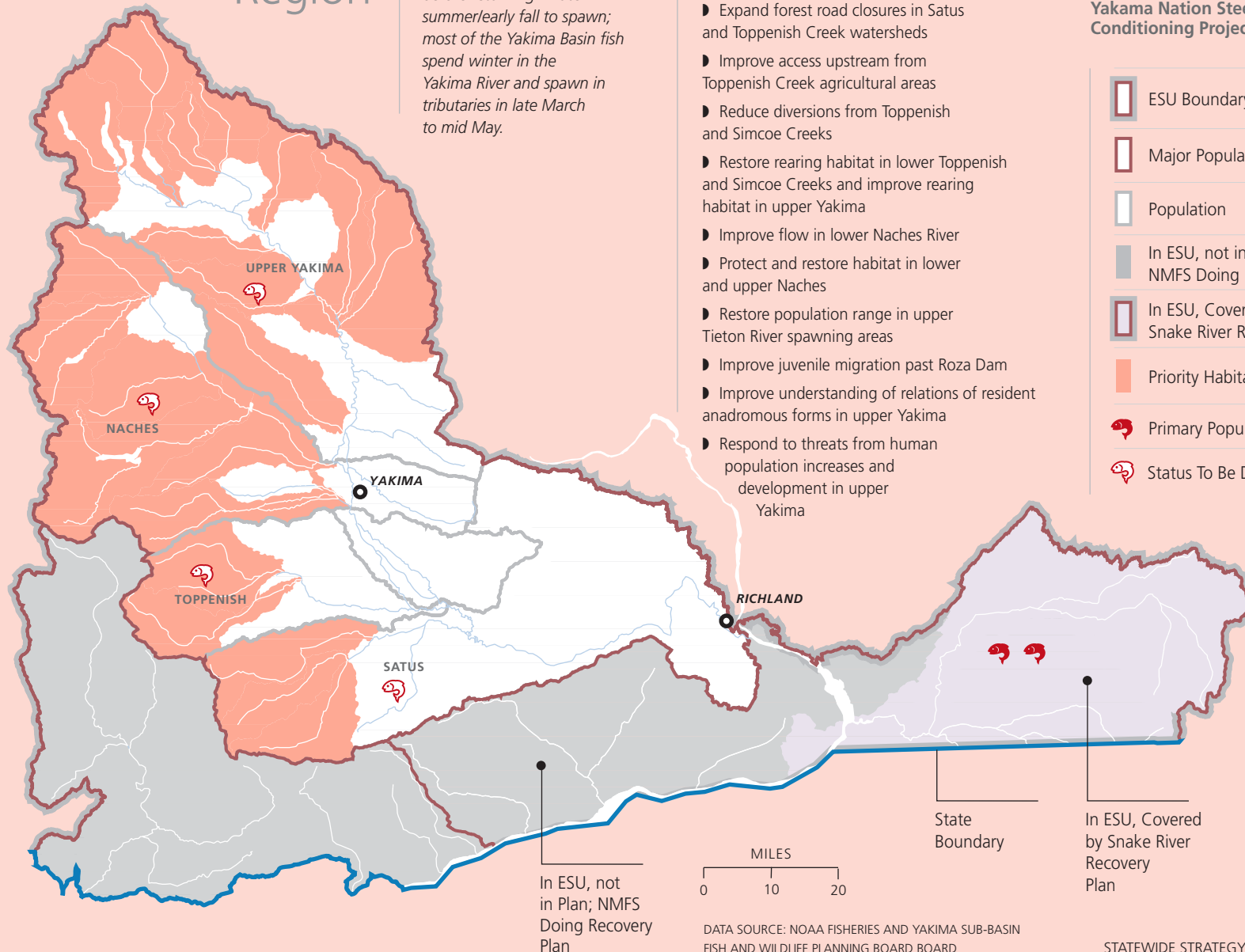
Salmon Recovery Region



STEELHEAD

Oncorhynchus mykiss

Live 4-7+ years; typically spend 1-3 years in ocean before returning in late summer/early fall to spawn; most of the Yakima Basin fish spend winter in the Yakima River and spawn in tributaries in late March to mid May.



Yakima MPG Key Actions

- Improve habitat in lower Satus Creek
- Improve floodplain/channel in Satus Creek next to US 97
- Improve grazing management in Satus Creek
- Restore passage to Shands Creek and provide passage and screens on Simcoe Creek
- Expand forest road closures in Satus and Toppenish Creek watersheds
- Improve access upstream from Toppenish Creek agricultural areas
- Reduce diversions from Toppenish and Simcoe Creeks
- Restore rearing habitat in lower Toppenish and Simcoe Creeks and improve rearing habitat in upper Yakima
- Improve flow in lower Naches River
- Protect and restore habitat in lower and upper Naches
- Restore population range in upper Tieton River spawning areas
- Improve juvenile migration past Roza Dam
- Improve understanding of relations of resident anadromous forms in upper Yakima
- Respond to threats from human population increases and development in upper Yakima

YAKIMA NATION



Yakima Nation Steelhead Kelt Conditioning Project

Upper Columbia Salmon Recovery Region Plan¹



VISION

Develop and maintain a healthy ecosystem that contributes to the rebuilding of key fish populations by providing abundant, productive, and diverse populations of aquatic species that support the social, cultural, and economic well being of the communities both within and outside the recovery region.

GOAL

Ensure long-term persistence of viable populations of naturally produced spring Chinook and steelhead distributed across their native range. Ensure long-term persistence of self-sustaining, complex, interacting groups of bull trout distributed across the native range of the species.

// If you think you are a stakeholder, then you are. **//**

UPPER COLUMBIA
SALMON RECOVERY
BOARD



Plan Timeframe
10-30 years



Estimated Cost
\$95 million



Actions Identified to Implement Plan
296 (of which 146 are habitat actions)



Status
Habitat portion of plan submitted to NMFS/USFWS 12/2005

Human Population 142,200	Counties Chelan, Douglas, Okanogan	Treaty and Executive Order Tribes Colville Confederated Tribes, Yakama Nation	Listed Fish Steelhead, spring Chinook, and bull trout ²	Regional Recovery Organization Upper Columbia Salmon Recovery Board
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MAJOR FACTORS LIMITING RECOVERY

- ▶ Hydropower system mortality on Columbia River
- ▶ Reduced stream flows in tributaries
- ▶ Impaired passage in tributaries
- ▶ Excessive tributary sediment
- ▶ Degraded tributary water quality
- ▶ Degraded floodplain and channel morphology
- ▶ Degraded riparian habitat
- ▶ Harvest

KEY ACTIONS RECOMMENDED TO RECOVER FISH

January 2006 to June 2007

- ▶ Protect high integrity areas.
- ▶ Restore connectivity.
- ▶ Establish, restore, and protect instream flows.
- ▶ Protect and restore water quality.
- ▶ Protect and restore riparian function.

Long Term

- ▶ Integrate habitat actions with hatchery, hydropower, and harvest actions identified in other planning processes.
- ▶ Continue short-term habitat actions, modified through adaptive management.
- ▶ Monitor effectiveness of all actions, primarily using freshwater productivity as an indicator of success.

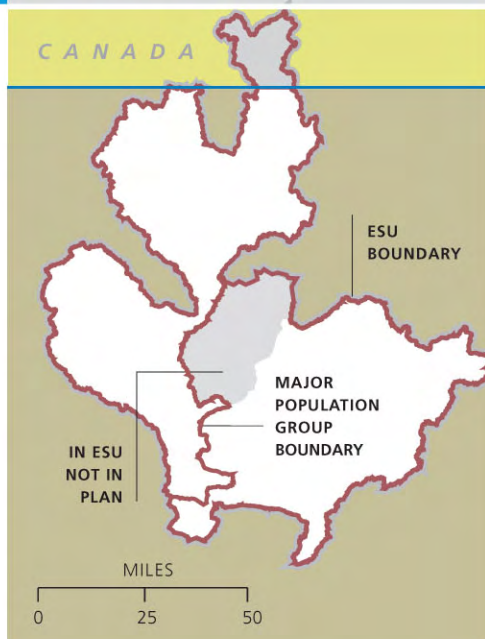


¹ All H recovery plan integration is underway, including focus on out-of-sub-basin impacts.

This process, involving the NMFS, Regional Board, WDFW, and GSRO is expected to be complete no later than June 2006.

² USFWS previously published a bull trout recovery plan (2002). The status of bull trout is currently under review and is expected to be complete by early 2006. At that time, USFWS will work with the Regional Board, WDFW, GSRO to incorporate elements of the State's strategy and the Board's plan into the federal plan.

Upper Columbia Salmon Recovery Region Steelhead



Upper Columbia Region Steelhead Evolutionarily Significant Unit (ESU) and Context Area

-  ESU in Washington
-  Major Population Group (MPG)
-  In ESU, Not In Plan

Steelhead Spawner Abundance

Population	Present	Goal
Okanogan	50	500 (US)
Methow	200	1,000
Entiat	100	500
Wenatchee	700	1,000
Total	1,050	3,000

**Total Spawner
Abundance Goal**
3,000 (100%)

This is the number of adults needed on the spawning grounds to achieve recovery. Wherever possible it is expressed in natural spawner numbers.



**Total Spawner
Abundance Present**
1,050 (35% of Goal)

This is expressed as an average from 1993 to 2004.

Steelhead Productivity

Population	Present	Goal
Okanogan	.90	1.20
Methow	.90	1.10
Entiat	.69	1.20
Wenatchee	.69	1.10

Productivity: Population growth rate. This is how many fish return for each fish that spawns. A population must have productivity greater than 1 to increase over time.



CHRIS JOHNSON



CHRIS JOHNSON



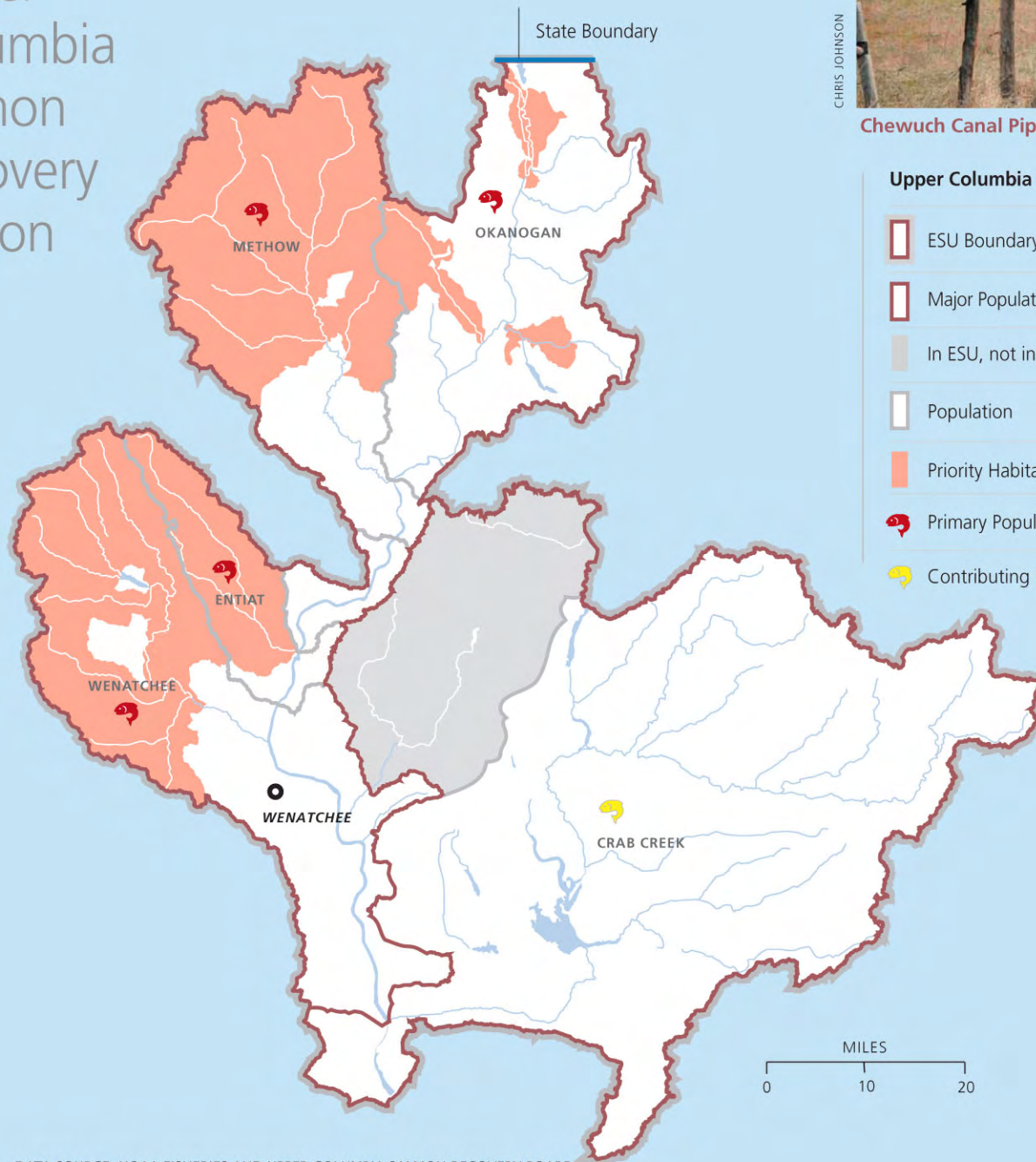
STEELHEAD

Oncorhynchus mykiss

Live 4-7+ years; may spawn more than once; utilize all parts of a river basin; adults return in late summer and early fall, spawn in late spring the following year; juveniles spend 1-3 years in freshwater before migrating to ocean

Steelhead

Upper Columbia Salmon Recovery Region



Wenatchee-Methow MPG Key Actions

- Protect high integrity areas in upper watersheds
- Restore connectivity for fragmented habitats in middle watersheds
- Restore and protect instream flows in middle and lower watersheds
- Protect and restore water quality in lower watersheds
- Protect and restore riparian function throughout entire watersheds



CHRIS JOHNSON

Chewuch Canal Pipe

Upper Columbia Steelhead

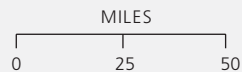
- ESU Boundary
- Major Population Group (MPG)
- In ESU, not in Plan
- Population
- Priority Habitat
- Primary Population
- Contributing Population

Upper Columbia Salmon Recovery Region Chinook



Upper Columbia Region Chinook Evolutionarily Significant Unit (ESU) and Context Area

- ESU Boundary
- Major Population Group (MPG)

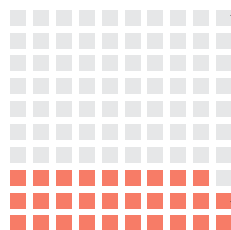


Chinook Spawner Abundance

Population	Present	Goal
Methow	700	2,000
Entiat	100	500
Wenatchee	500	2,000
Total	1,300	4,500

**Total Spawner
Abundance Goal**
4,500 (100%)

This is the number of adults needed on the spawning grounds to achieve recovery. Wherever possible it is expressed in natural spawner numbers.



1 BOX = 1%

**Total Spawner
Abundance Present**
1,300 (29% of Goal)

This is expressed as an average from 1993 to 2004.

Chinook Productivity

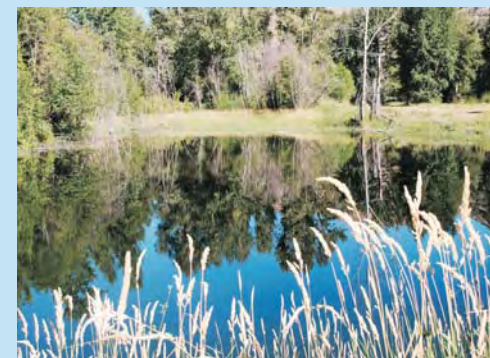
Population	Present	Goal
Methow	.51	1.2
Entiat	.76	1.4
Wenatchee	.74	1.2

Productivity: Population growth rate. This is how many fish return for each fish that spawns. A population must have productivity greater than 1 to increase over time.

Chewuch Dam Renovation



CHRIS JOHNSON



CHRIS JOHNSON

Twisp River

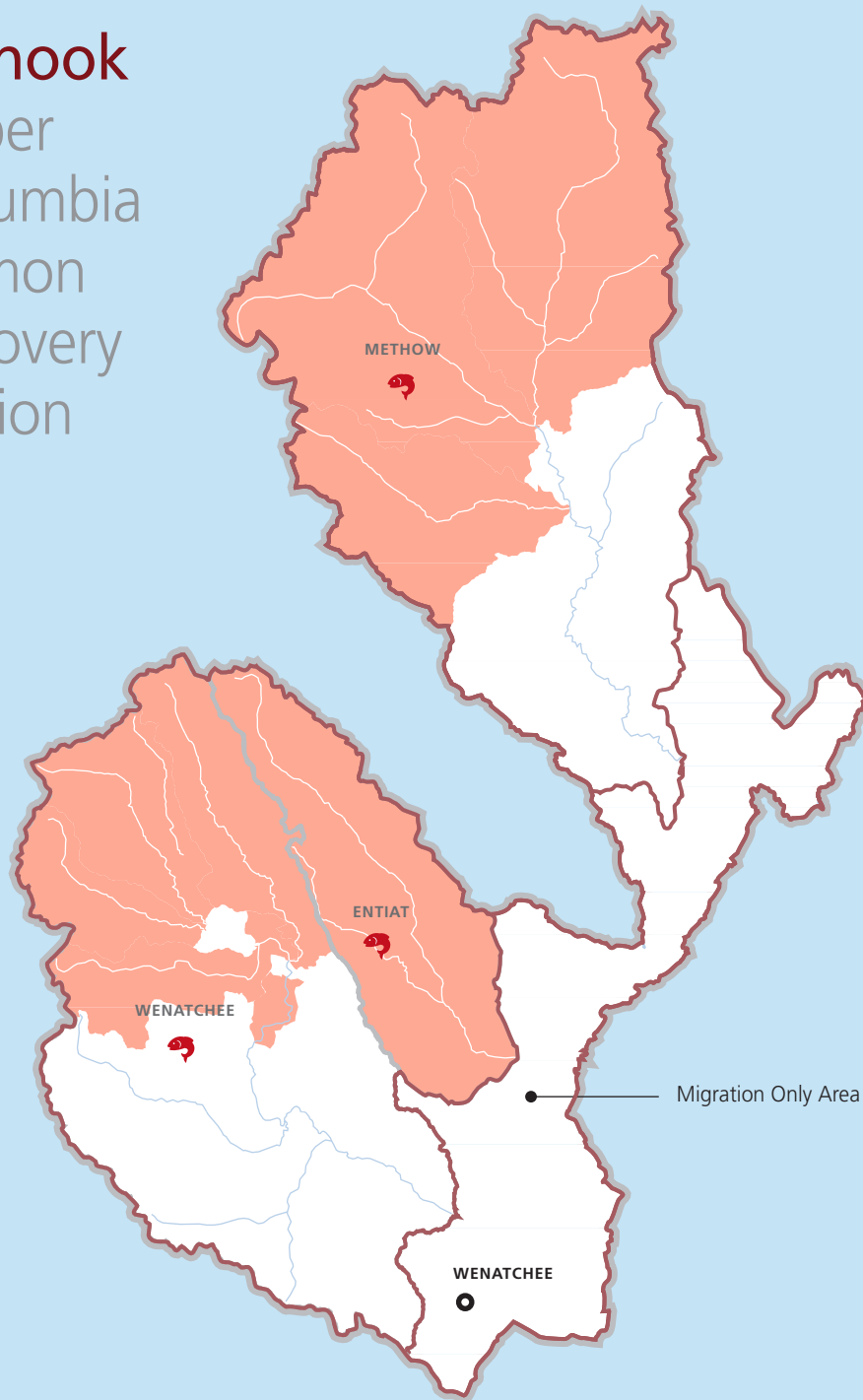


CHINOOK
Oncorhynchus tshawytscha

Live 3-6 years;
life histories vary greatly,
but spawn mainly in
mainstem rivers; adults
begin returning in early
spring, spawning in late
summer; juveniles spend
1 year in freshwater before
migrating to ocean

Chinook

Upper Columbia Salmon Recovery Region



Wenatchee-Methow MPG Key Actions

- ▶ Protect high integrity areas in upper watersheds
- ▶ Restore connectivity for fragmented habitats in middle watersheds
- ▶ Restore and protect instream flows in middle and lower watersheds
- ▶ Protect and restore water quality in lower watersheds
- ▶ Protect and restore riparian function throughout entire watersheds

SALMON RECOVERY FUNDING BOARD



Dreyden Fish Enhancement Project

Upper Columbia Chinook

- ESU Boundary
- Major Population Group (MPG)
- Population
- Priority Habitat
- Primary Population

MILES
0 10 20

Snake River Salmon Recovery Region Plan¹



SALMON RECOVERY FUNDING BOARD

GOAL

Develop and maintain a healthy ecosystem that contributes to the rebuilding of key fish populations by providing abundant, productive, and diverse populations of aquatic species that support the social, cultural, and economic well-being of the communities both within and outside the recovery region.

// Recovery plans are a vital part of the effort to combat the decline of salmon... **//**

**SNAKE RIVER
SALMON RECOVERY
BOARD**



Plan Timeframe
15 years



Estimated Cost
\$115 million



**Actions Identified
to Implement Plan**
264



Status
Habitat portion
of plan submitted to
NMFS/USFWS
10/2005

Human Population 213,508	Counties Walla Walla, Columbia, Garfield, Asotin, and portions of Whitman	Treaty Tribes Nez Perce and Confederated Tribes of the Umatilla Reservation	Listed Fish Sockeye ² , steelhead, Chinook ³ , and bull trout ⁴	Regional Recovery Organization Snake River Salmon Recovery Board
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MAJOR FACTORS LIMITING RECOVERY

- ▮ Hydropower system mortality on Columbia River
- ▮ Reduced summer stream flows
- ▮ Over harvest of fish
- ▮ Excessive sediment
- ▮ Elevated water temperatures
- ▮ Altered channel morphology
- ▮ Degraded riparian habitat
- ▮ Fish passage blockages

KEY ACTIONS RECOMMENDED TO RECOVER FISH

January 2006 to June 2007

- ▮ Reduce sediment
- ▮ Improve and protect riparian areas
- ▮ Improve fish passage
- ▮ Properly screen diversions
- ▮ Increase stream habitat complexity

Long Term

- ▮ Restore and maintain suitable stream flows
- ▮ Improve uplands
- ▮ Improve channel and floodplain conditions
- ▮ Improve riparian functions
- ▮ Monitor effectiveness of actions



¹ All H recovery plan integration is underway, including focus on out-of-sub-basin impacts. This process, involving the NMFS, Regional Board, WDFW, and GSRO is expected to be complete no later than June 2006. Roll up of entire ESU (Oregon and Idaho portions) underway.

² Sockeye do not reside in the region and are not addressed in the plan

³ The ICTRT has not yet developed criteria for Snake River fall Chinook, so they are not yet addressed in the plan.

⁴ USFWS previously published a bull trout recovery plan (2002). The status of bull trout is currently under review and is expected to be complete by early 2006. At that time, USFWS will work with the Regional Board, WDFW, GSRO to incorporate elements of the State's strategy and the Board's plan into the federal plan.

Snake River Salmon Recovery Region Mid-Columbia Steelhead



Snake River Region Mid-Columbia Steelhead Evolutionarily Significant Unit (ESU) and Context Area

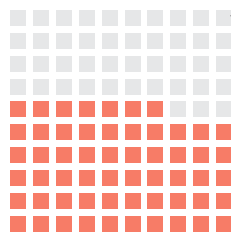
-  ESU in Washington
-  Major Population Group (MPG)
-  In ESU, Not in Plan
-  ESU in Oregon

Steelhead Spawner Abundance

Population	Present	Goal ¹
Touchet	310	701
Walla Walla	905	1,432
Total	1,215	2,133

**Total Spawner
Abundance Goal**
2,133 (100%)

This is the number of adults needed on the spawning grounds to achieve recovery. Wherever possible it is expressed in natural spawner numbers.



**Total Spawner
Abundance Present**
1,215 (57% of Goal)

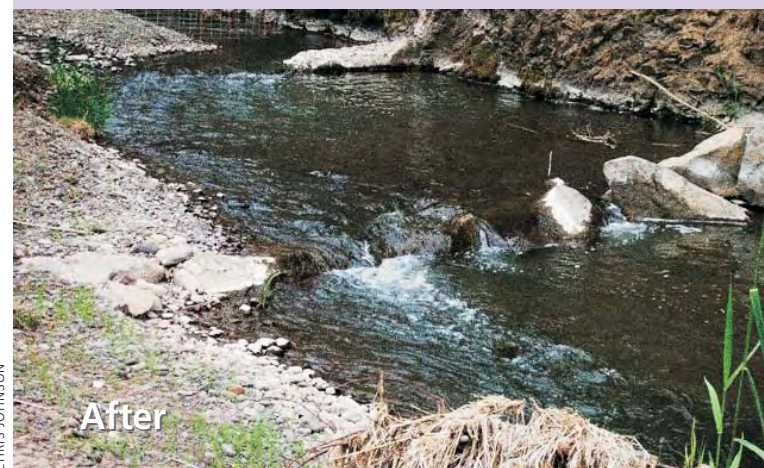
1 BOX = 1%

¹ Goal established by recovery organization as habitat contribution to recovery. These goals are interim (15 years) and long range goals may exceed them.

Steelhead Productivity

Population	Present	Goal
Touchet	1.2	1.30
Walla Walla	1.4	1.45

Productivity: Population growth rate. This is how many fish return for each fish that spawns. A population must have productivity greater than 1 to increase over time.



CHRIS JOHNSON

Whiskey Creek Dam Removal



STEELHEAD
Oncorhynchus mykiss

Live 4-7+ years; typically spend 1-3 years in ocean before returning in late summer/early fall to spawn; in the Snake River system, steelhead are found in the Walla Walla and Touchet River systems, including Patit Creek + tributaries, Dry and Pine-Dry Creeks.

MID-COLUMBIA Steelhead Snake River Salmon Recovery Region

Walla Walla MPG Key Actions

- Irrigation efficiency projects on 2,600 acres
- Lease/purchase 27 CFS annually
- 750 AF storage in Walla Walla
- 60,000 acres upland BMPs
- 3 miles bank stabilization in priority riparian areas
- 29 miles instream habitat modification
- Remove all passage barriers

SALMON RECOVERY FUNDING BOARD

Before



After

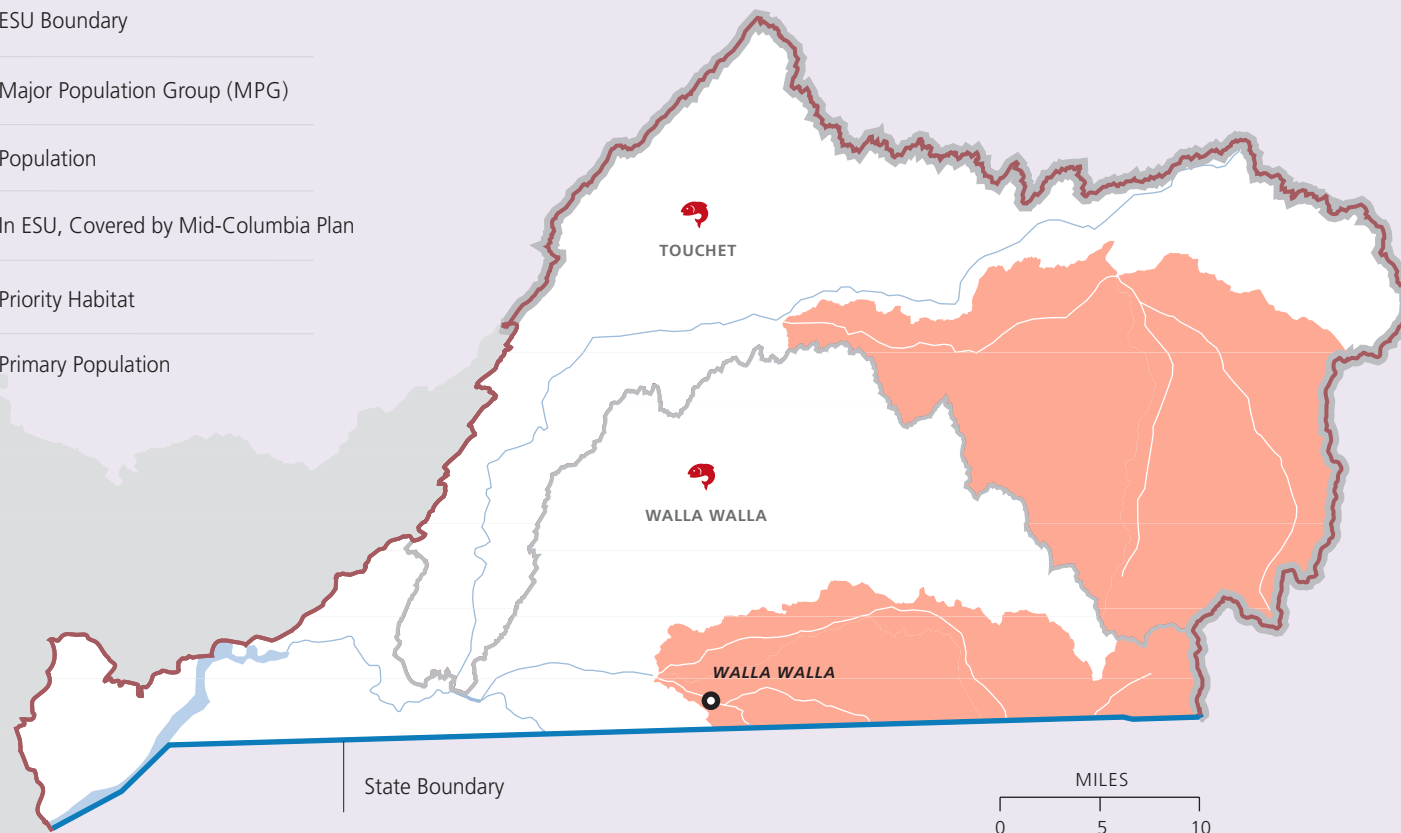


Removal of Kooskooskie Dam on Mill Creek

- ESU Boundary
- Major Population Group (MPG)
- Population
- In ESU, Covered by Mid-Columbia Plan
- Priority Habitat
- Primary Population

In ESU,
Covered by
Mid-Columbia
Plan

In ESU,
Not in Plan;
NMFS Doing
Recovery Plan



Snake River Salmon Recovery Region **Chinook**



Snake River Region Chinook Evolutionarily Significant Unit (ESU) and Context Area

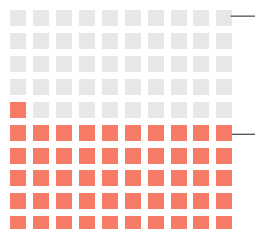
-  ESU in Washington
-  Major Population Group (MPG)
-  ESU in Oregon and Idaho

Chinook Spawner Abundance

Population	Present	Goal ¹
Tucannon River	527	907
Asotin Creek	254	569
Wenaha River	334	337
Total	1,115	1,813

Total Spawner Abundance Goal
1,813 (100%)

This is the number of adults needed on the spawning grounds to achieve recovery. Wherever possible it is expressed in natural spawner numbers.



Total Spawner Abundance Present
1,115 (61.5% of Goal)

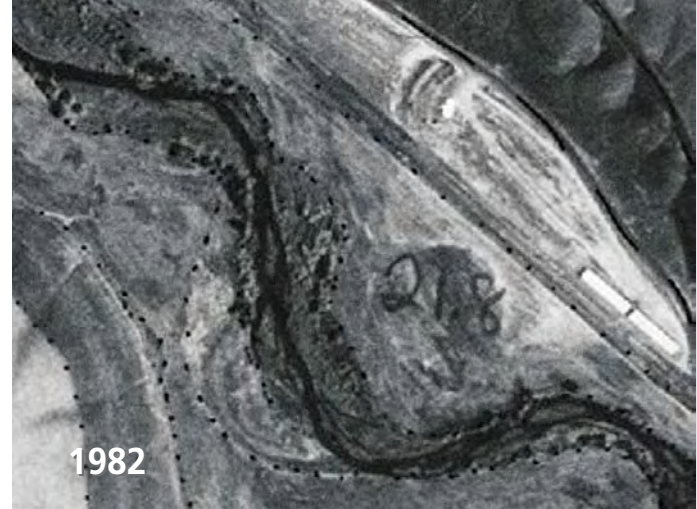
1 BOX = 1%

¹ Goal established by recovery organization as habitat contribution to recovery. These goals are interim (15 years) and long range goals may exceed them.

Chinook Productivity

Population	Present	Goal
Tucannon River	1.26	1.39
Asotin Creek	1.27	1.37
Wenaha River	1.5	1.50

Productivity: Population growth rate. This is how many fish return for each fish that spawns. A population must have productivity greater than 1 to increase over time.



Snake River Salmon Recovery Board

Tucannon River Riparian Habitat Improvement from 1982 to 2004



CHINOOK

Oncorhynchus tshawytscha

Live 3-6 years; life histories vary greatly, but spawn mainly in mainstem rivers; found in mainstem Snake, Tucannon, Grande Ronde, and Wenaha Rivers; spring/summer populations found in Asotin, Joseph and Pataha Creeks

Chinook Snake River Salmon Recovery Region

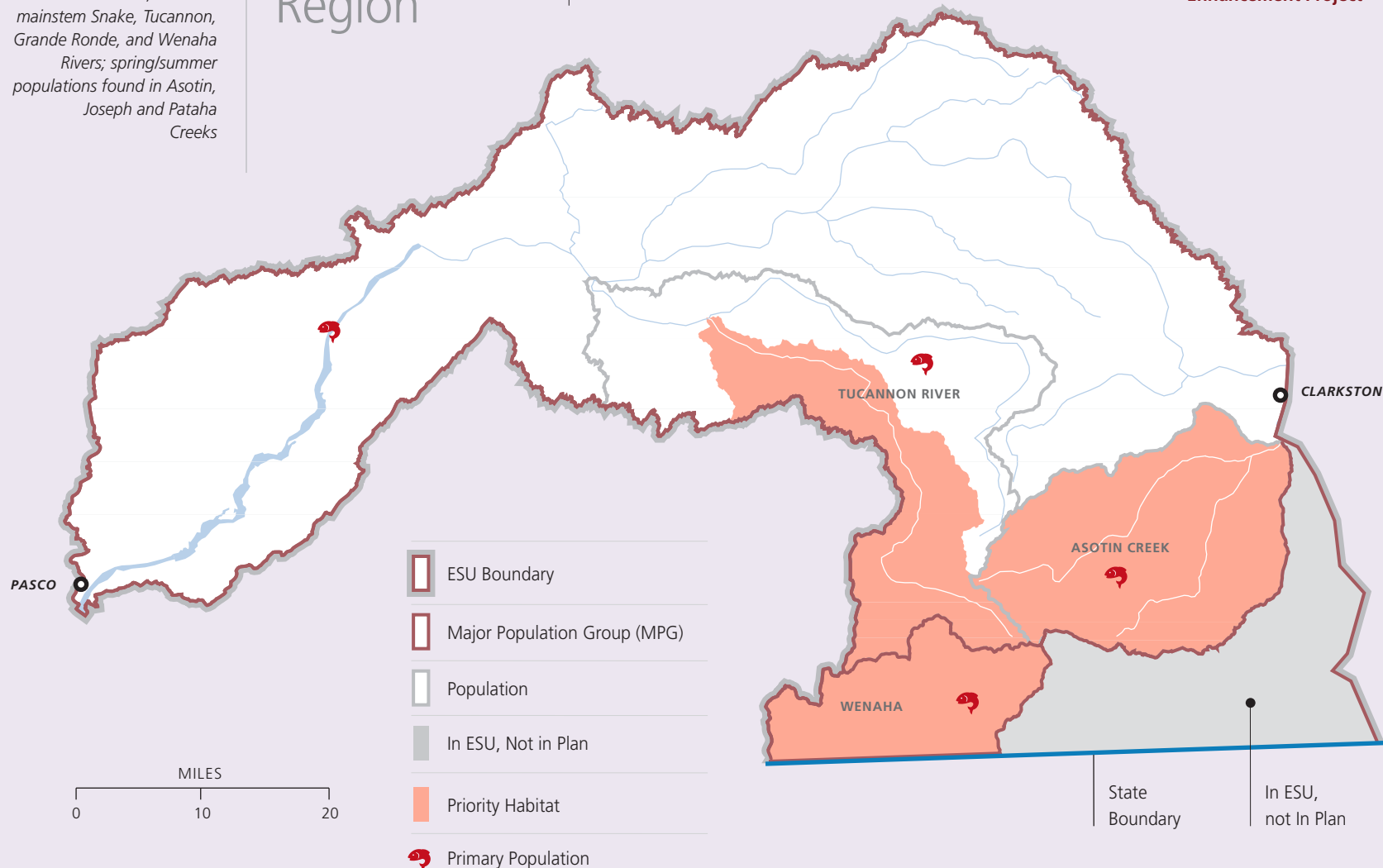
Snake River Chinook MPG Key Actions

- 13 miles Tucannon River channel improvements
- 20,000 acres Tucannon and Asotin watersheds improved for water quality
- 2,000 acres riparian buffer and improvements in Tucannon and Asotin watersheds

SALMON RECOVERY FUNDING BOARD



Tucannon-Touchet River Instream Enhancement Project



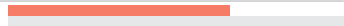
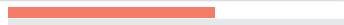
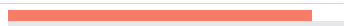
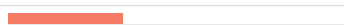
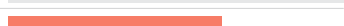
Snake River Salmon Recovery Region **Steelhead**



Snake River Region Steelhead Evolutionarily Significant Unit (ESU) and Context Area

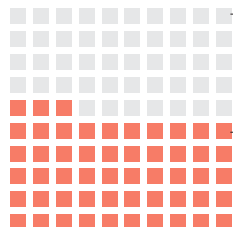
-  ESU in Washington
-  Major Population Group (MPG)
-  ESU in Oregon and Idaho

Steelhead Spawner Abundance

Population		Present	Goal ¹
Tucannon River	900		1,348
Asotin Creek	435		712
Grande Ronde	1,516		1,681
Joseph Creek	558		1,658
Total	3,409		5,399

Total Spawner Abundance Goal 5,399 (100%)

This is the number of adults needed on the spawning grounds to achieve recovery. Wherever possible it is expressed in natural spawner numbers.

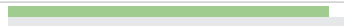
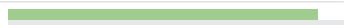
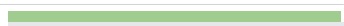



1 BOX = 1%

Total Spawner Abundance Present 3,409 (63.14% of Goal)

¹ Goal established by recovery organization as habitat contribution to recovery. These goals are interim (15 years) and long range goals may exceed them.

Steelhead Productivity

Population		Present	Goal
Tucannon River	1.27		1.32
Asotin Creek	1.20		1.30
Grande Ronde	1.42		1.43
Joseph Creek	1.08		1.28

Productivity: Population growth rate. This is how many fish return for each fish that spawns. A population must have productivity greater than 1 to increase over time.



Before



After

Snake River Salmon Recovery Board

Alpowa Creek Dam Removal



STEELHEAD
Oncorhynchus mykiss

Live 4-7+ years;
may spawn more than
once; utilize all parts of a
river basin; found in
Tucannon and Grande
Ronde Rivers, Asotin
Creek, and major
tributaries

Steelhead

Snake River Salmon Recovery Region

Snake River Steelhead MPG Key Actions

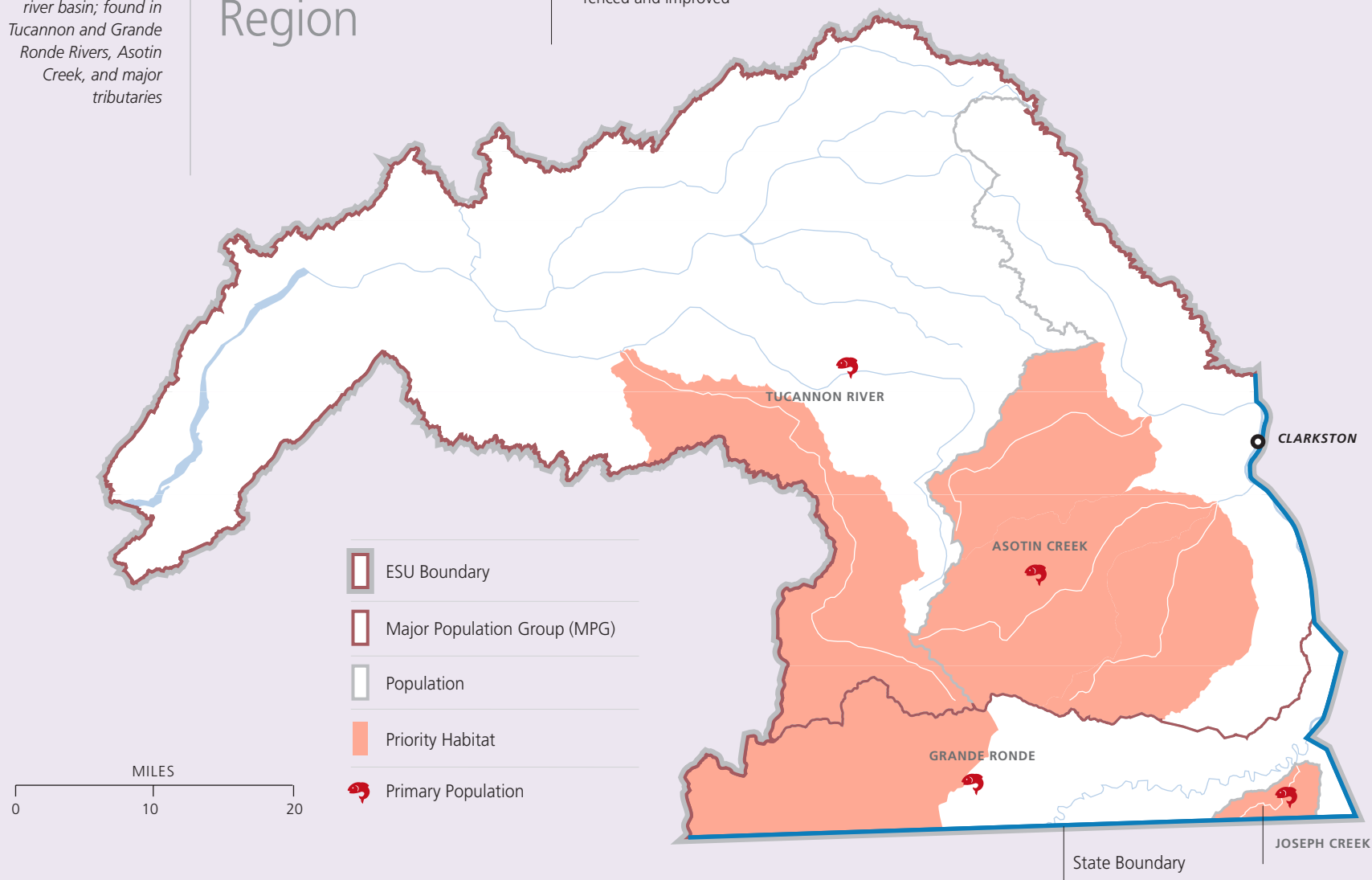
- 13 miles Tucannon River and Asotin Creek channel improvements
- 50,000 acres upland BMPs
- 5,500 acres riparian buffers, 14,200 acres riparian areas fenced and improved

- Irrigation efficiency projects on 300 acres
- Lease/purchase 1.3 CFS annually
- 300 AF storage

Snake River Salmon Recovery Board



Curl Lake Fish Barrier



Implementing Recovery Plans



Now that plans are complete or nearly so, regional organizations and others desire to move forward to do what we said we would do in these plans. There is agreement that regional organizations together with lead entities and other interested parties are in position to tackle this enormous undertaking: they bring the right people to the table in a forum that allows healthy discussion about local issues; they have a common goal that they have created; and they know their plan and its relation to other efforts going on in their areas. They know that recovery actions hit the ground at the local watershed scale, but it is ultimately at the ESU or regional scale at which recovery must be measured and coordinated. And, they know that this is new territory, but we need to act in the face of uncertainty and learn from our mistakes and successes as we proceed.

✚ It is ultimately at the ESU or regional scale at which recovery must be measured and coordinated. This is new territory, but we need to act in the face of uncertainty and learn from our mistakes and successes as we proceed.

Relationship of Regional Structures to Lead Entities, Planning Units, and Others Engaged in Salmon Recovery Within the Region

The regional groups have stepped forward and said they are committed and ready to continue the work they began years ago. They held meetings with lead entities in their recovery area and discussed roles, responsibilities, and relationships. Generally, lead entities will continue in their legislatively directed roles relative to habitat project development. Actions are underway in the Yakima to bring the lead entity and regional organization together into one body; this will result in four of six regions where the lead entity and regional organization are the same: Hood Canal, Lower Columbia, Yakima, and Snake. In Puget Sound and the Upper Columbia Regions there is acknowledgement that recovery plans will guide project recommendations from lead entities.

Structure to Implement Plans

In general, all regions are proposing a model that uses the policy structure that created the recovery plan, a small technical arm to provide continuing advice on scientific matters, and a minimal staff to complete the plan adoption process with NMFS; coordinate implementation of recovery plan actions with implementing partners to ensure their partners' programs reflect the actions and science embodied in recovery plans; track and report progress; implement, convene, coordinate, and/or facilitate key regional programmatic actions; coordinate development and implementation of funding strategies to support plan implementation; and provide a focal point for information sharing and public outreach. Some regions may contract with local governments, conservation districts, PUDs, and others to assist with these functions. In Puget Sound, the Governor has asked a panel to develop a broad initiative on the overall health of the Sound and recommend how to incorporate and support salmon recovery.

Funding Recovery Plans

Funding implementation of all actions in these recovery plans will take more than the state and federal dollars available to the SRFB. Even with all existing sources tapped, it's likely we will be short of the funding needs that have been identified. These regional organizations are committed to seeking new sources, leveraging existing sources to improve synergy, and better aligning actions to ensure we are doing the most important projects in the highest priority places and in the right sequence.

Funding for regional organization structures to accomplish these tasks is an important consideration for the future. The GSRO will work with the Office of Financial Management, Council of Regions, Lead Entity Advisory Group, and the SRFB to develop a recommended funding strategy supported by those involved in salmon recovery. We intend that process to yield recommendations that will be presented to the Governor, legislature, and the SRFB for deliberation and action in 2007.

Implementing Recovery Plans | Monitoring

Monitoring Salmon Recovery

Monitoring is the fulcrum for success in salmon recovery. Information from monitoring will tell us how well salmon are doing, and help us understand whether our actions are having the desired effect, so that adjustments can be made if needed.

NMFS has produced a decision framework that outlines what kinds of things lead to listings under the ESA, and what recovery efforts will need to achieve for de-listing. That framework is consistent with the state Comprehensive Monitoring Strategy and helps organize our approaches to monitoring recovery. Given the diverse situations across Washington, each recovery plan must establish an implementation structure and process that will bring together monitoring information to track and report progress toward recovery goals, objectives, and key milestones, and to make adjustments in

direction where needed based on new information. This is called adaptive management. The implementation structure must ensure that the appropriate decisions can be made and that monitoring addresses the most important questions in an efficient manner.

Finally, data associated with recovery monitoring need to be accessible and shared both within and outside each regional planning area to meet the needs of local and statewide reporting.

The Governor's Forum on Monitoring Salmon Recovery and Watershed Health (Forum) emphasized these monitoring needs in guidance to salmon recovery regions in December 2005. These recommendations are also consistent with the state's 2002 Comprehensive Monitoring Strategy and federal monitoring guidance.

Monitoring Needs to Address Key Questions Associated with Each Recovery Plan

We must monitor:

- ▶ Viability of fish populations in each ESU — adults and juveniles, productivity, distribution, and diversity — asking, "Are fish numbers increasing?"
- ▶ Reduction in major threats and limiting factors — habitat, harvest, hatcheries, hydropower — asking, "Is habitat improving?"
- ▶ Our recovery actions, asking, "Did we do what we said we would do?" "Are recovery actions effective in meeting their local objectives?"

+ Monitoring is the fulcrum for success in salmon recovery. Information from monitoring will tell us how well salmon are doing, and help us understand whether our actions are having the desired effect, so that adjustments can be made if needed.

Regional Monitoring

Each of Washington's regional salmon recovery plans contains adaptive management and monitoring components. Each region is improving and refining these components to address local needs and state and federal monitoring guidance.

Aspects that all regional recovery plans currently emphasize include:

- ▶ Adaptive management processes
- ▶ Monitoring trends in fish and their viability
- ▶ Habitat status and trends monitoring
- ▶ Implementation monitoring and reporting

The Forum has helped coordinate and resolve technical and policy issues in support of salmon recovery monitoring and reporting at the regional and statewide scales and produced its first biennial report of activities in January 2006.

The Forum, with its state, tribal, federal, local, and regional recovery partners, brings needed expertise and resources to salmon recovery monitoring. For example:

- ▶ The Salmon Recovery Funding Board monitors the effectiveness of categories of habitat projects, determines cause-effect relationships of actions to fish responses in a few intensively monitored watersheds, and funds development of habitat and water quality status and trends information
- ▶ The Washington Department of Fish and Wildlife and tribal co-managers monitor numbers and other trends of fish
- ▶ The Department of Ecology monitors water quality and quantity
- ▶ The Department of Natural Resources and US Forest Service monitor forested lands
- ▶ The Salmon and Watersheds Information Management Technical Advisory Committee helps coordinate data management issues for the Forum

- ▶ The initial phase of the Natural Resources Information Portal provides an approach for statewide access to state agency data

The Forum is also coordinating an effort by state agencies and OFM to develop recommendations to the Governor and legislature for improving or eliminating monitoring activities related to salmon recovery and watershed health.

A progress report is due in March 2006, with a final report due by September 2006.



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