Diversity & History of Fish Runs and Habitat

in the

Yakima Basin

Diversity of Yakima Basin Habitats

The Yakima Basin

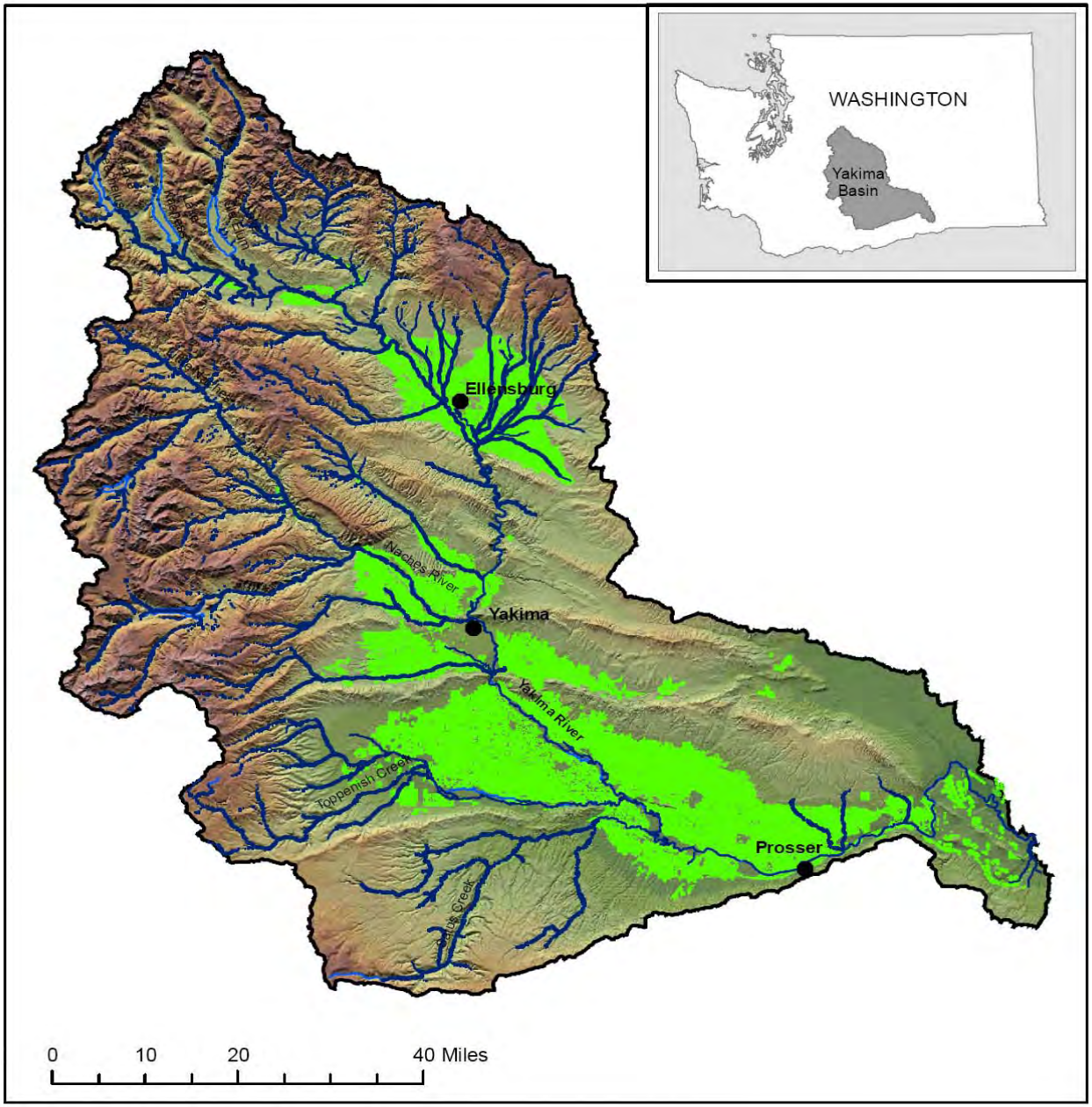


Image © 2009 DigitalGlobe
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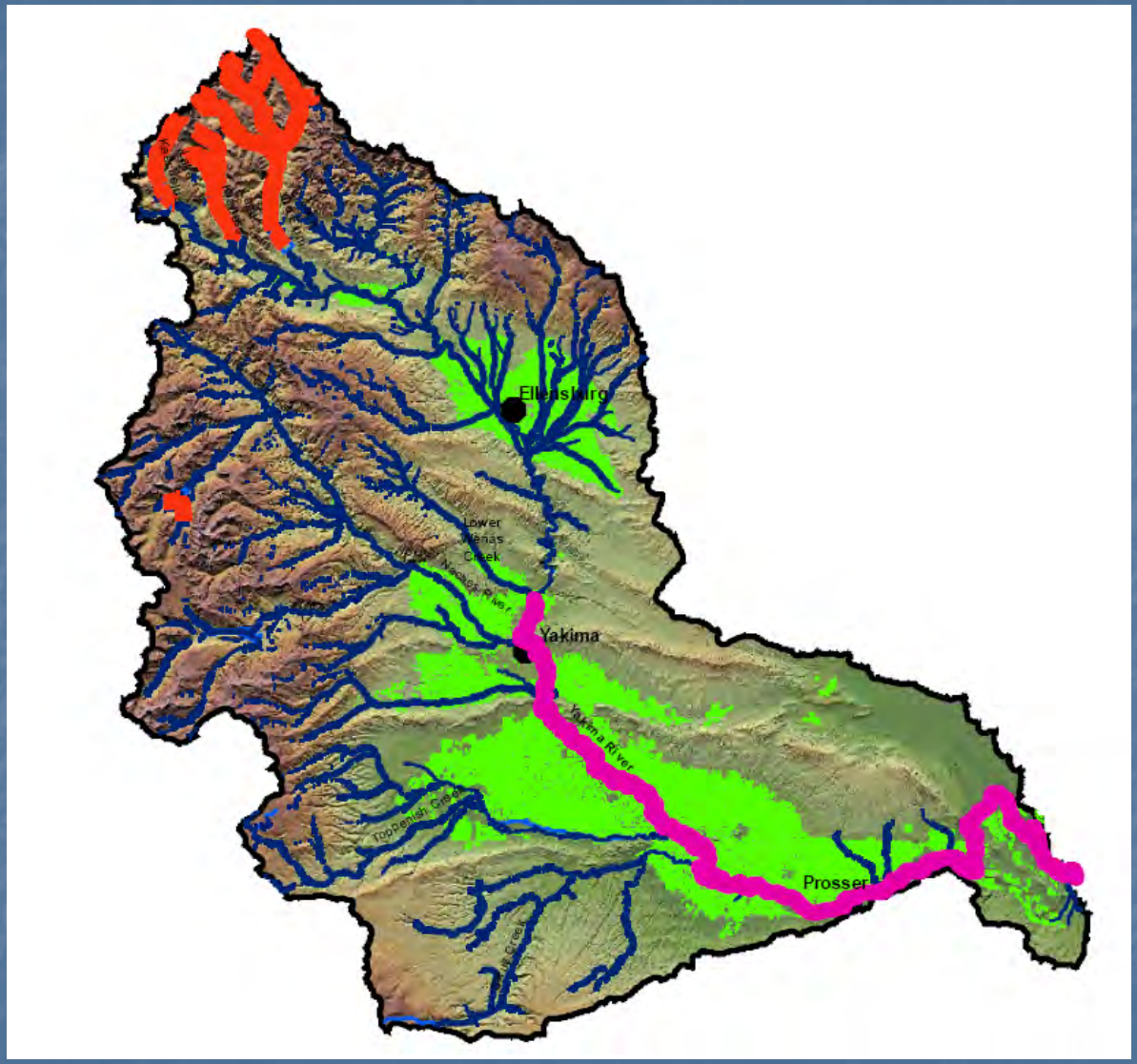
Overview of Fish Runs

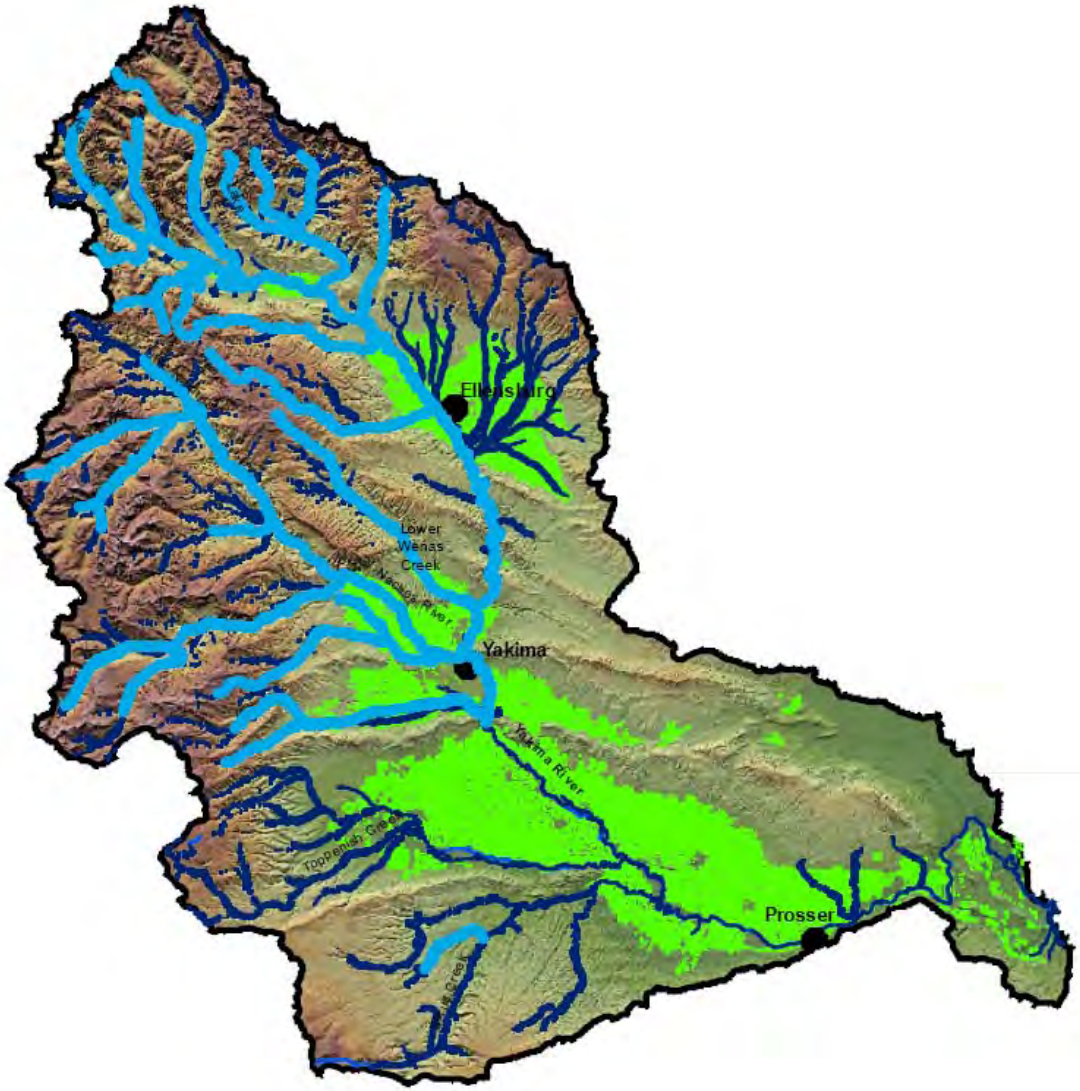
HISTORIC DISTRIBUTIONS

SOCKEYE (red)

FALL CHINOOK (purple)

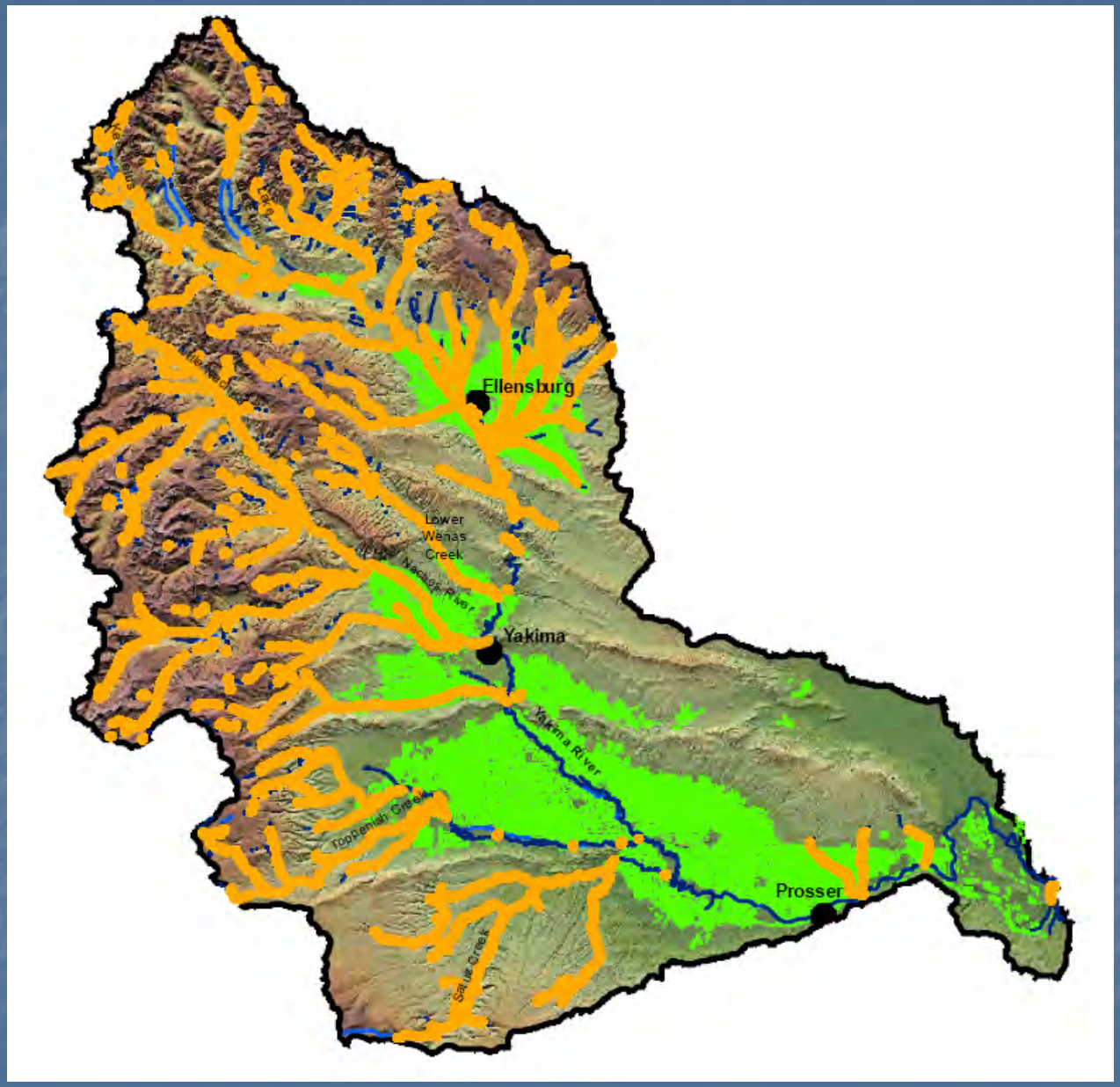


SPRING CHINOOK
HISTORIC DISTRIBUTION



STEELHEAD

HISTORIC DISTRIBUTION



Historic Salmon Runs

Species/Run	Low Estimate	High Estimate	Current Status	Low	Year	High	Year
Spring Chinook	200,000	500,000	Supplemented Population	666	1995	21,472	2001
Fall Chinook	38,000	100,000	Supplemented Population	523	1988	13,000	2002
Summer Chinook	??	??	Extirpated	-		-	
Coho	40,000	150,000	Extirpated and reintroduced	-	till 93	4,978	2001
Sockeye	100,000	200,000	Extirpated	-		-	
Steelhead	30,000	100,000	Wild Population	721	1990	4,525	2001
Total	**408,000**	**1,050,000**		**1,910**		**43,975**	
Bull Trout	??	??	Wild Population			2500 to 3000 adults	
Lamprey	??	??	Wild Population			0 to 87 adults	

Causes of Declines

Outside the Yakima Basin....

Intensive Fisheries thru the 1980s

The Columbia Hydropower System

And in the Basin….

Changed flows

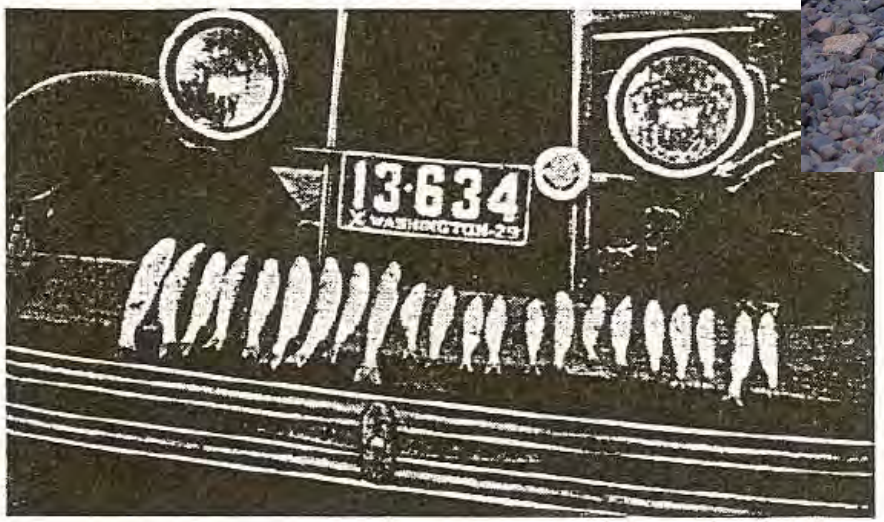


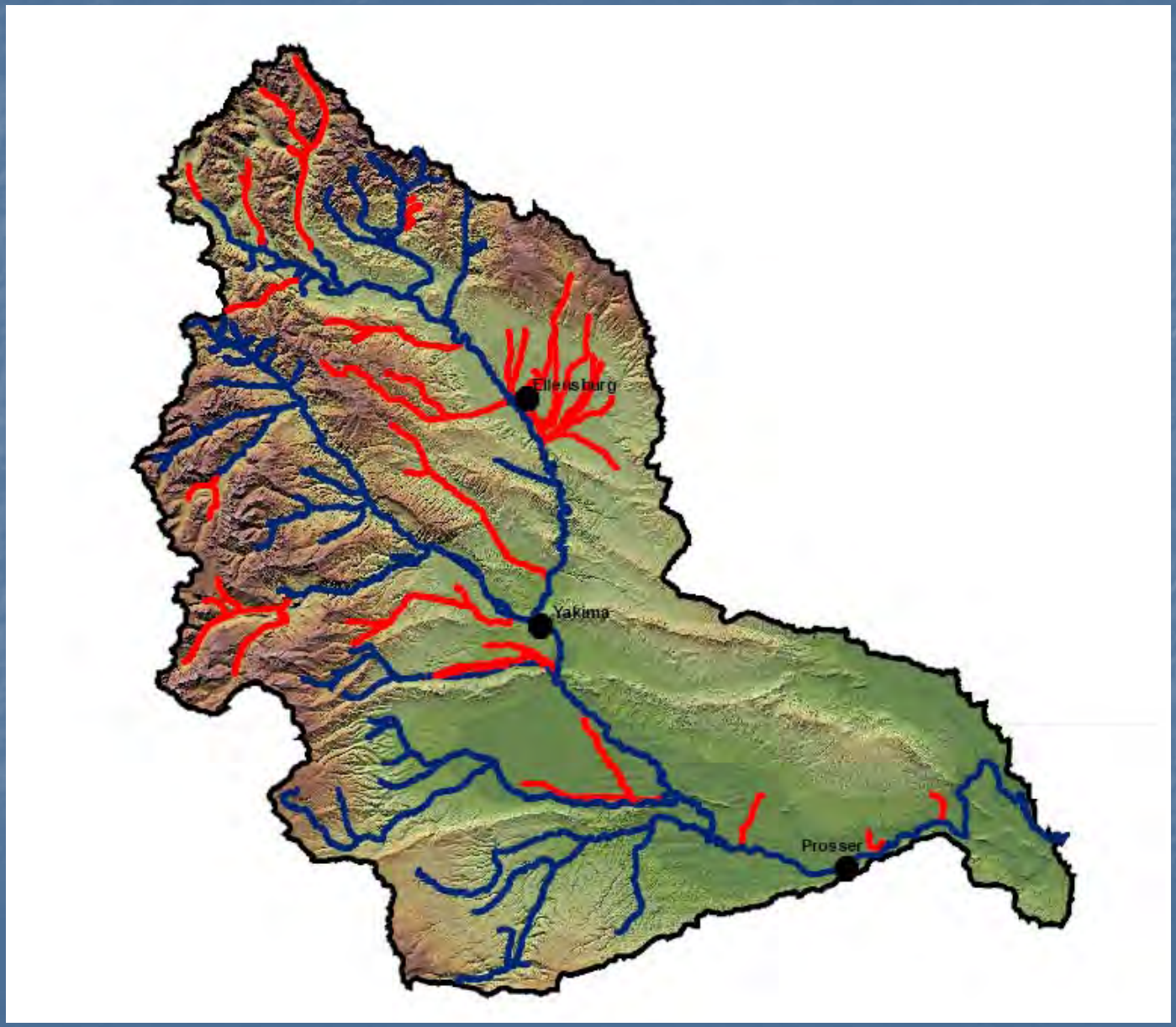
Figure 4. Nine juvenile steelhead and thirteen salmon caught in Lateral 371, Wapato Irrigation Project, by E. Brannon, on 26 May 1929. (Source--WDFW)

Unscreened diversions

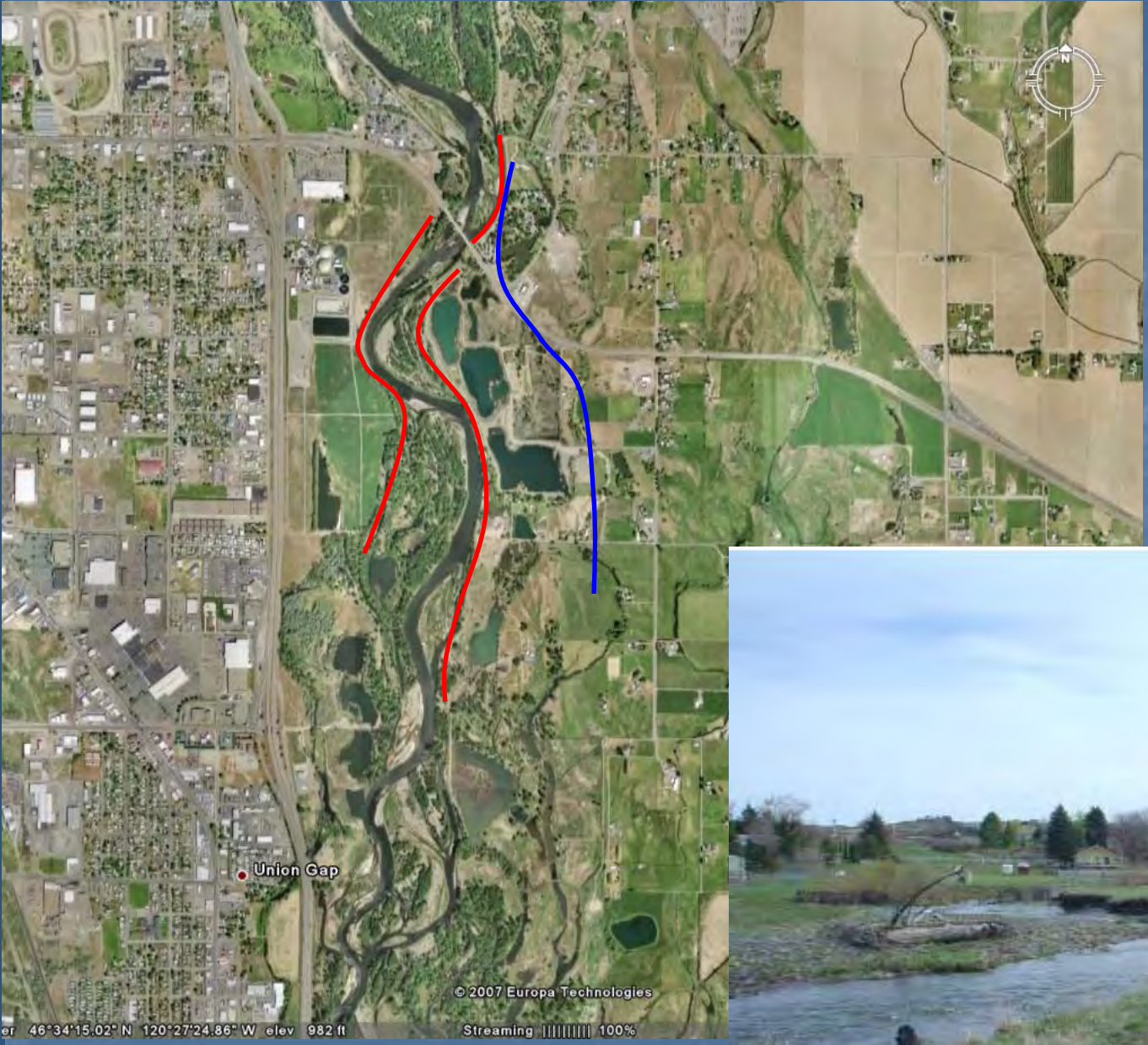
Blocking off of Upstream Habitat

BLOCKED STEELHEAD HABITAT IN RED

(about 1980- some areas recently reopened)



Habitat Degradation



Reaches Data...

LOSS OF FLOODPLAIN HABITAT

Reach	*% Floodplain Loss*
Easton	61
Cle Elum	59
Kittitas	68
Selah	67
Union Gap	60
Wapato	85

Data from Eitemiller & Uebelacker, as presented in Snyder & Stanford, 2001

By the 1980s….

Extirpation of:

- Summer Chinook
- Sockeye
- Coho

Returns of under 1000:

- Spring & Fall Chinook
- Steelhead

Declines and local extinctions of bull trout

Yakima Basin Salmon Restoration Activities

Overview of Reintroduction and Restoration Activities in the Yakima Basin

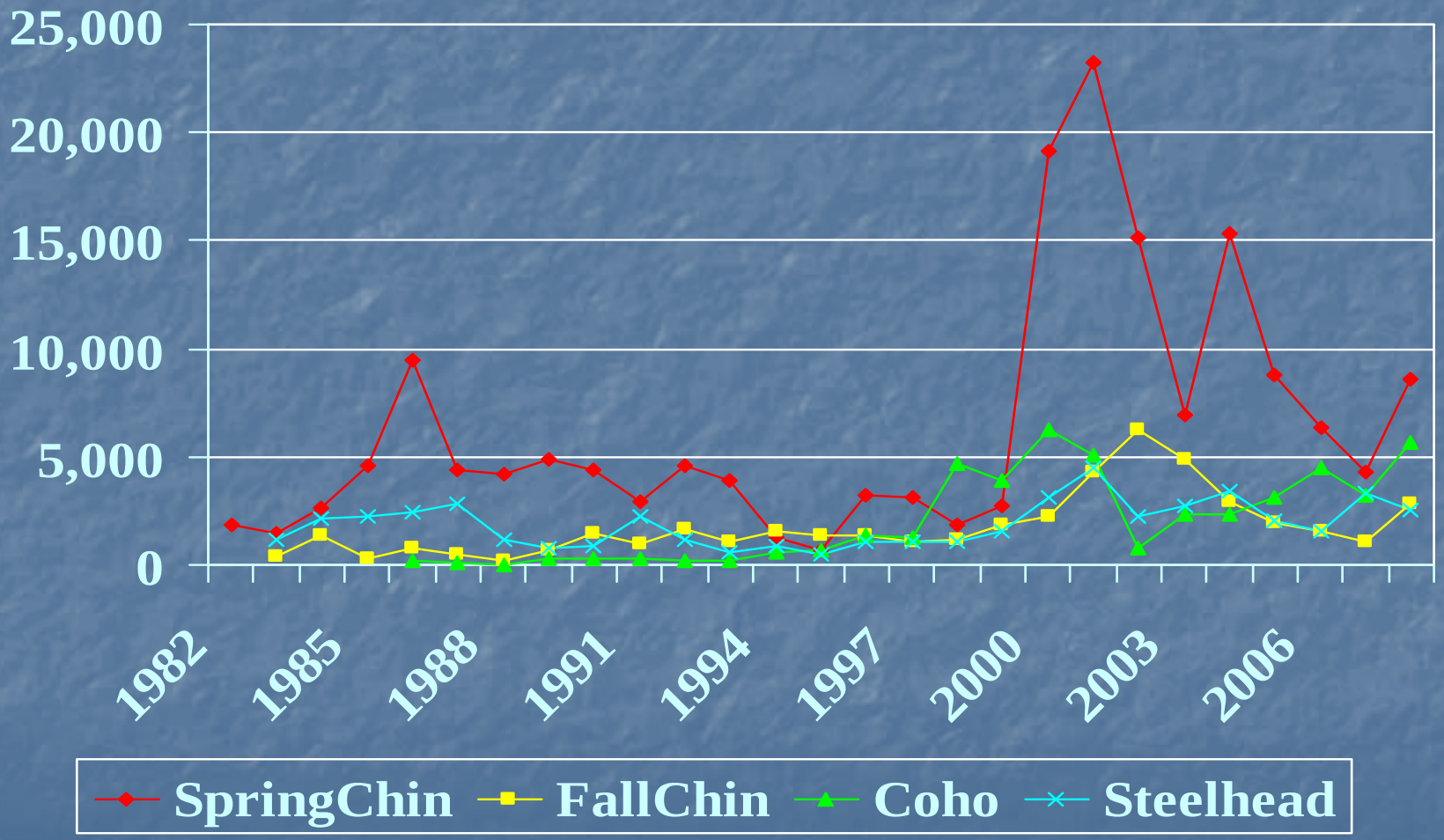
YAKIMA/KLICKITAT FISHERIES PROJECT (YKFP)

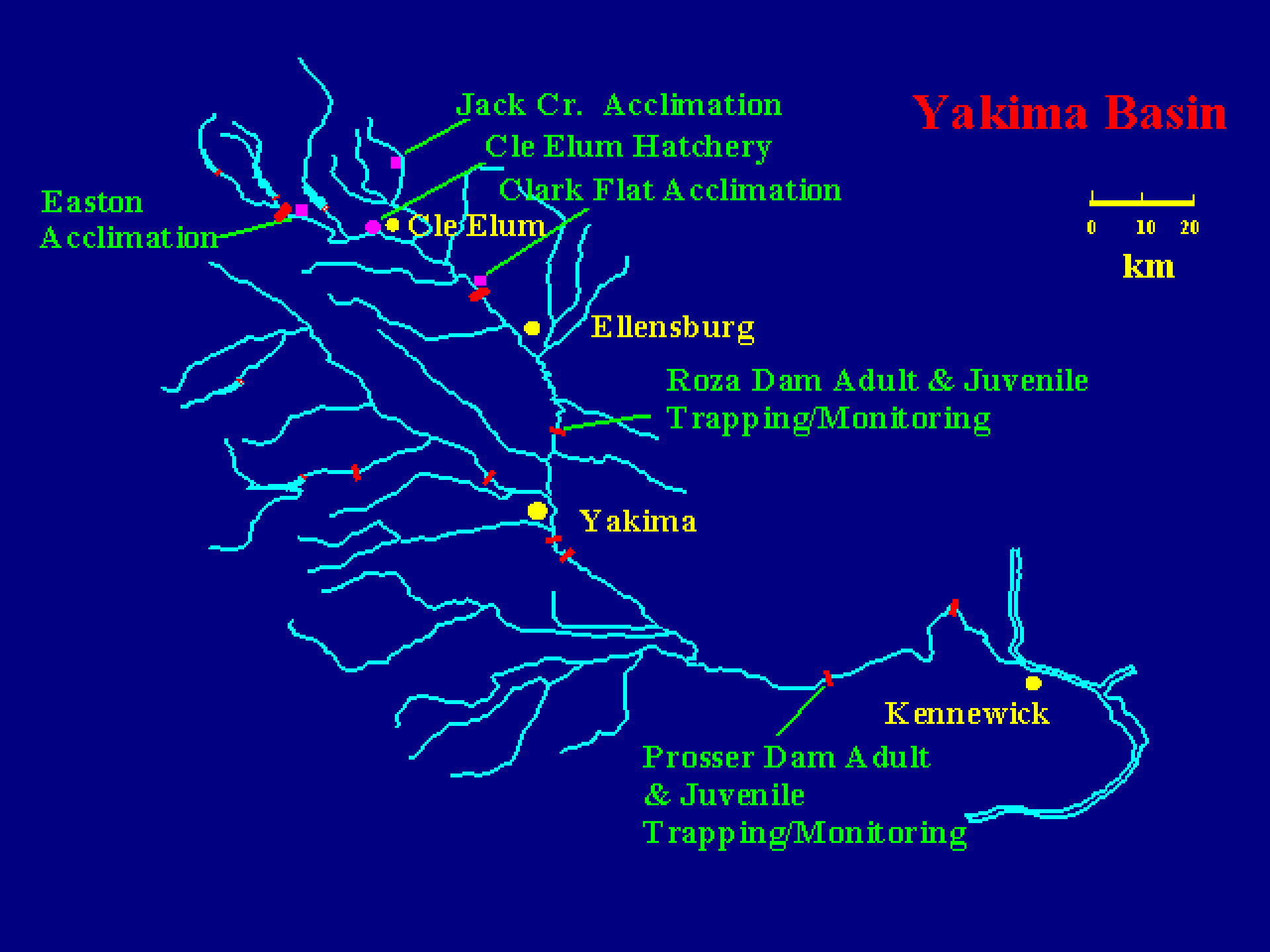
- MODELING EDT and AHA
- SALMON SUPPLEMENTATION AND REINTRODUCTION PROGRAMS
- HABITAT ACQUISITION AND ENHANCEMENT PROGRAMS

HABITAT ENHANCEMENT
IMPROVING CULVERT PASSAGE

SPECIES TARGETED IN YKFP

- ALL STOCKS IN BASIN - TIERED
- SPRING CHINOOK INITIAL STOCK 1997
- COHO FEASIBILITY PART OF PROGRAM
- FALL CHINOOK 1998
- STEELHEAD – MODELING, PLANNING, (and KELT RECONDITIONING)
- SUMMER/FALL CHINOOK
- SOCKEYE


25,000
20,000
15,000
10,000
5,000
0
1982
1985
1988
1991
1994
1997
2000
2003
2006
SpringChin
FallChin
Coho
Steelhead


Yakima Basin
Jack Cr. Acclimation
Cle Elum Hatchery
Clark Flat Acclimation
Easton
Acclimation
Cle Elum
Ellensburg
Roza Dam Adult & Juvenile
Trapping/Monitoring
Yakima
Kennewick
Prosser Dam Adult
& Juvenile
Trapping/Monitoring
0
10
20
km

Adult and Juvenile Fish Passage

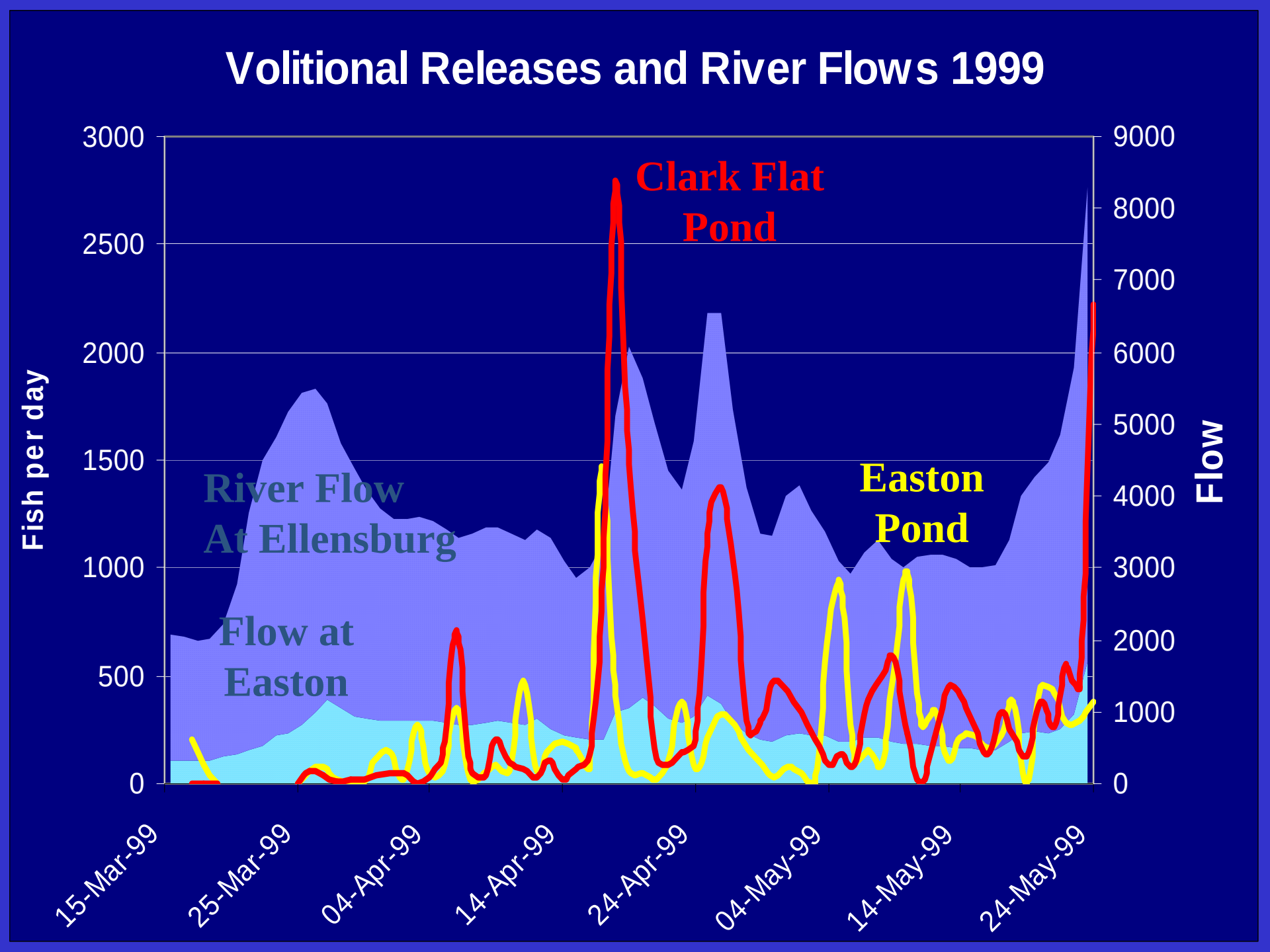
MISSION OF FACILITY

- Collect Broodstock
- Enumerate Spawning Escapement
- Monitor Characteristics of Escapement (age, length, weight, DNA,)
- Enumerate Hatchery Returns (by Treatment, Acclimation Site and Brood Year)

Upper Yakima River Basin


P.F. No. F.

Upper Yakima River Basin


Volitional Releases and River Flows 1999
Fish per day
Flow
3000
2500
2000
1500
1000
500
0
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
Clark Flat Pond
River Flow At Ellensburg
Flow at Easton
Easton Pond
15-Mar-99
25-Mar-99
04-Apr-99
14-Apr-99
24-Apr-99
04-May-99
14-May-99
24-May-99

Hatchery Fish Performance will be Measured in Four Areas

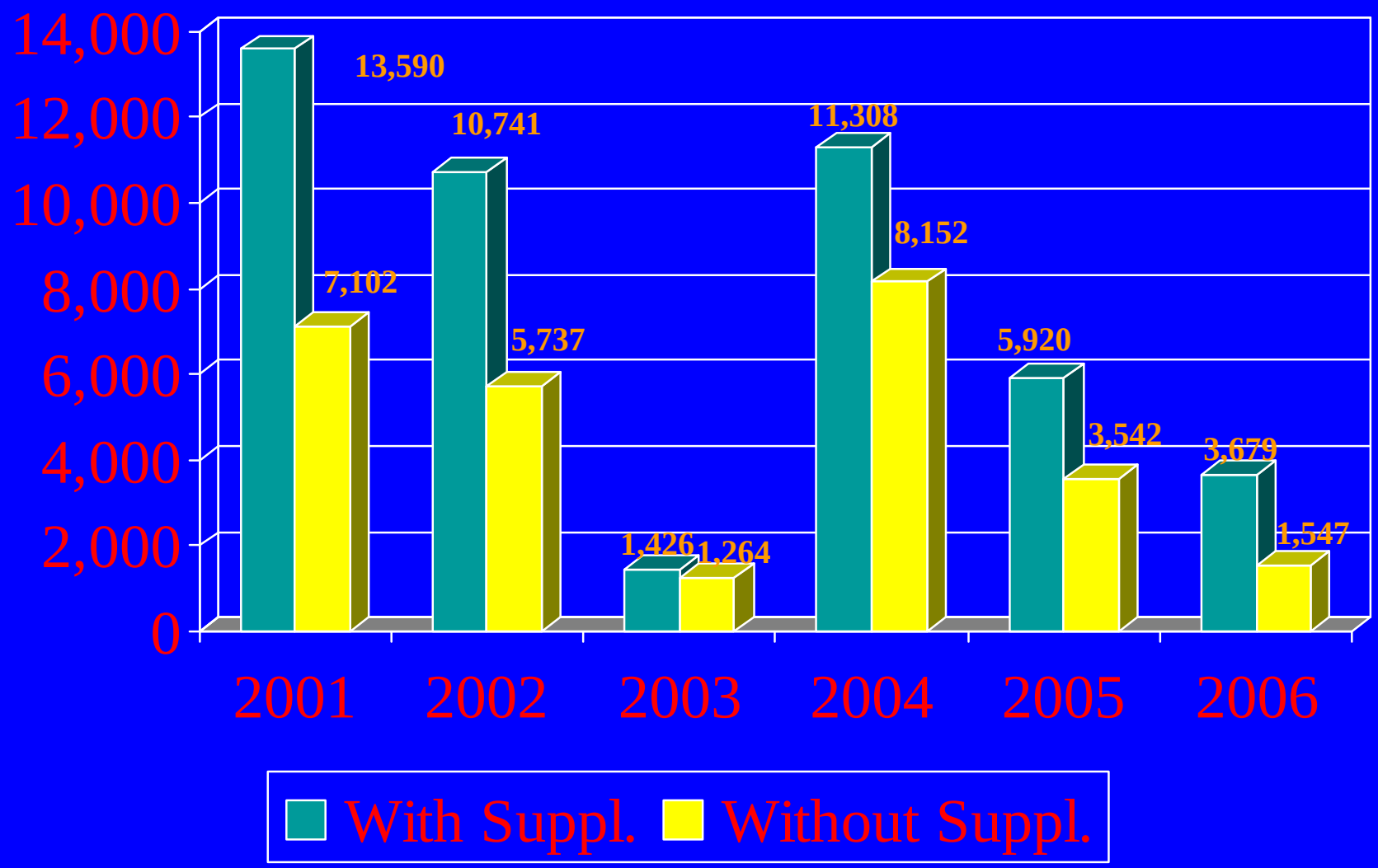
Post-release Survival (smolt release to adult)

Reproductive Success (smolts/spawner)

Long Term Fitness (genetic diversity and long te
stock productivity)

Ecological Interactions (population abundance,
distribution, growth rates,
predation and competitio

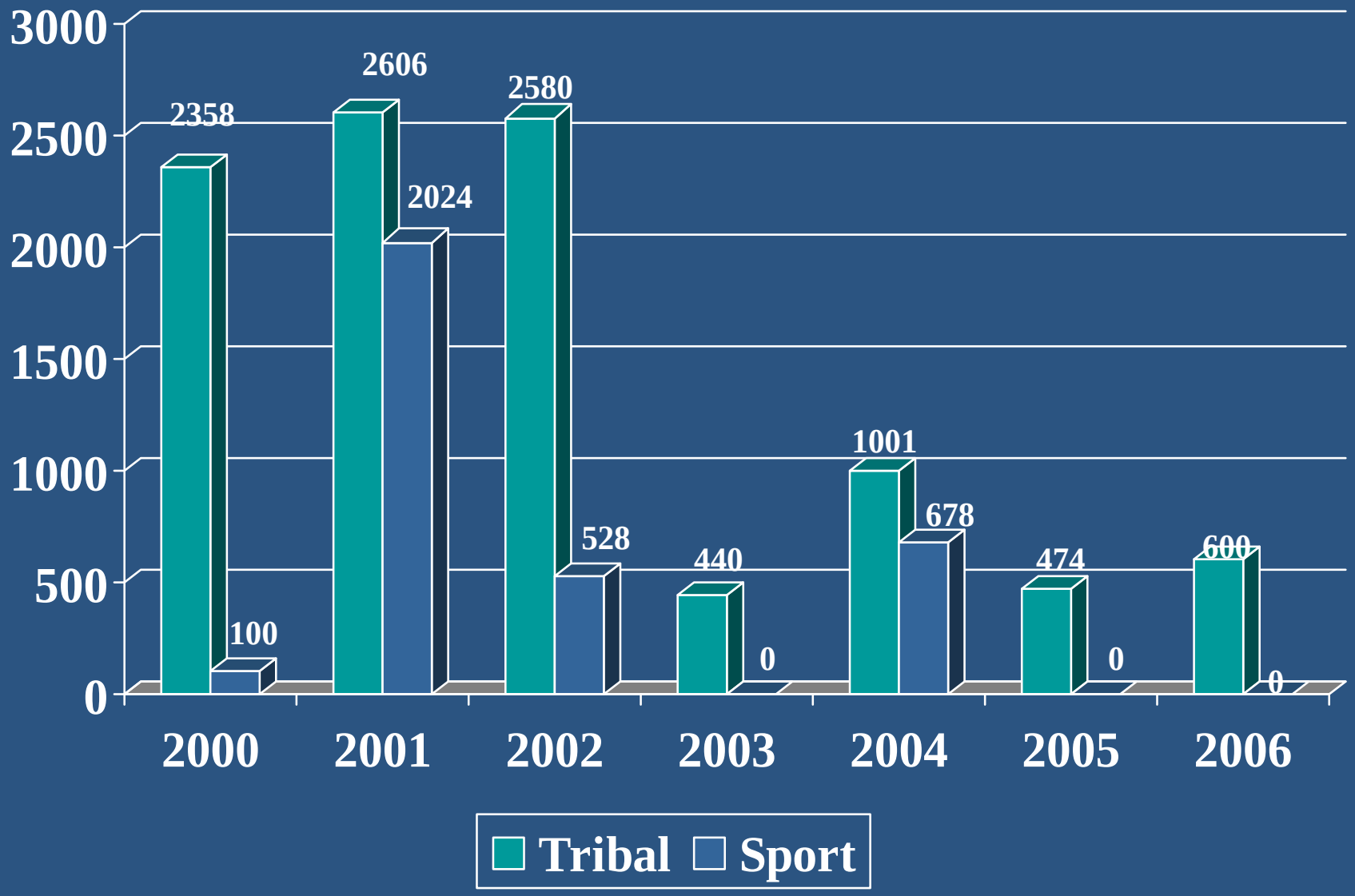
Upper Yakima Spring Chinook
Age 4 Returns with and without Supplementation



YKFP
Spring Chinook Supplementation Project

Enhanced the tribal subsistence
And ceremonial fisheries
&
Initiated the first sport fisheries
In over 50 years

Yakima Spring Chinook Harvest



YKFP Coho Program

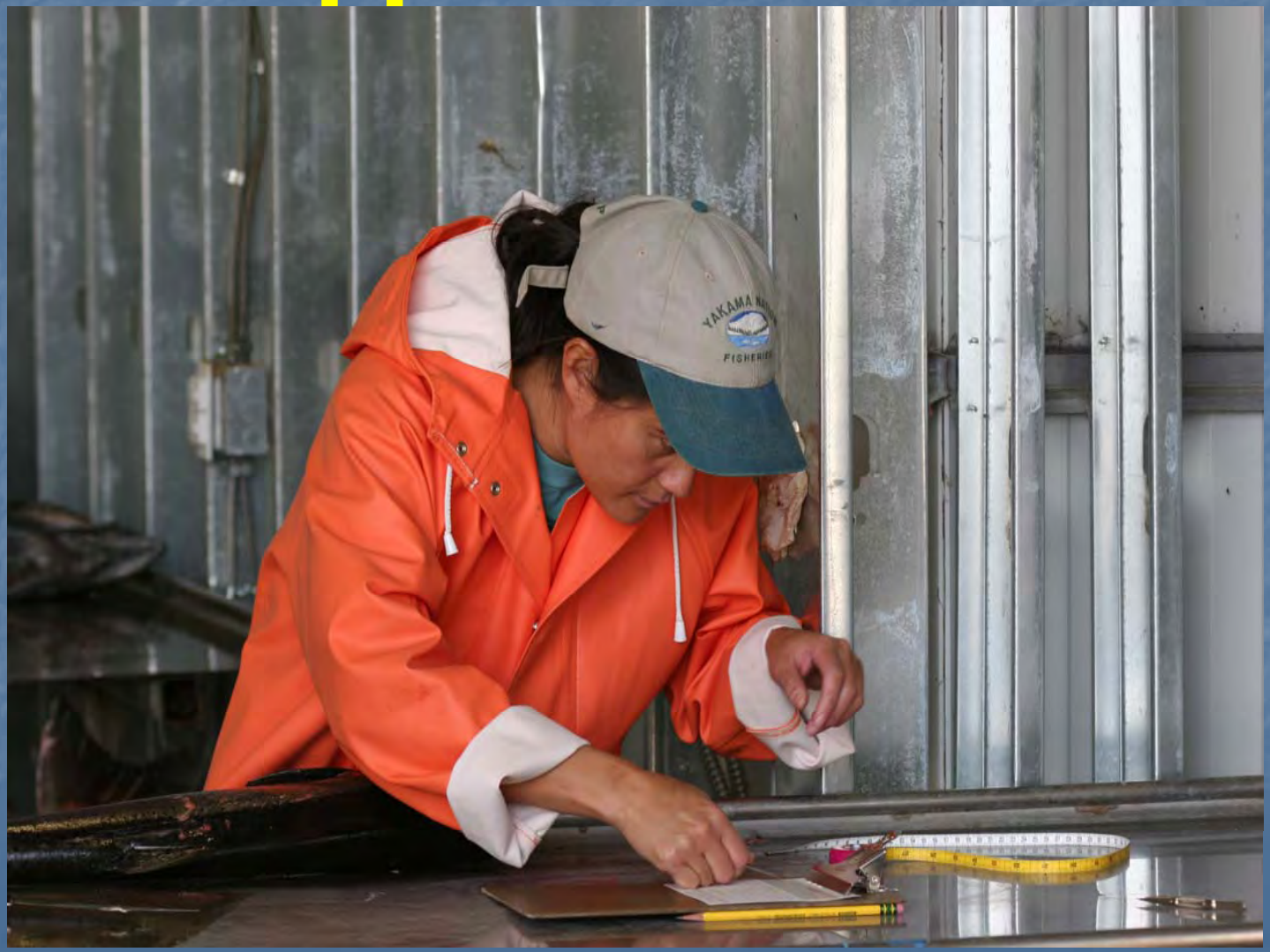
- Program Goal - Re-establish self-sustaining naturally spawning population of coho salmon in Yakima River

  Phase I: 1999-2003 ***Completed*** (Yes, it is possible to re-establish an extinct stock of Coho Salmon)

- Feasibility

  Phase II: 2006-2010 (Can escapement goals be obtained using an established, fully developed Yakima Basin Coho Stock and, can re-establishment occur in tributaries)

Fall Chinook Supplementation




Ziploc
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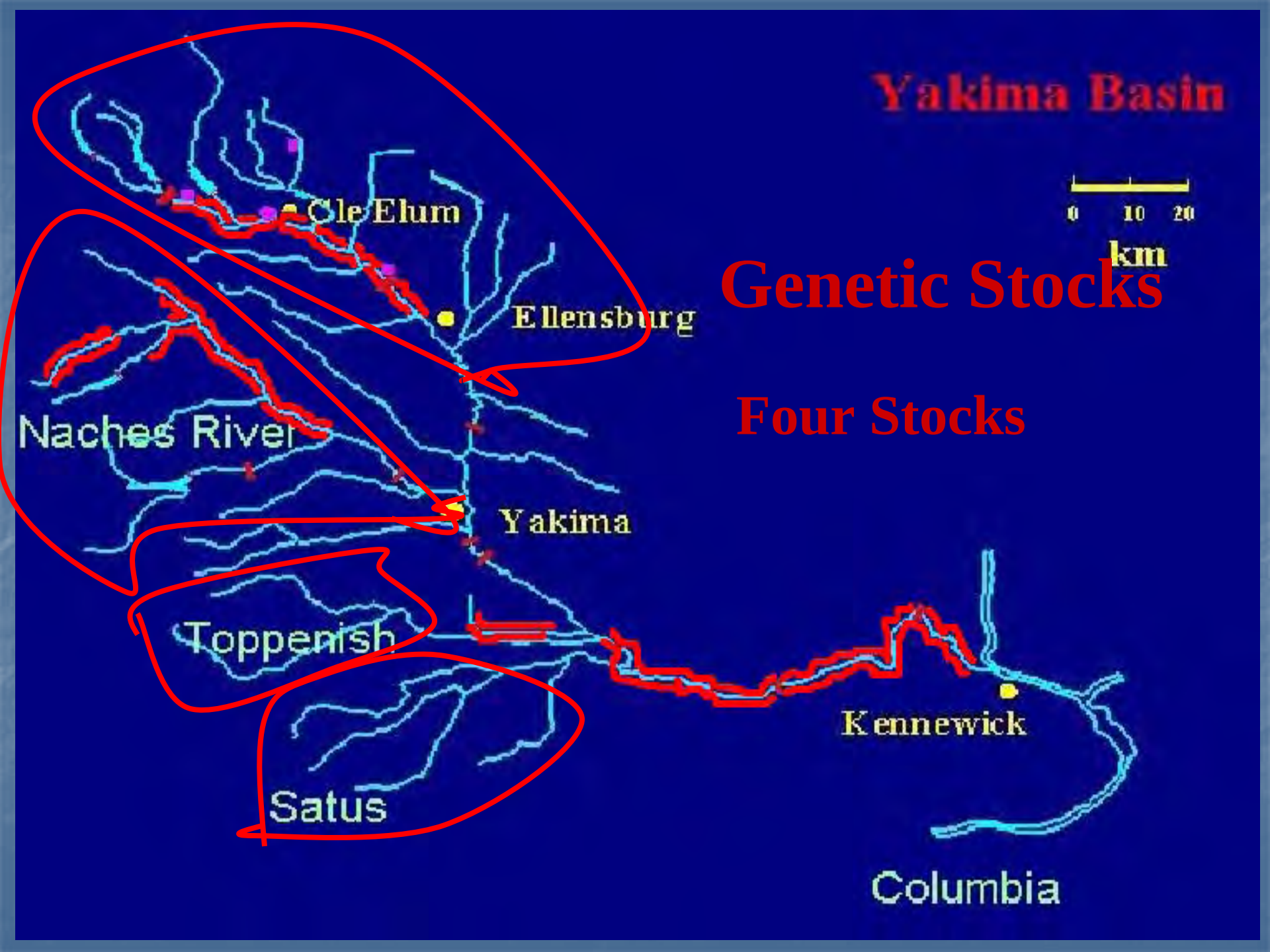
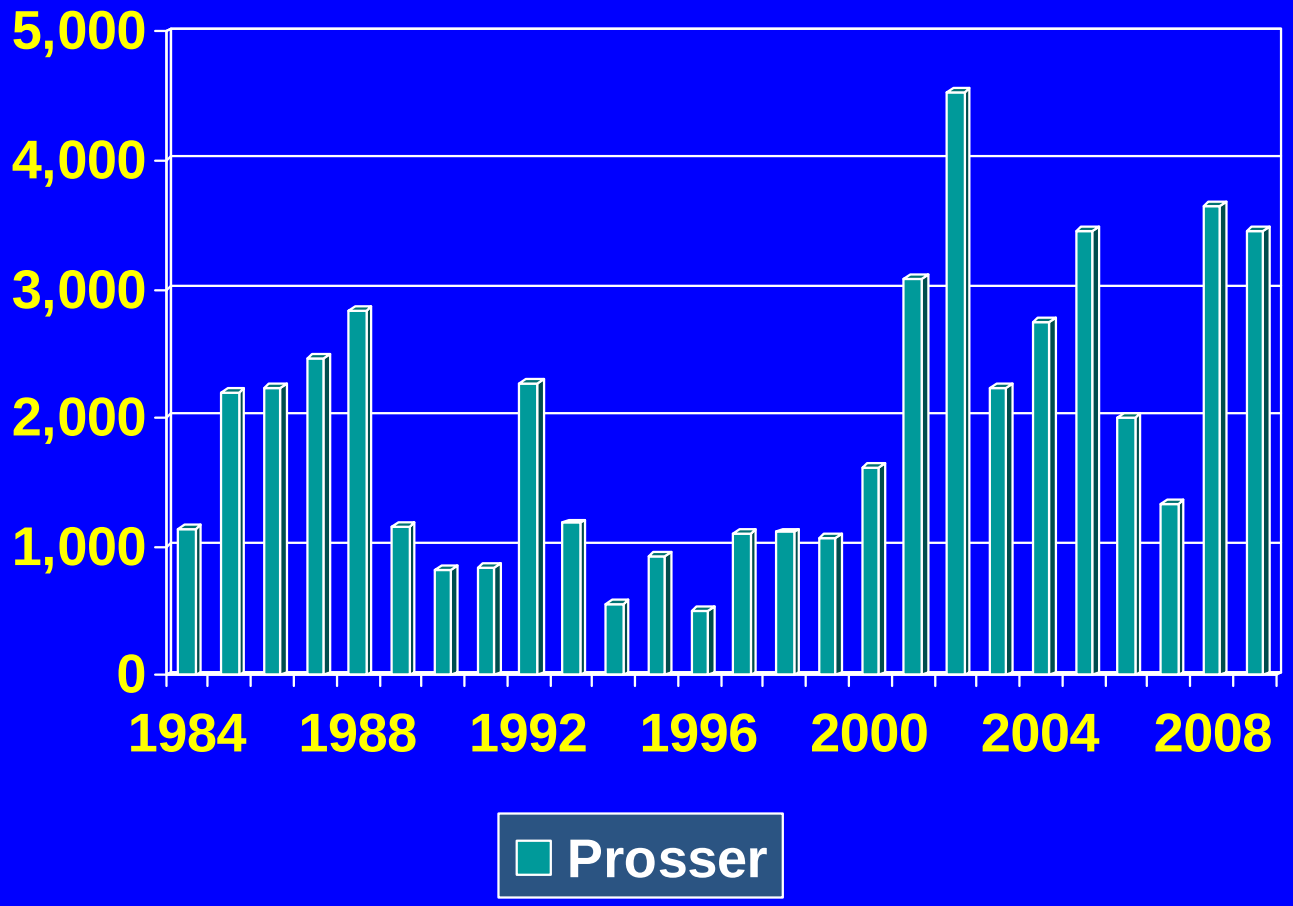
Kelt Reconditioning:

A Research Project to Enhance Multiple Spawning in the Yakima Basin Steelhead (*Oncorhynchus mykiss)*


Yakima Basin
0 10 20
km
Cle Elum
Ellensburg
Naches River
Yakima
Toppenish
Satus
Kennewick
Columbia
Genetic Stocks
Four Stocks

Yakima River Steelhead Returns, 1984 – Present




Existing Conditions
C4
C1

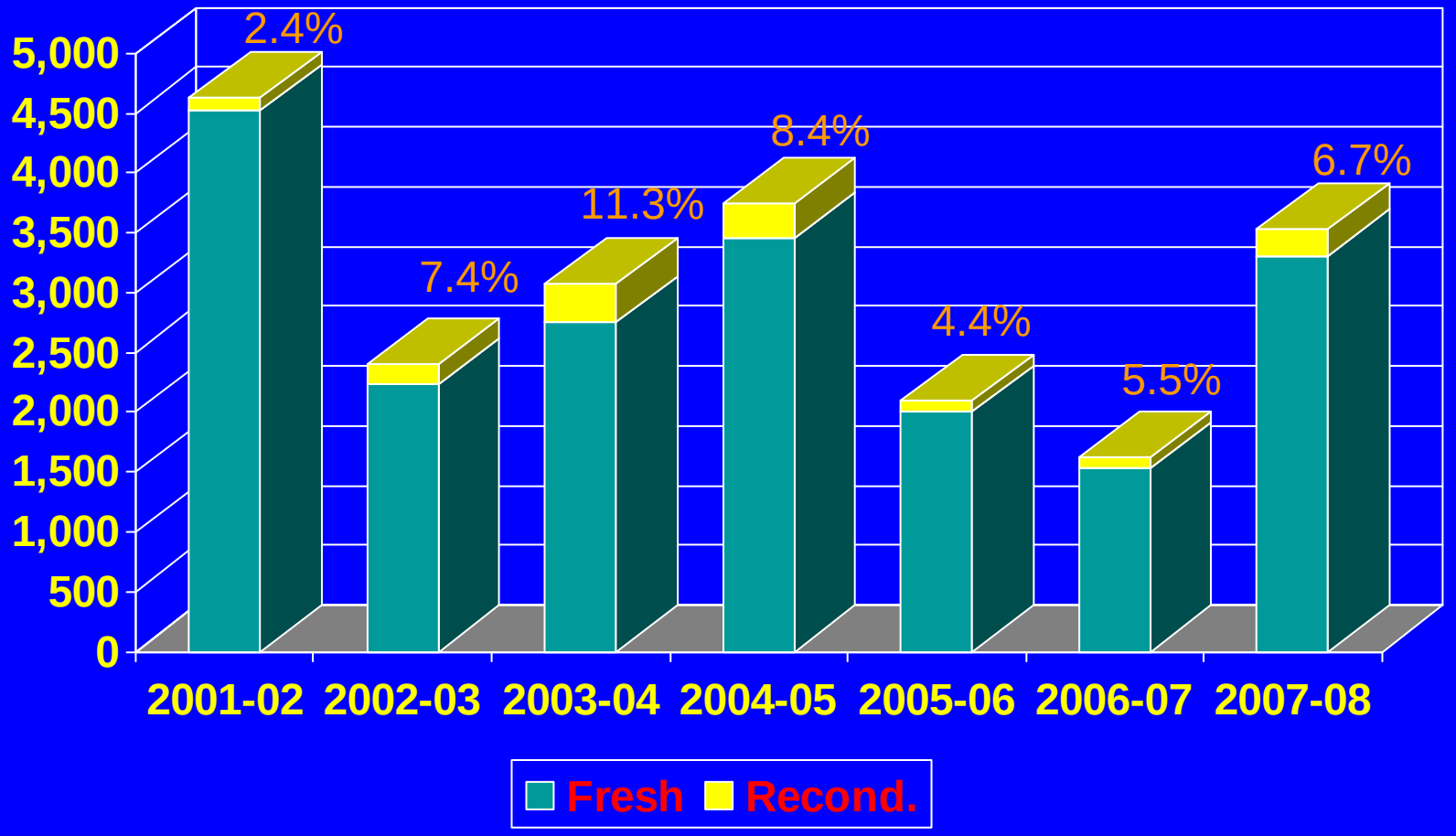

Desired Future
Conditions


GLACIER
GLOVE


Steelhead Biologist

Kelt Pictures Before and After

Yakima R. Steelhead Escapement with Reconditioning



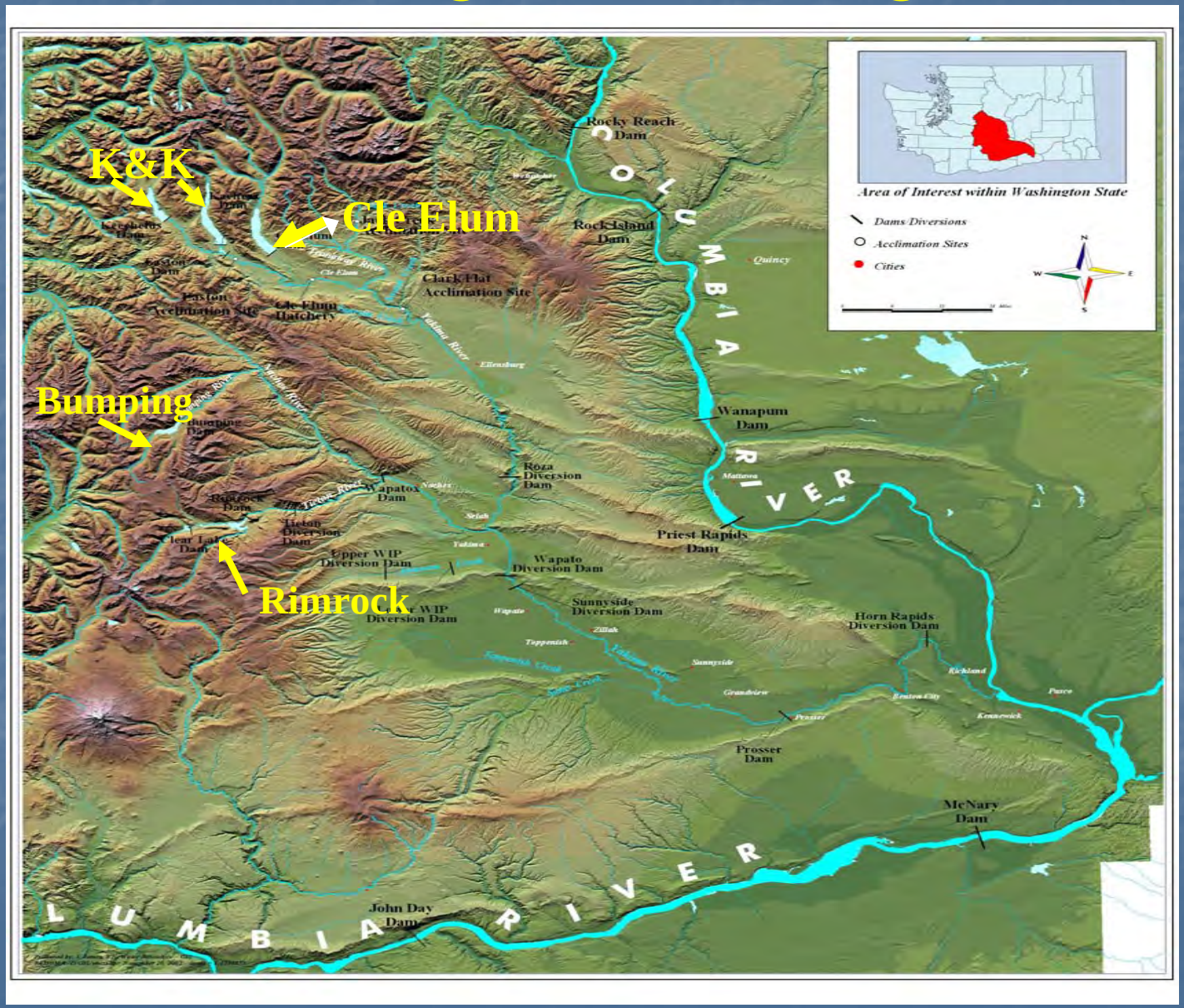
Percentage increase in escapement due to reconditioning.

Cle Elum Dam Fish Passage Update: Moving Forward

Cooperative Project

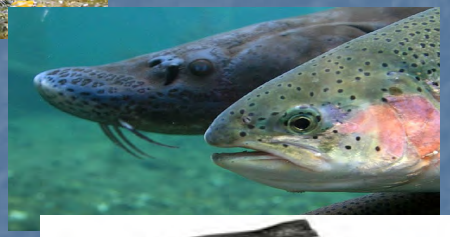
Bureau of Reclamation, Yakama Nation, Dept. of Ecology, WDFW, NOAA Fisheries & Forest Service

Yakima Basin Irrigation Storage Reservoirs



Potential Anadromous Fish Reintroduction

- Coho Salmon
- Sockeye Salmon
- Steelhead
- Spring Chinook
- Also could help Bull Trout movement (not functioning properly)



Sockeye Reintroduction Plan

- Release adults in reservoir to monitor location and timing of spawning
- Release smolts (when available) to monitor outmigration success and survival
- Collect returning adults at Roza Dam as brood stock


102027

Fish Flume Down Face of Dam

Releasing PIT Tagged Test Fish

- PIT Tagged Coho Salmon into Flume

Release Pipe Into Flume

Cle Elum Dam Passage Study
Outfall of Flume into River

Questions???

www.ykfp.org