Balancing Habitat and Fisheries Management For ESA - Listed Salmon and Steelhead in the Pacific Northwest

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* Personal Perspectives,
Not presented as NOAA Fisheries Position or Policy

1. Overview of Salmon & Steelhead Status – general to specific

2. Comprehensive ESA Recovery Plans

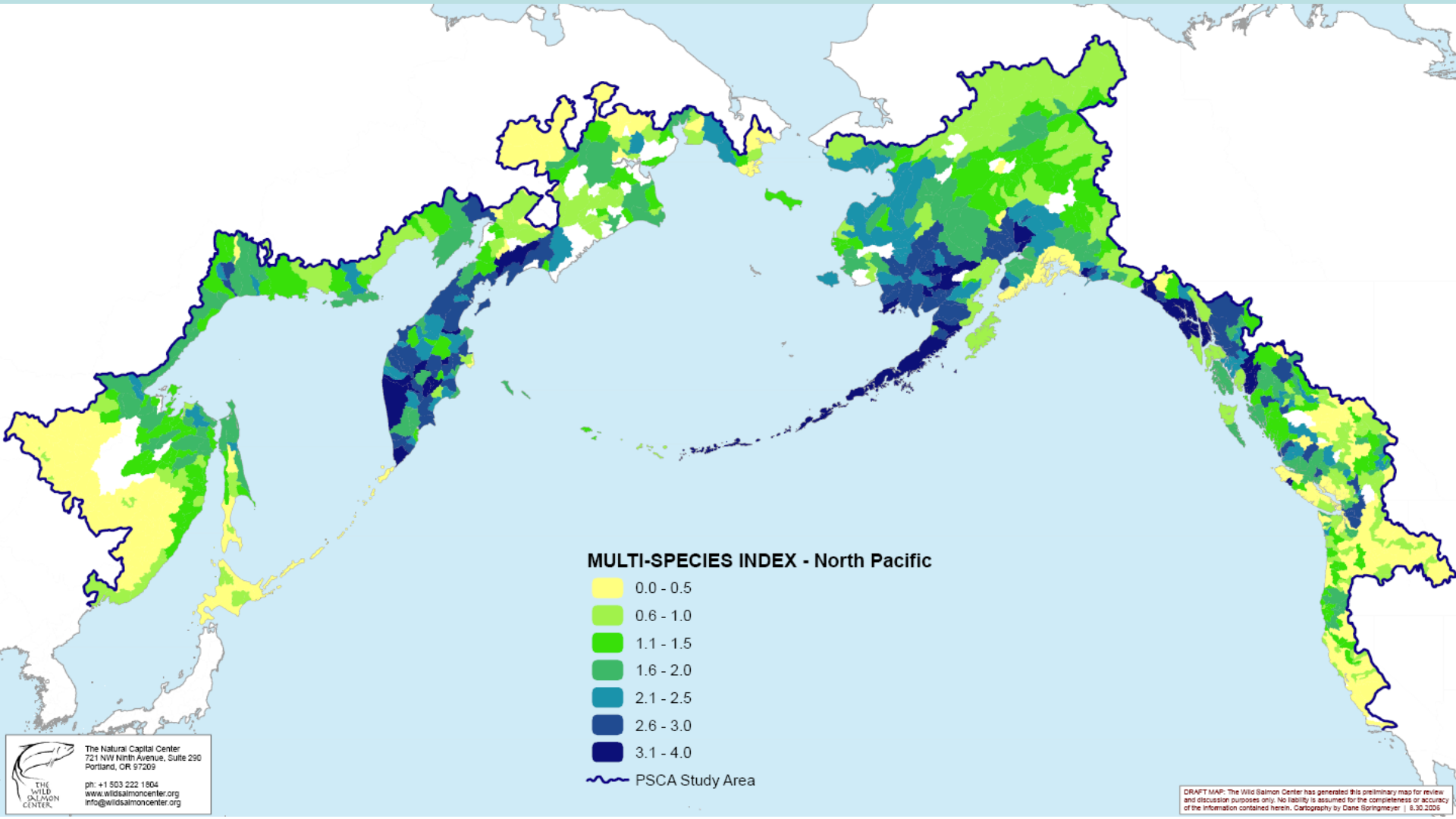
3. Offer recommendations, lessons learned and questions to ponder.

1. Overview of Status

- North Pacific
- U.S. Salmon and Steelhead Populations
- ESA listed and not listed
- PNW Salmon and Steelhead Domains

Wild Salmon Center's Ecoregions

Where salmon are strongest



Pacific Salmon Conservation Assessment

Of ≈ 1400 historic salmonid populations in PNW & California, ≈ 29% have gone extinct since Euro-American Contact.
(RG Gustafson et all 2007)

Of 52 extant salmonid species on the west coast, 31 are listed as endangered or threatened or are species of concern.

Endangered Species Act Status of West Coast Salmon & Steelhead

(Updated Sept. 25, 2008)

Species[1]			*Current Endangered Species Act Listing Status*[2]	*ESA Listing Actions Under Review*
Sockeye Salmon (*Oncorhynchus nerka*)	1	Snake River	*Endangered*	
	2	Ozette Lake	*Threatened*	
	3	Baker River	*Not Warranted*	
	4	Okanogan River	*Not Warranted*	
	5	Lake Wenatchee	*Not Warranted*	
	6	Quinalt Lake	*Not Warranted*	
	7	Lake Pleasant	*Not Warranted*	
Chinook Salmon (*O. tshawytscha*)	8	Sacramento River Winter-run	*Endangered*	
	9	Upper Columbia River Spring-run	*Endangered*	
	10	Snake River Spring/Summer-run	*Threatened*	
	11	Snake River Fall-run	*Threatened*	
	12	Puget Sound	*Threatened*	
	13	Lower Columbia River	*Threatened*	
	14	Upper Willamette River	*Threatened*	
	15	Central Valley Spring-run	*Threatened*	
	16	California Coastal	*Threatened*	
	17	Central Valley Fall and Late Fall-run	*Species of Concern*	
	18	Upper Klamath-Trinity Rivers	*Not Warranted*	
	19	Oregon Coast	*Not Warranted*	
	20	Washington Coast	*Not Warranted*	
	21	Middle Columbia River spring-run	*Not Warranted*	
	22	Upper Columbia River summer/fall-run	*Not Warranted*	
	23	Southern Oregon and Northern California Coast	*Not Warranted*	
	24	Deschutes River summer/fall-run	*Not Warranted*	
Coho Salmon (*O. kisutch*)	25	Central California Coast	*Endangered*	
	26	Southern Oregon/Northern California	*Threatened*	
	27	Lower Columbia River	*Threatened*	• Critical habitat
	28	Oregon Coast	*Threatened*	
	29	Southwest Washington	*Undetermined*	
	30	Puget Sound/Strait of Georgia	*Species of Concern*	
	31	Olympic Peninsula	*Not Warranted*	
Chum Salmon (*O. keta*)	32	Hood Canal Summer-run	*Threatened*	
	33	Columbia River	*Threatened*	
	34	Puget Sound/Strait of Georgia	*Not Warranted*	
	35	Pacific Coast	*Not Warranted*	
Steelhead (*O. mykiss*)	36	Southern California	*Endangered*	
	37	Upper Columbia River	*Endangered*	
	38	Central California Coast	*Threatened*	
	39	South Central California Coast	*Threatened*	
	40	Snake River Basin	*Threatened*	
	41	Lower Columbia River	*Threatened*	
	42	California Central Valley	*Threatened*	
	43	Upper Willamette River	*Threatened*	
	44	Middle Columbia River	*Threatened*	
	45	Northern California	*Threatened*	
	46	Oregon Coast	*Species of Concern*	
	47	Southwest Washington	*Not Warranted*	
	48	Olympic Peninsula	*Not Warranted*	
	49	Puget Sound	*Threatened*	• Critical habitat
	50	Klamath Mountains Province	*Not Warranted*	
Pink Salmon (*O. gorbuscha*)	51	Even-year	*Not Warranted*	
	52	Odd-year	*Not Warranted*	

1 The ESA defines a "species" to include any distinct population segment of any species of vertebrate fish or wildlife. For Pacific salmon, NOAA Fisheries Service considers an evolutionarily significant unit, or "ESU," a "species" under the ESA. For Pacific steelhead, NOAA Fisheries Service has delineated distinct population segments (DPSs) for consideration as "species" under the ESA.

NOAA's Mandates

Endangered Species Act

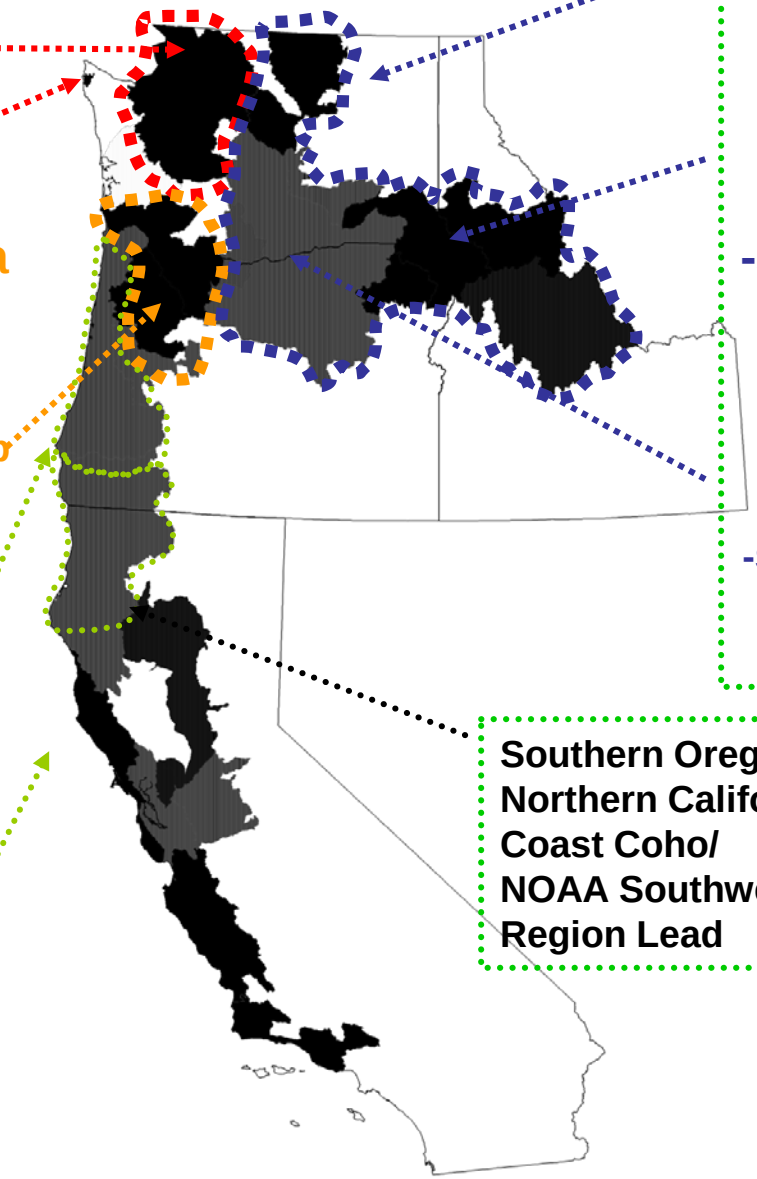
- Listing
- Recovery
- Avoid jeopardy
- Avoid adverse modification to critical habitat

Tribal Treaty and Trust Responsibilities

Magnuson-Stevens Fishery Conservation & Management Act

Marine Mammal Protection Act

ESA Recovery Planning Efforts



Puget Sound
- Shared Strategy
- Lake Ozette

Willamette/Lower Columbia
- Willamette/lower Col
- L. Col. Estuary Partnership
- L. Col Fish Recovery Board
- OR L.Col. Stakeholder group
- Willamette Restoration Initiative

Oregon Coast
Oregon Coho Conservation Plan

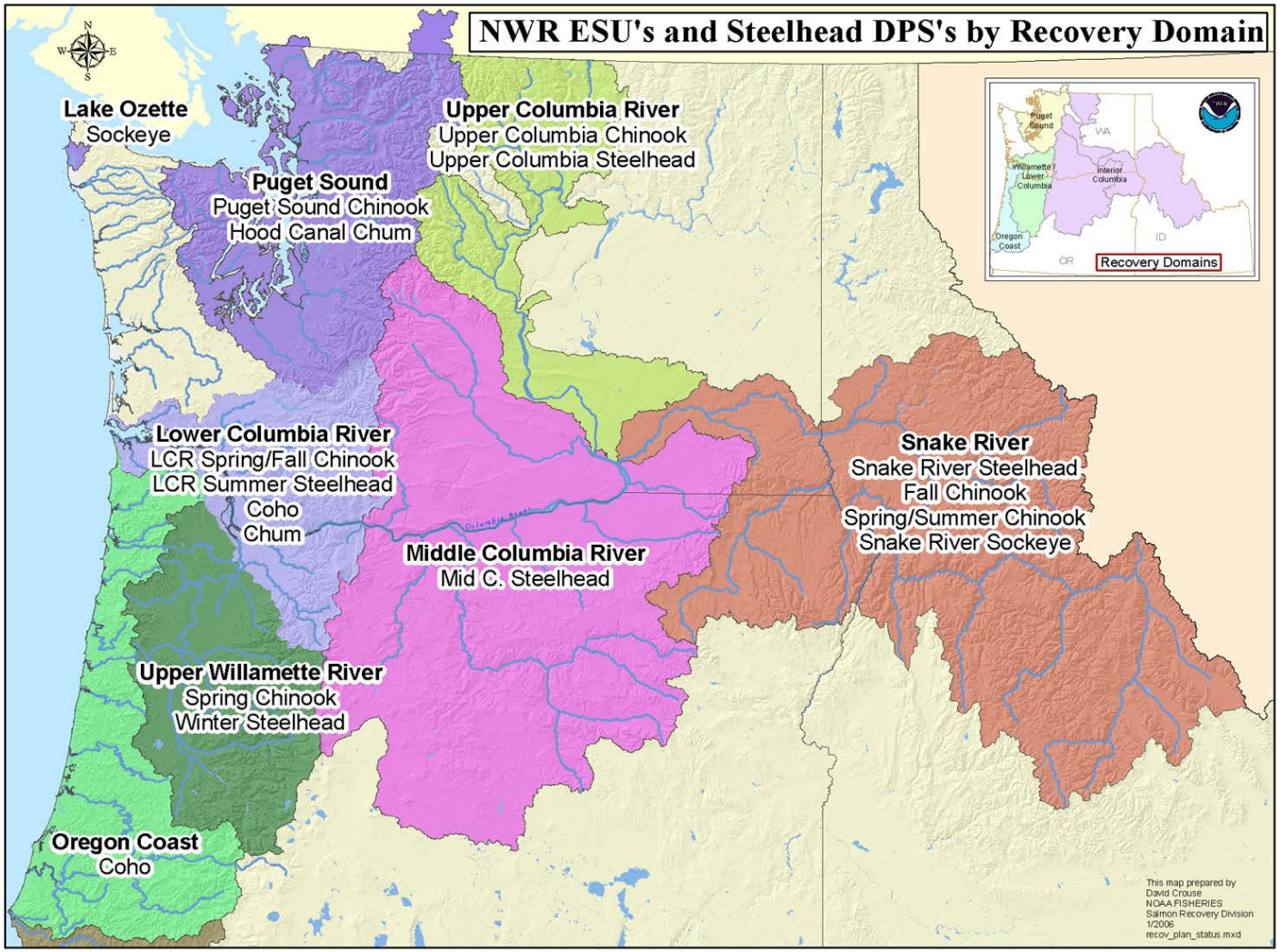
California:
Recovery Stakeholder Groups

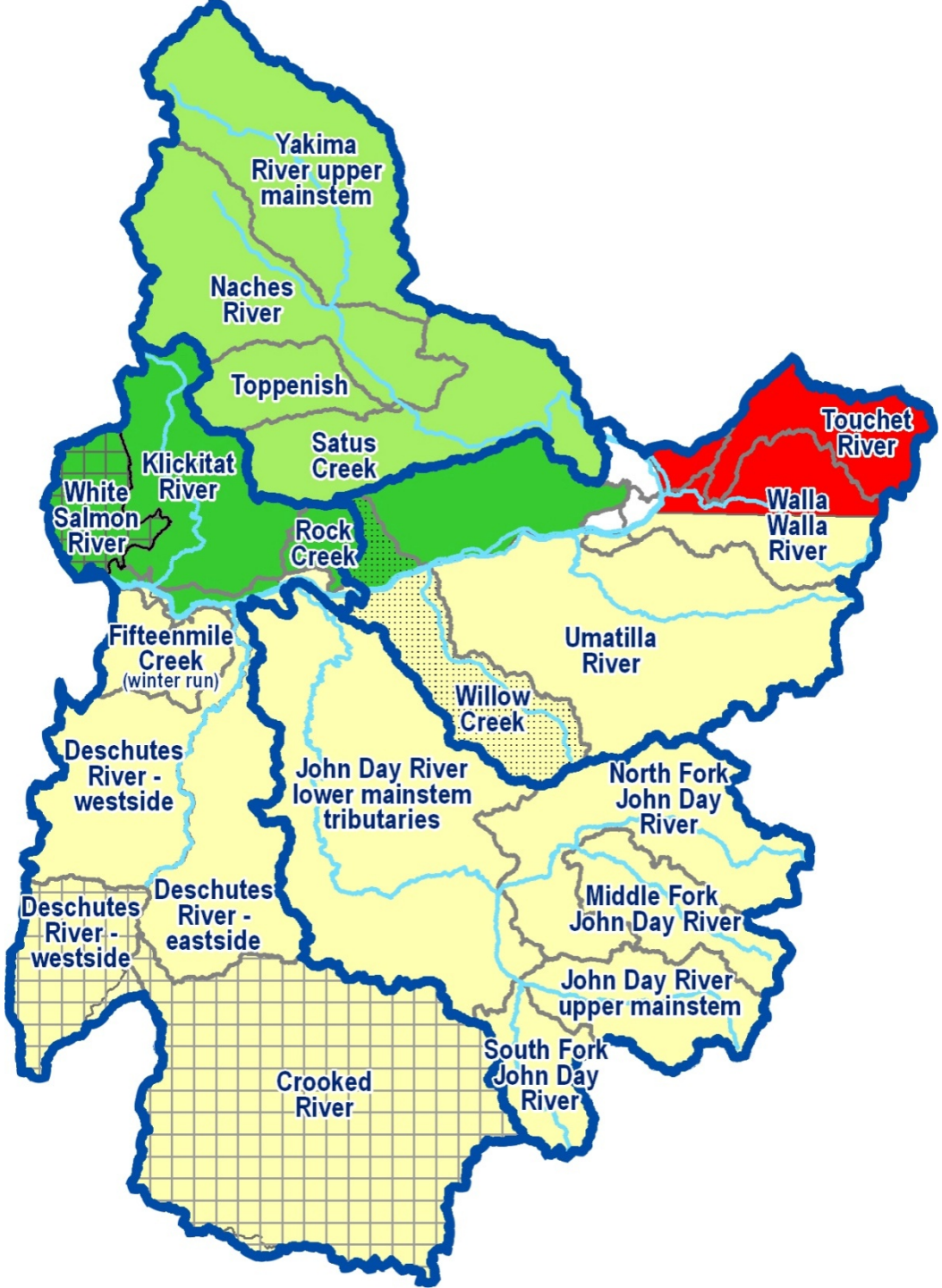
Upper Columbia
Recovery Board

Snake (Idaho, NE Oregon, SE Washington)
-Sounding Board - Oregon
-Recovery Boards- Washington

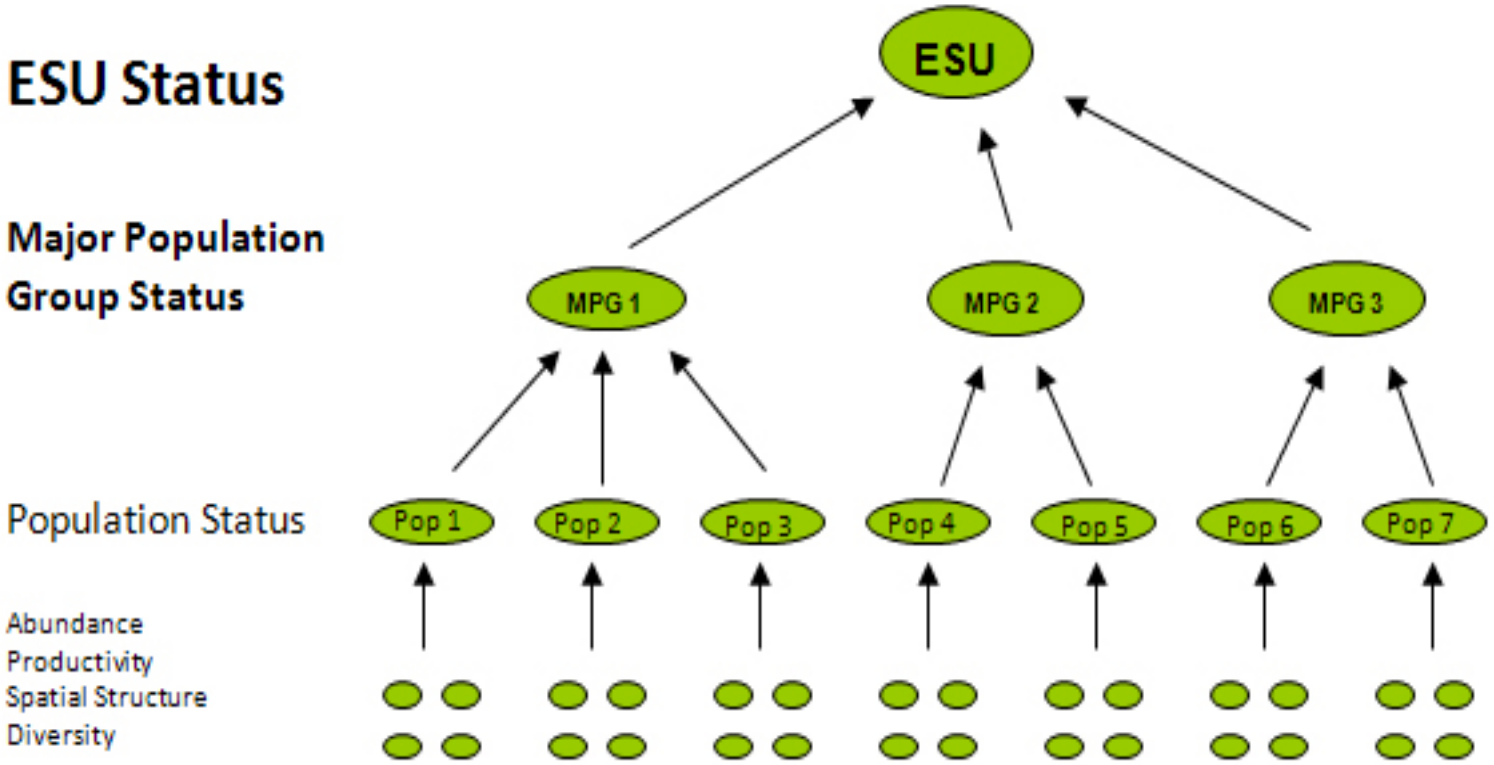
Mid Columbia (Oregon, Washington)
-Sounding Board - Oregon
-Recovery Boards- Washington

Southern Oregon Northern California Coast Coho/ NOAA Southwest Region Lead

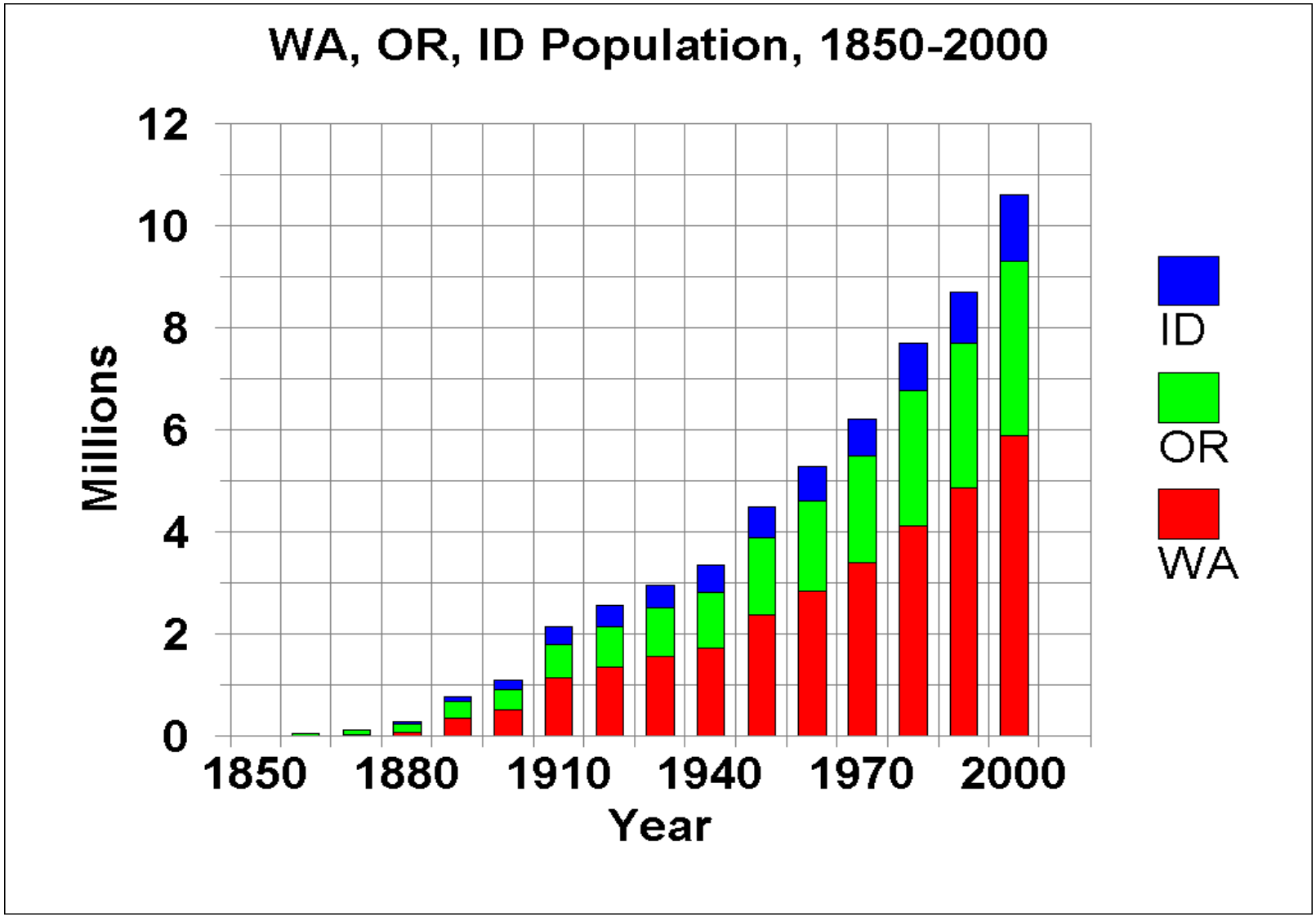

NWR ESU's and Steelhead DPS's by Recovery Domain
Lake Ozette
Sockeye
Puget Sound
Puget Sound Chinook
Hood Canal Chum
Upper Columbia River
Upper Columbia Chinook
Upper Columbia Steelhead
Lower Columbia River
LCR Spring/Fall Chinook
LCR Summer Steelhead
Coho
Chum
Middle Columbia River
Mid C. Steelhead
Snake River
Snake River Steelhead
Fall Chinook
Spring/Summer Chinook
Snake River Sockeye
Upper Willamette River
Spring Chinook
Winter Steelhead
Oregon Coast
Coho
Recovery Domains
This map prepared by
David Crouse
NOAA FISHERIES
Salmon Recovery Division
1/2006
recov_plan_status.mxd


Yakima River upper mainstem
Naches River
Toppenish
Satus Creek
Touchet River
Klickitat River
White Salmon River
Rock Creek
Walla Walla River
Fifteenmile Creek (winter run)
Umatilla River
Willow Creek
Deschutes River - westside
John Day River lower mainstem tributaries
North Fork John Day River
Deschutes River - eastside
Deschutes River - westside
Middle Fork John Day River
John Day River upper mainstem
South Fork John Day River
Crooked River

Hierarchical Structure Management Priority: VSP



Pacific Northwest Human Population Growth (From Smith 2007)



2. Comprehensive Plans

- ESA Recovery Plans For Salmon and Steelhead in the Northwest Region (Southwest Region’s Recovery Plans aren’t shown)

Developing Comprehensive Plans

ESA Section 4(f)(1)

RECOVERY PLANS-.The Secretary shall develop and implement … "recovery plans" for the conservation and survival of endangered species and threatened species …

ESA Sec. 4(f) requirements

- Develop and Implement Plans… for the *conservation and survival* of listed species
  - Site-Specific Actions (necessary to achieve the plan's goal of conservation and survival)
  - Measurable Criteria (both biological and threats)
  - Estimate of Time and Cost for completing measures to achieve plan's goal

Recovery plans will be:

1. Developed with federal, state, tribal and local involvement
2. Based on science
3. Realistic roadmaps to recovery

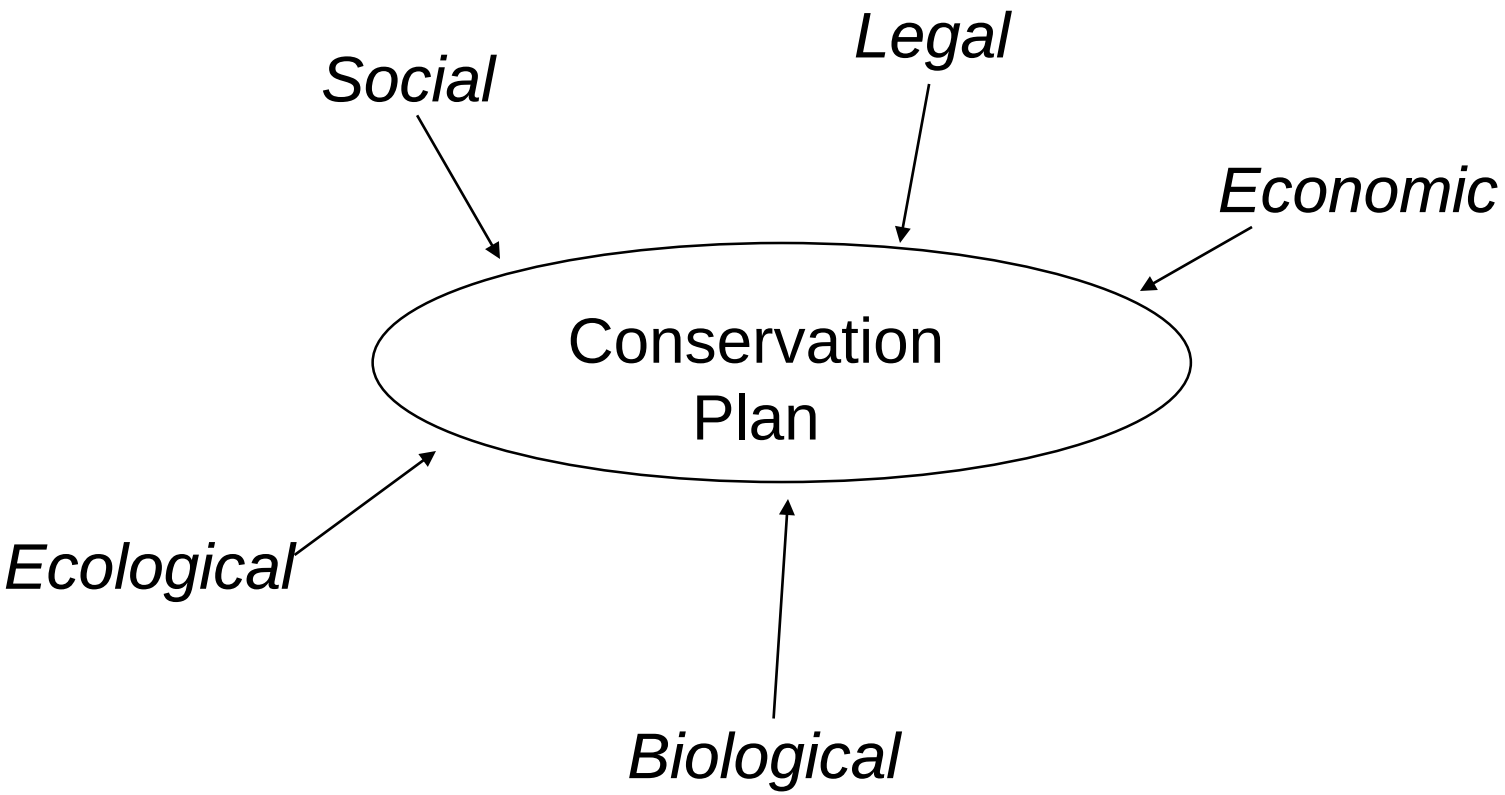
Based on science…

- Participation on technical recovery teams (TRTs)
- TRTs
  - Identified historical populations
  - Developed and recommended VSP criteria for each population; population level to MPG to ESU/DPS
  - Developed guidelines for viable ESUs (how many and which populations)
  - Developing other technical products
  - Reviewing draft recovery plans

Realistic roadmaps to recovery: how recovery plans will be used…

- Improved context for ESA decisions:
  - Consistent approach to all Hs in consultation
  - Expedite actions that implement recovery plans
- Setting priorities
  - Focus restoration on limiting factors in priority areas
  - Use plans as a guide in processing permits
  - Improve cost effectiveness and likelihood of success

Recovery planning: not just fish biology

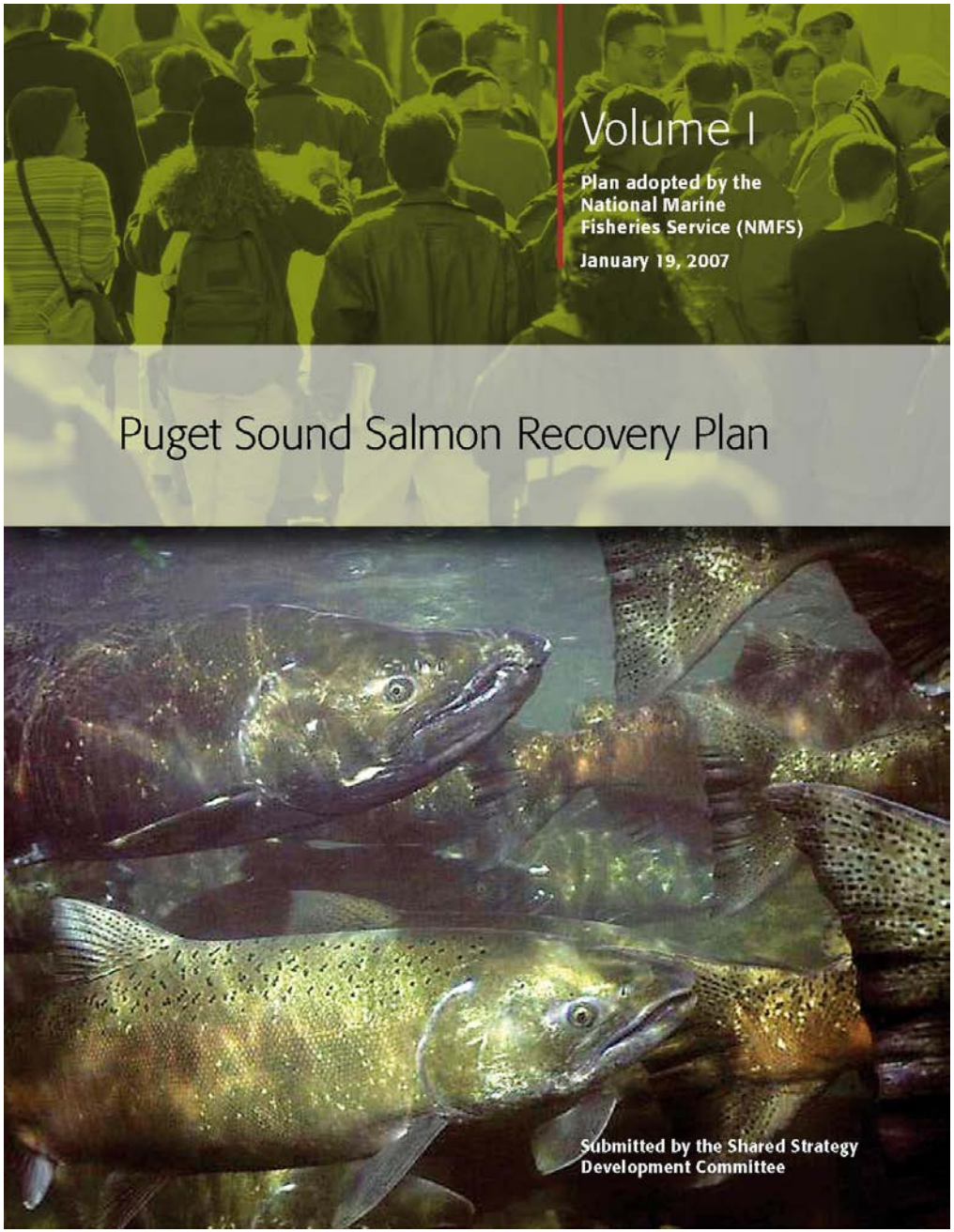


Completed Plans:
- Puget Sound Chinook
- Hood Canal Summer Chum
- Upper Columbia Chinook and steelhead
- Lake Ozette Sockeye

Close to completion:
- Mid Columbia Steelhead

Underway:
- Lower Columbia – 4
- Snake Basin - 4
- Willamette – 2

Next:
- Oregon Coast Coho
- Puget Sound Steelhead



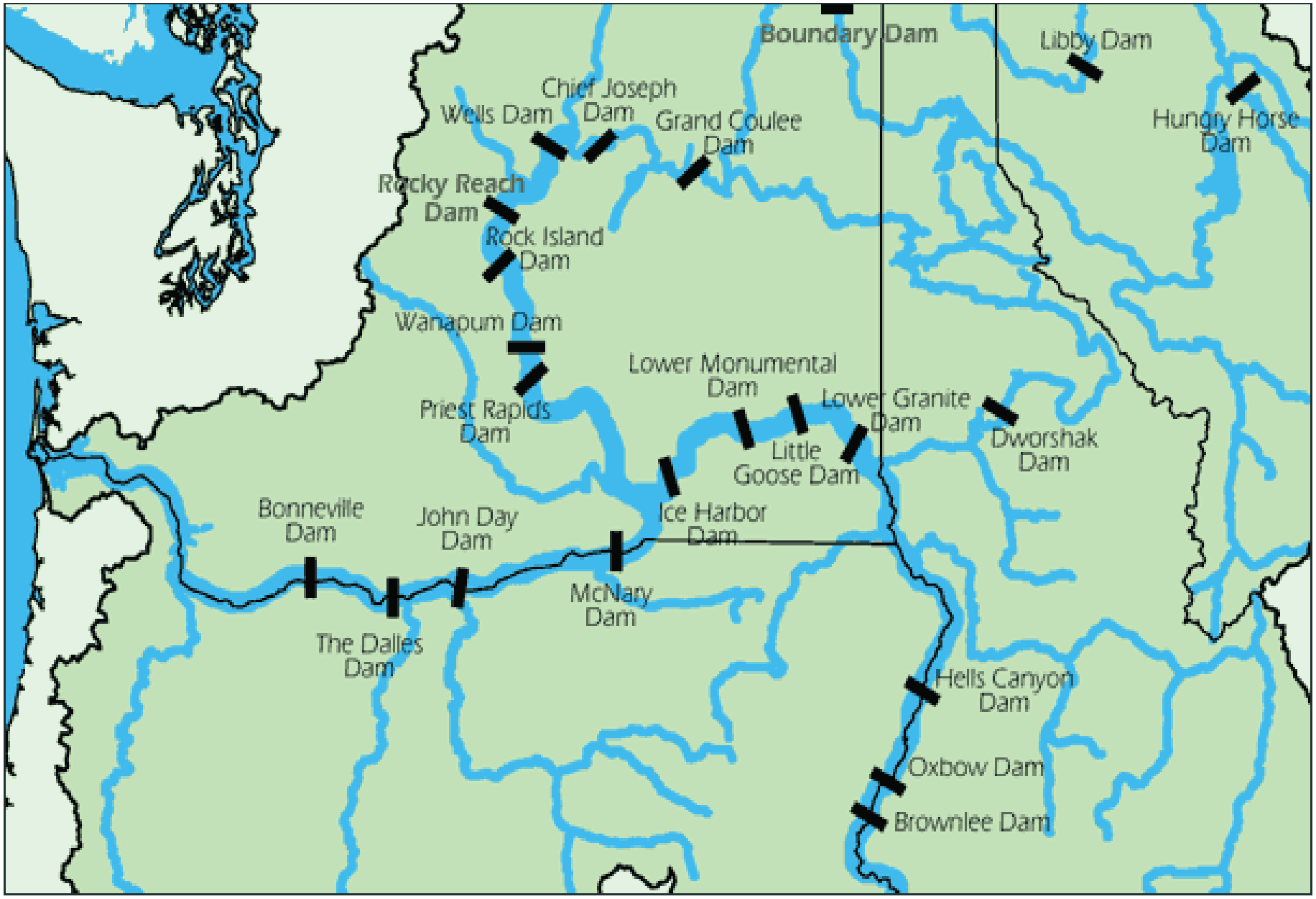
Comprehensive Plans Include:

- Hydro
- Habitat
- Hatcheries
- Harvest
- Climate

Hydro

Grand Coulee Dam (Built 1941) (Blocked 1100 miles)

Hydropower Dams in the Columbia River Basin



Managing Habitat

- Watershed Health
- Ecosystem management
- Changing Human Behavior using the carrot and the stick
- Improving Metrics and indicators

Impacts of Timber Harvest

Past and present logging patterns are among the processes affecting sediment yield and flood runoff in the watershed.

Impacts of Dredge Mining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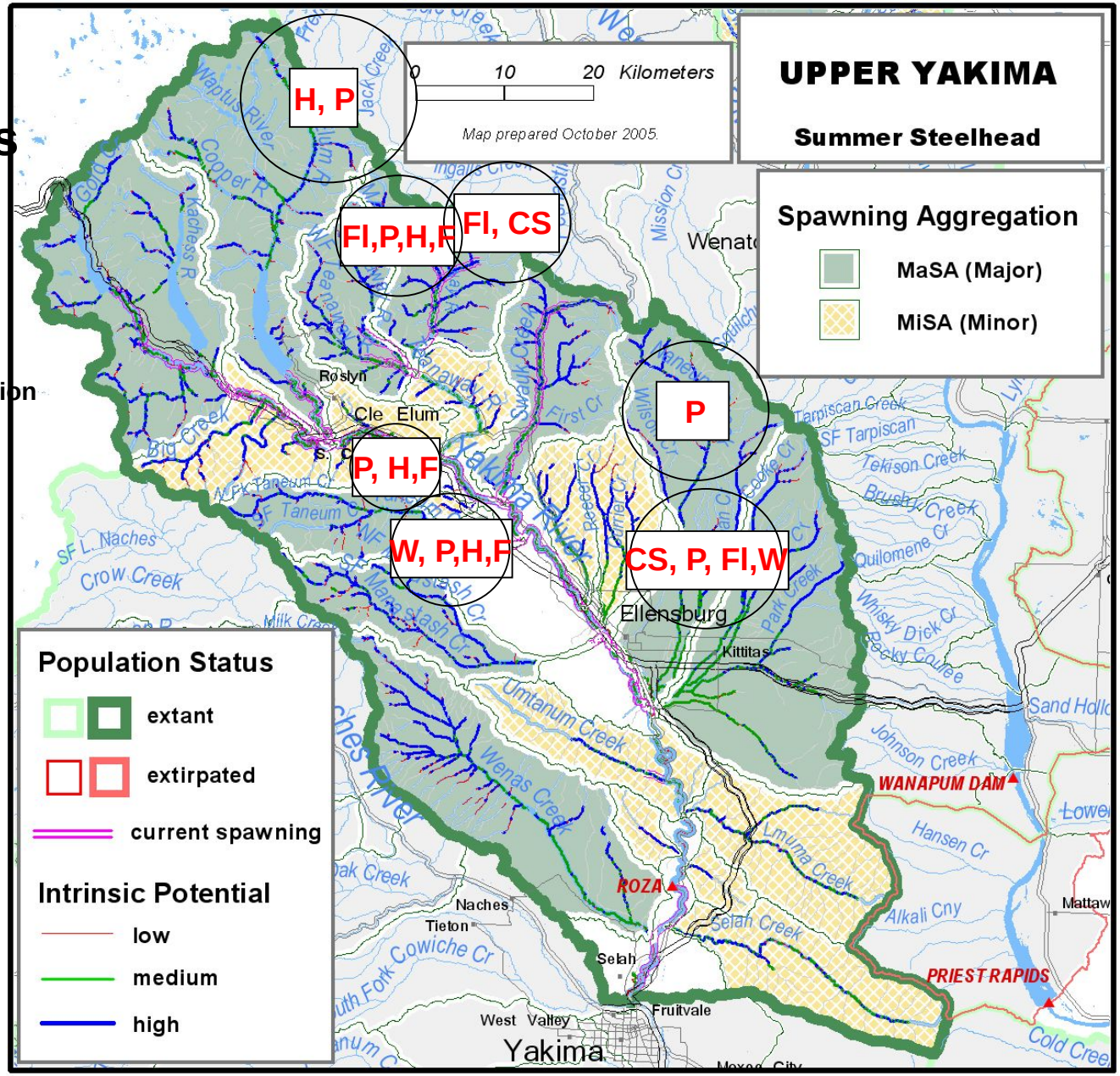
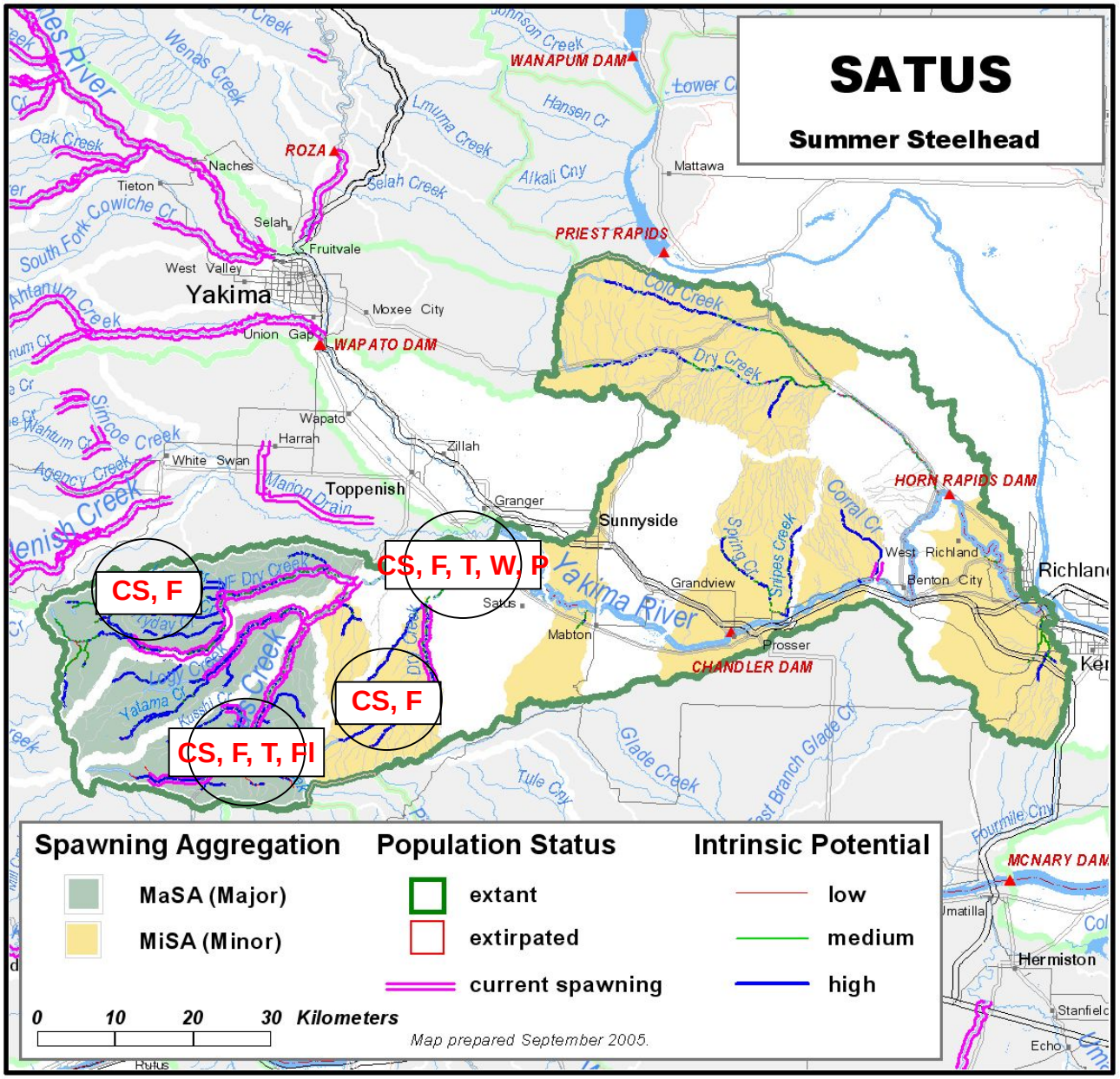
Limiting Factors

- (CS) Degraded floodplain and channel structure
- (S) Sediment routing dysfunction
- (P) Hydrologic alterations including fish passage
- (W) Degraded water quality
- (M) Mainstem hydropower and habitat effects
- (C) Competition, predation, harassment
- (Fl) Low flows
- (H) Reduced habitat quantity, quality, and diversity



Limiting Factors

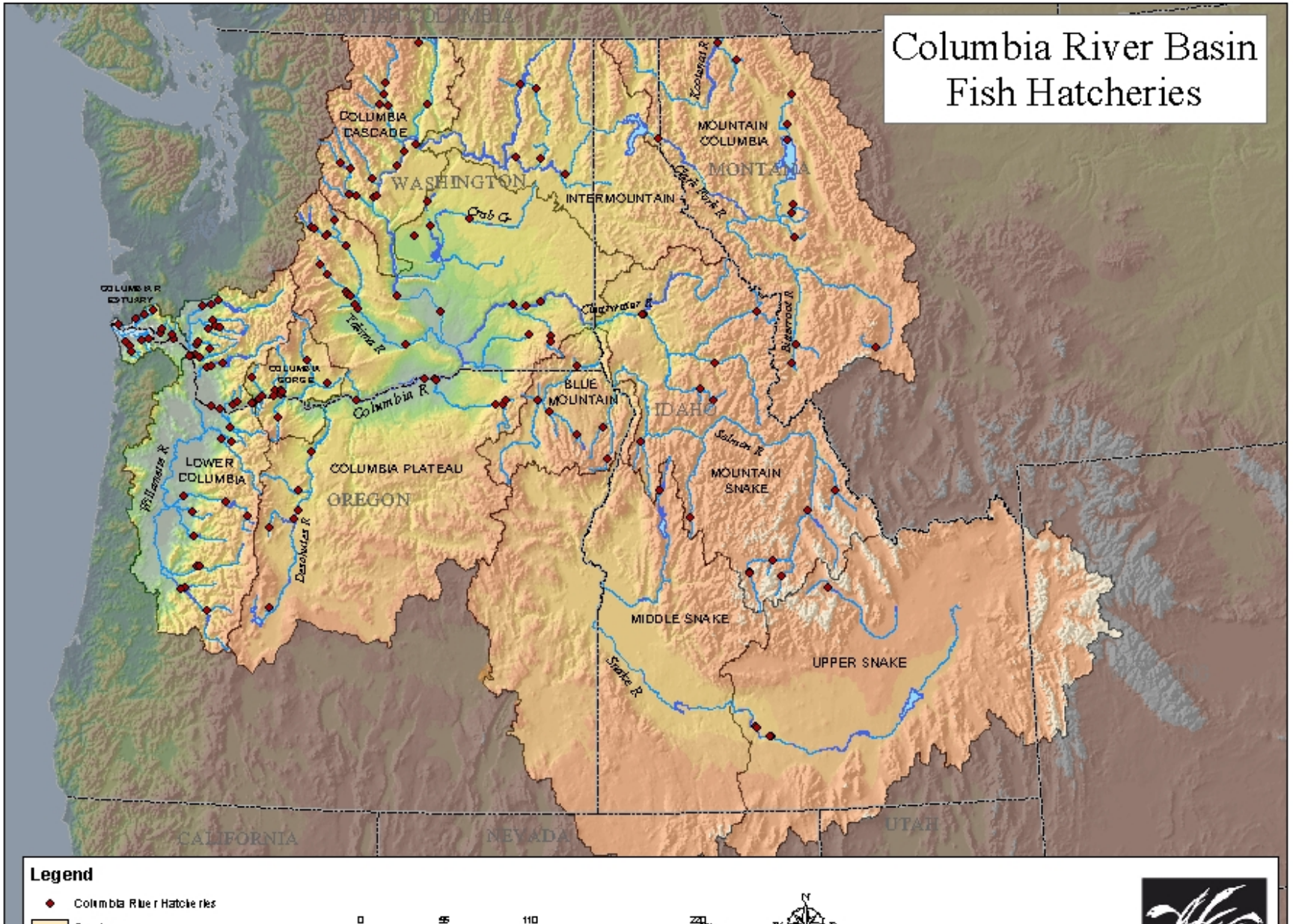
- (CS) **Degraded floodplain and channel structure**
- (S) **Sediment routing dysfunction**
- (P) **Hydrologic alterations including fish passage**
- (W) **Degraded water quality**
- (F) **Degraded riparian forest and LWD recruitment**
- (M) **Mainstem hydropower and habitat effects**
- (C) **Competition, predation, harassment**
- (H) **Reduced habitat quantity, quality, and diversity**
- (Fl) **Low flows**
- (T) **Temperature**



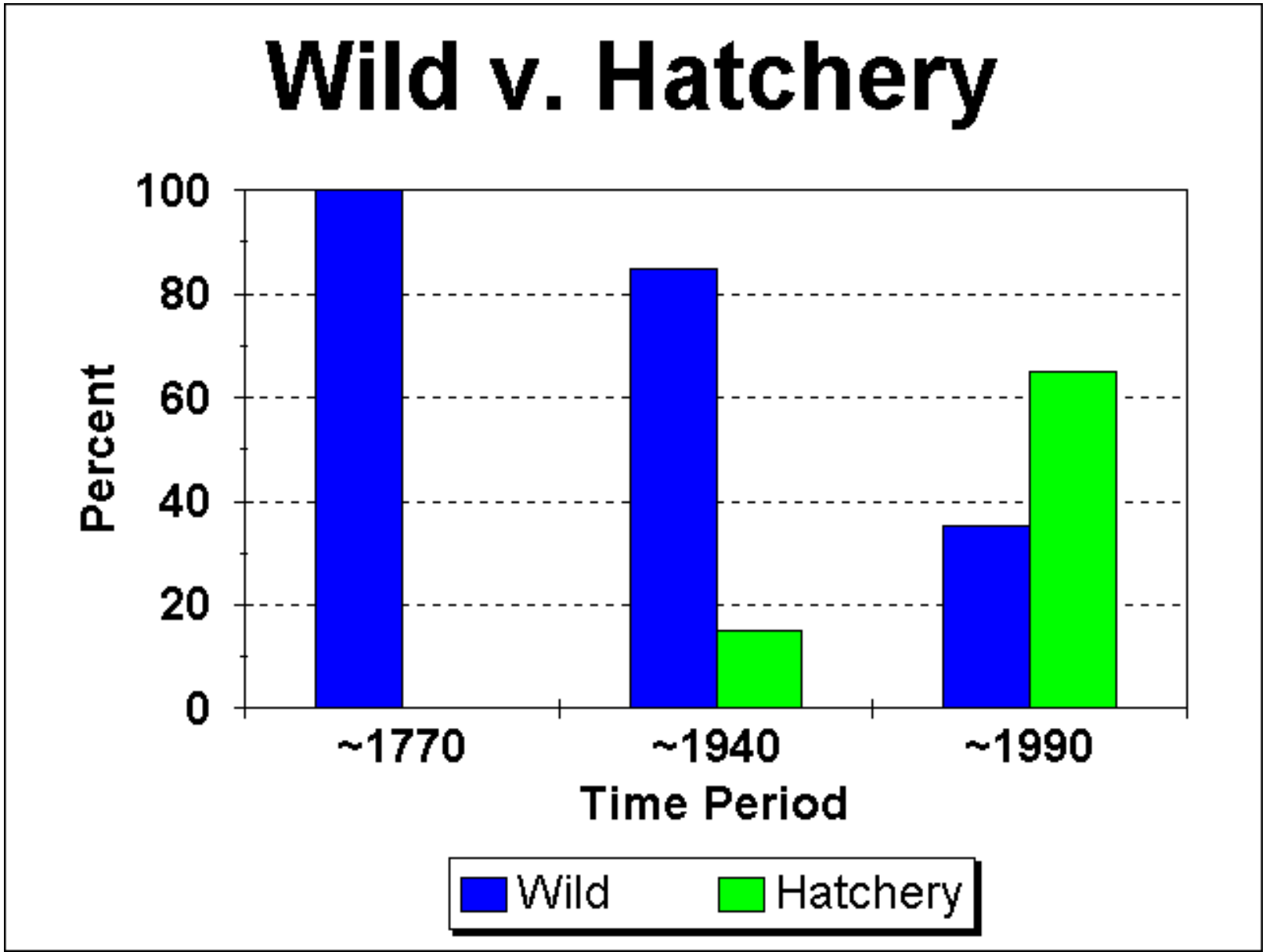
Hatcheries

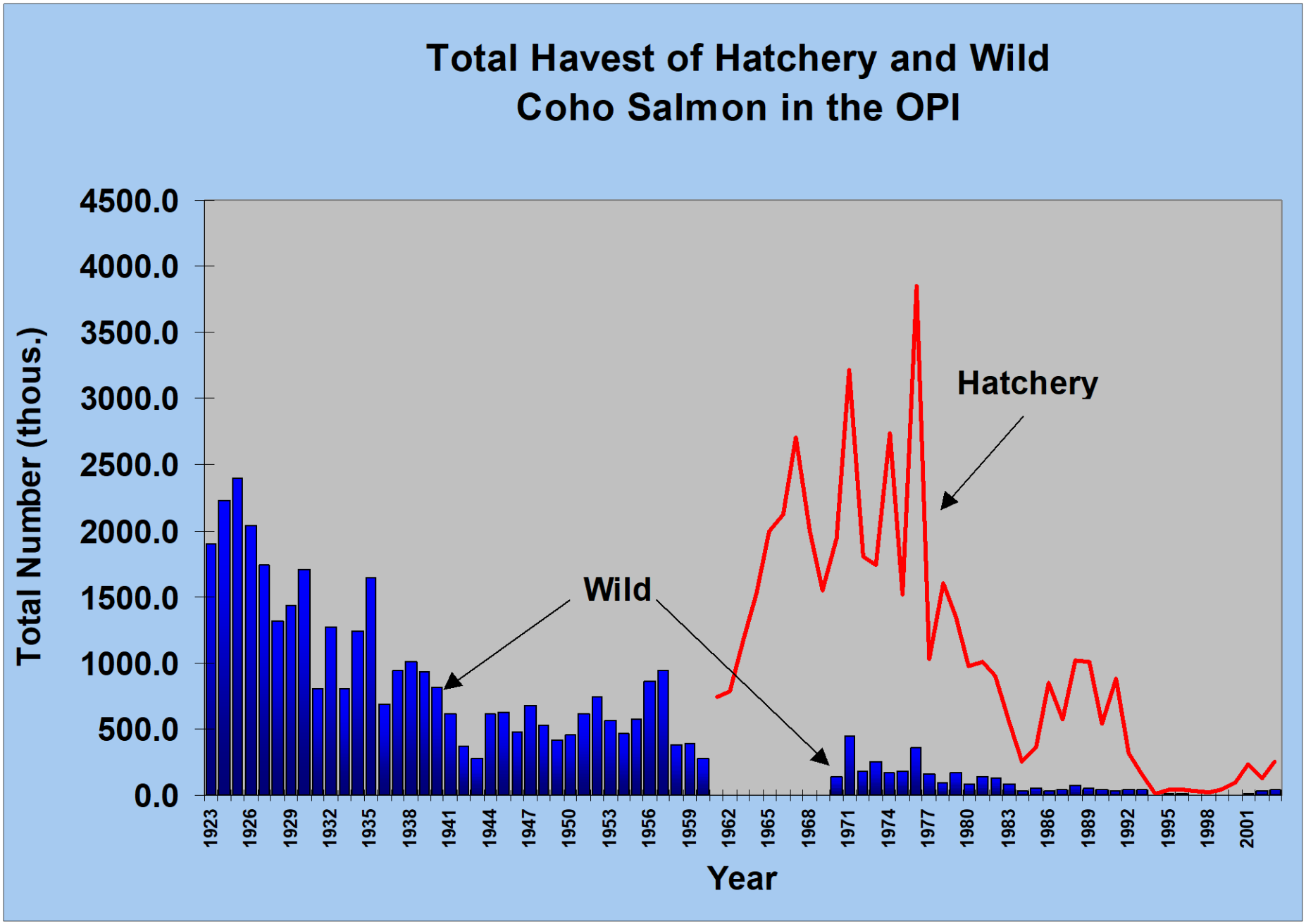
Bonneville Fish Hatchery

Columbia River Basin Hatcheries
(From Smith, 2007)



Percent Of Salmon That Are Wild-Origin Entering the Columbia River (Smith,2007)




Total Havest of Hatchery and Wild Coho Salmon in the OPI
Total Number (thous.)
4500.0
4000.0
3500.0
3000.0
2500.0
2000.0
1500.0
1000.0
500.0
0.0
Hatchery
Wild
1923
1926
1929
1932
1935
1938
1941
1944
1947
1950
1953
1956
1959
1962
1965
1968
1971
1974
1977
1980
1983
1986
1989
1992
1995
1998
2001
Year

Evolutionary Effects of Alternative Artificial Propagation Programs: Implications for Viability of Endangered Anadromous Salmonids

Artificial propagation and viability of salmonids

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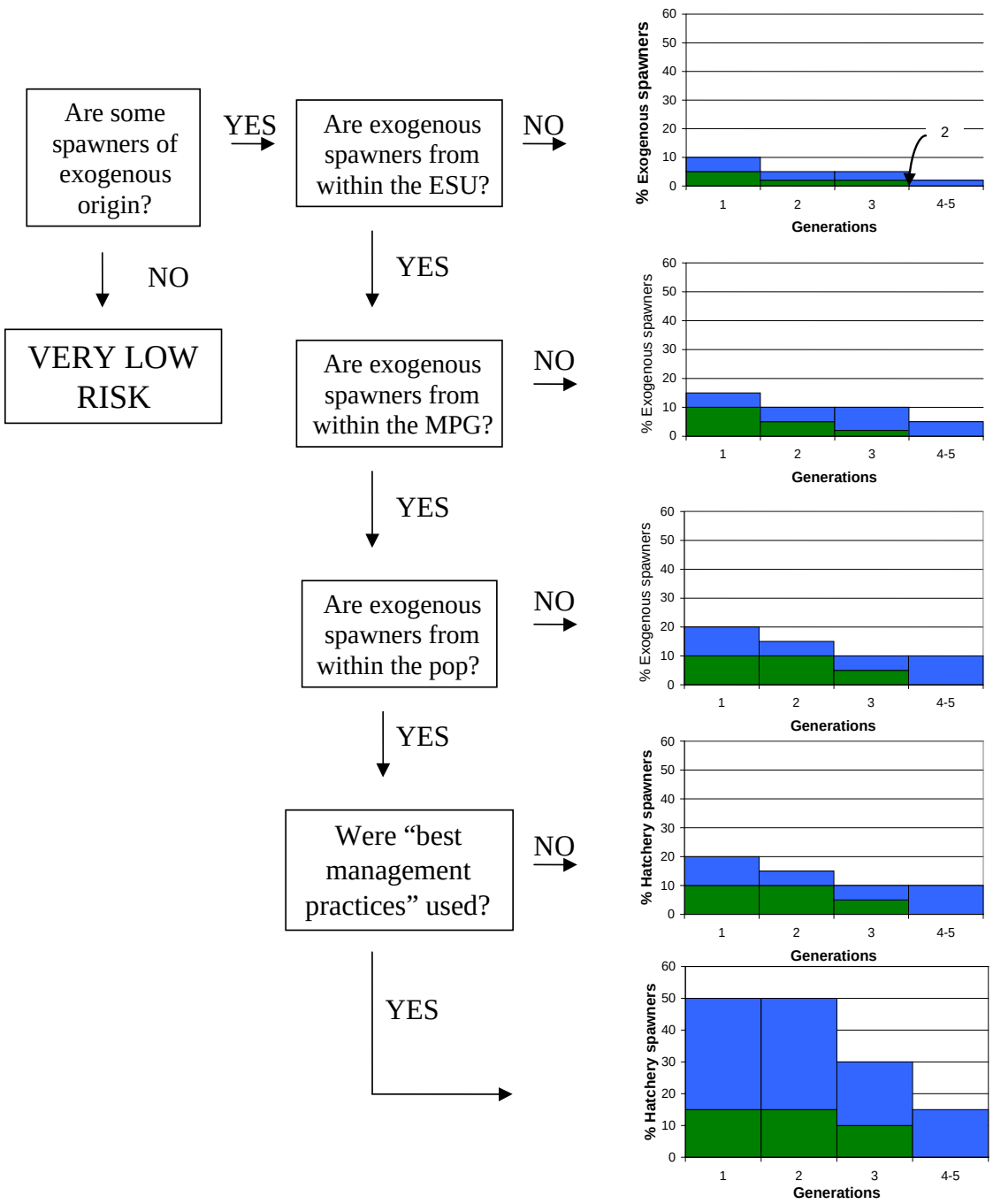
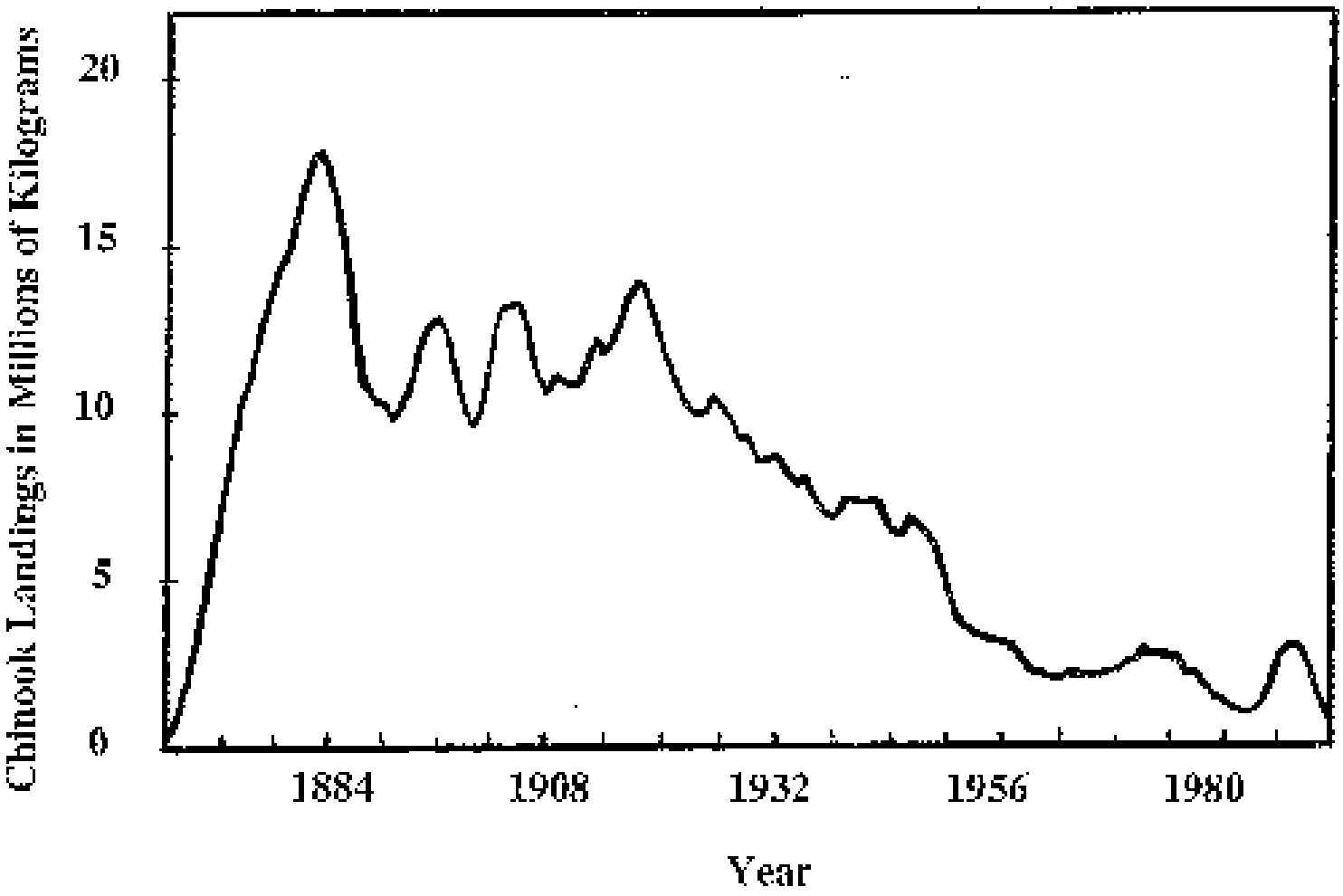

Are some spawners of exogenous origin?
YES
Are exogenous spawners from within the ESU?
NO
NO
YES
VERY LOW RISK
Are exogenous spawners from within the MPG?
NO
YES
Are exogenous spawners from within the pop?
NO
YES
Were “best management practices” used?
NO
YES
% Exogenous spawners
2
Generations
% Exogenous spawners
Generations
% Exogenous spawners
Generations
% Hatchery spawners
Generations
% Hatchery spawners
Generations
0
10
20
30
40
50
60
1
2
3
4-5

Harvest

Traditional Tribal Fishers at Celilo Falls on the Free Flowing Columbia River

Historical Salmon Cannery Floor

Chinook Salmon Landings in the Columbia River Basin (1866-1992)




OUTLAW
SKAMOKAWA, WA

Five Recommendations, Lessons Learned & Questions to Ponder.

1. Ecosystem Management makes sense!

- ESA Section 2 (b):

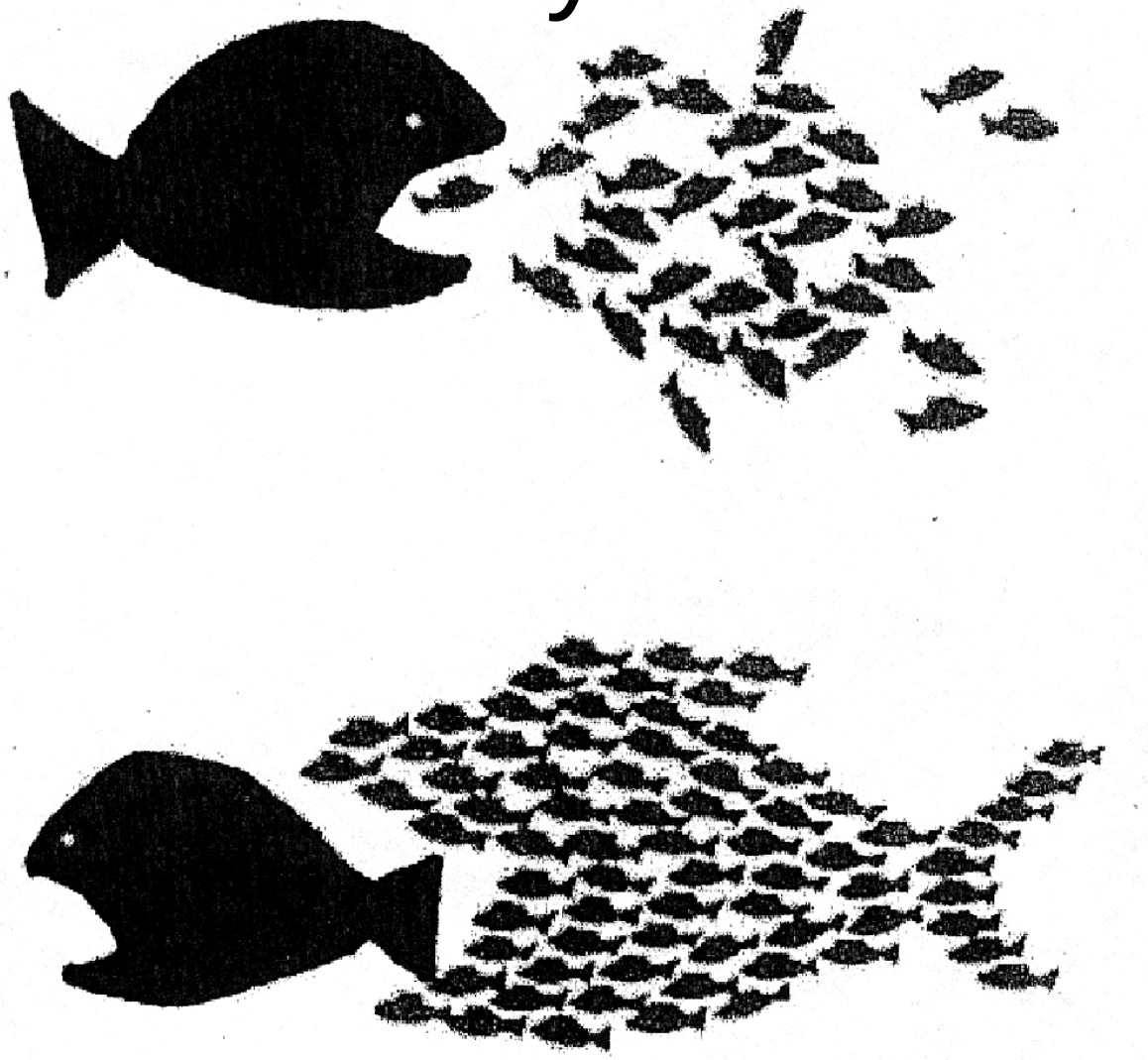
The purposes of the Act are to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program fo the conservation of such (listed) species…”


NORTH AMERICAN
Salmon Stronghold
PARTNERSHIP

II. Science Isn’t Enough

- Unless you want the plan to sit on the shelf, it will need broad-based support
- Landowners
- Government: local, state, tribal, federal
- Fisheries Managers
- Education and outreach

The Power of Organizing Is Key!

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Scenic Middle Fork of the John Day River
RESTORATION

Confederated Tribes of the Warm Springs

Keystone Species like beaver and salmon play pivotal roles as indicators and in regulating the health of riparian ecosystems.

Salmon returning year after year indicate clean, clear, cold and abundant water supporting a healthy aquatic community.

Beaver expedite the creation and restoration of healthy wetlands surrounding the river and its tributaries, providing quality habitat for fish and other wildlife.

Collaborating Partners

Malheur Forest · Keystone Project · ODFW · OSU Extension · Grant Soil and Water · NRCS · Prineville BLM

III. Science Fundamentals

- Natural Selection
- Local Adaptation
- Viability at the Population Level

IV. Integrating Management of Fisheries & Habitat

- Instead of finger pointing (it's the other guy's fault)
- Telling a positive story for each H
- Changing human behavior: carrot, stick
- Protecting and restoring habitat is absolutely necessary, but it isn't sufficient!

V. Don’t Underestimate the Challenges

www.nwr.noaa.gov

Questions?

Continuing Need for RM&E

Examples of Critical Uncertainties:

- Managing salmon habitat: Uncertainty: what's happening to habitat at a landscape scale?
- Hydro: delayed mortality in FCRPS
- Fisheries Management: harvest, hatcheries, and related facilities. Uncertainty: what is the long term effect of hatchery programs on natural productivity?

Management Priorities: what about the strong runs?

The North American Salmon Stronghold Partnership is established to identify and protect a network of the healthiest remaining wild Pacific salmon ecosystems across North America...