

An aerial photograph of a hatchery facility. The facility consists of several large, rectangular concrete tanks arranged in a grid-like pattern. A building with a prominent green roof is situated near the center of the tanks. The surrounding area includes grassy fields, trees, and a road. The text is overlaid in the center of the image.

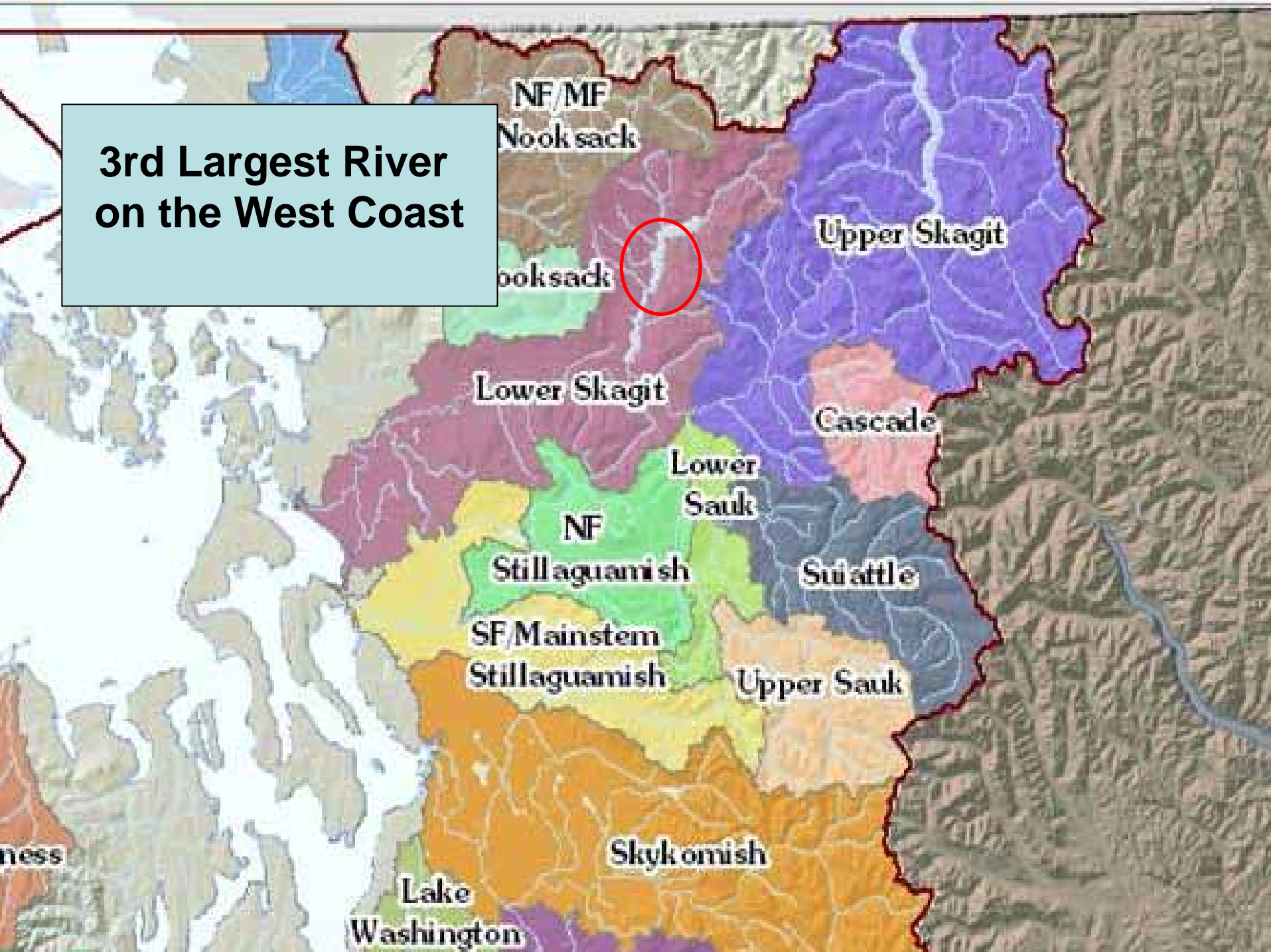
The Saga of Hatchery
Mitigation At the Skagit
Hydroelectric Project During
Licensing & Implementation
(1990-2007)

Hatchery Mitigation Measures

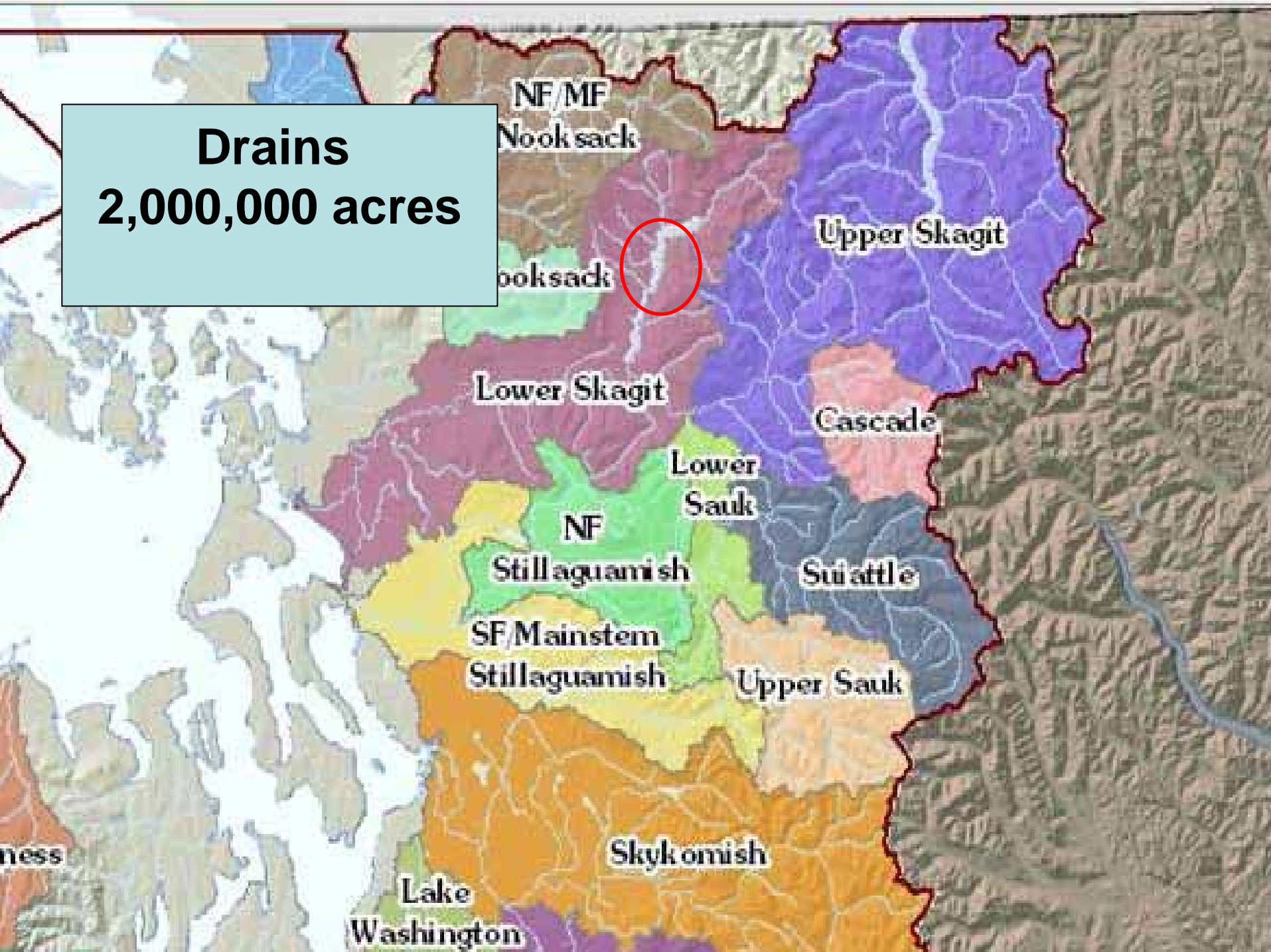
1. Steelhead Smolt Production Program

2. Reservoir Trout Program

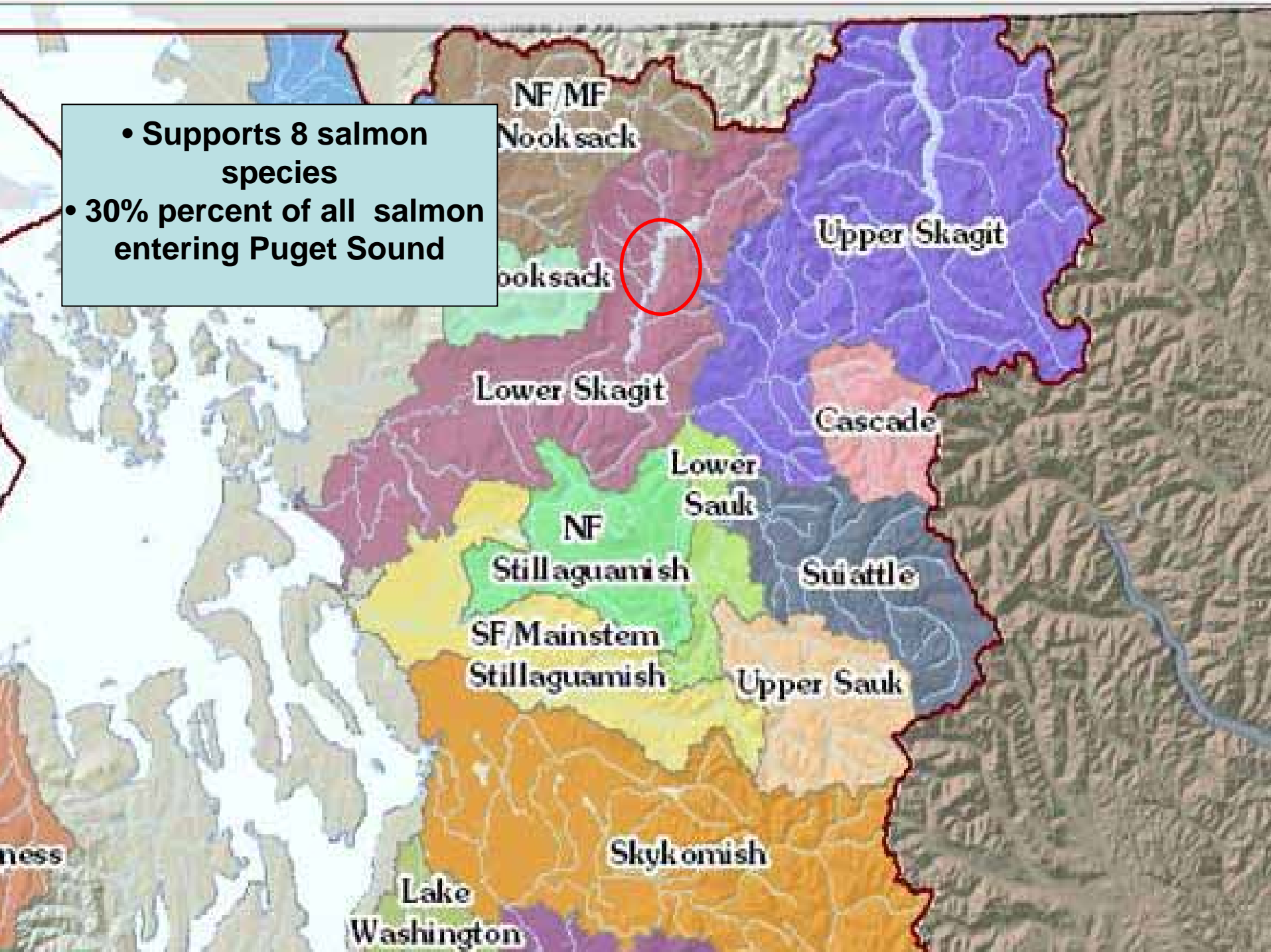
**3rd Largest River
on the West Coast**



Drains
2,000,000 acres



- Supports 8 salmon species
- 30% percent of all salmon entering Puget Sound



Wild Salmon Runs

The background of the slide is a photograph of two salmon swimming in shallow, clear water over a rocky riverbed. The fish are silvery with some darker spots, and their fins are visible as they move through the water.

Pink	300,000 – 1,000,000
Chum	100,000 – 300,000
Coho	30,000 – 100,000
Chinook	15,000 – 25,000
Steelhead	4,000 – 10,000
Sockeye	5,000 – 20,000

Listed Species

Chinook 1999

Bull Trout 1999

Steelhead March, 2007?



SKAGIT RIVER BASIN



Precip Stations

Skagit Basin Summary

Skagit Hydroelectric Projects

PSE Baker Project

Seattle City Light Skagit Project



Mount Vernon

Concrete

Upper Baker

Lower Baker

Marblemount

Rockport

Sauk

Darrington

Whitechuck

Newhalem

Diablo

Ross

Nookachamps

Day

Finney

SKAGIT RIVER BASIN



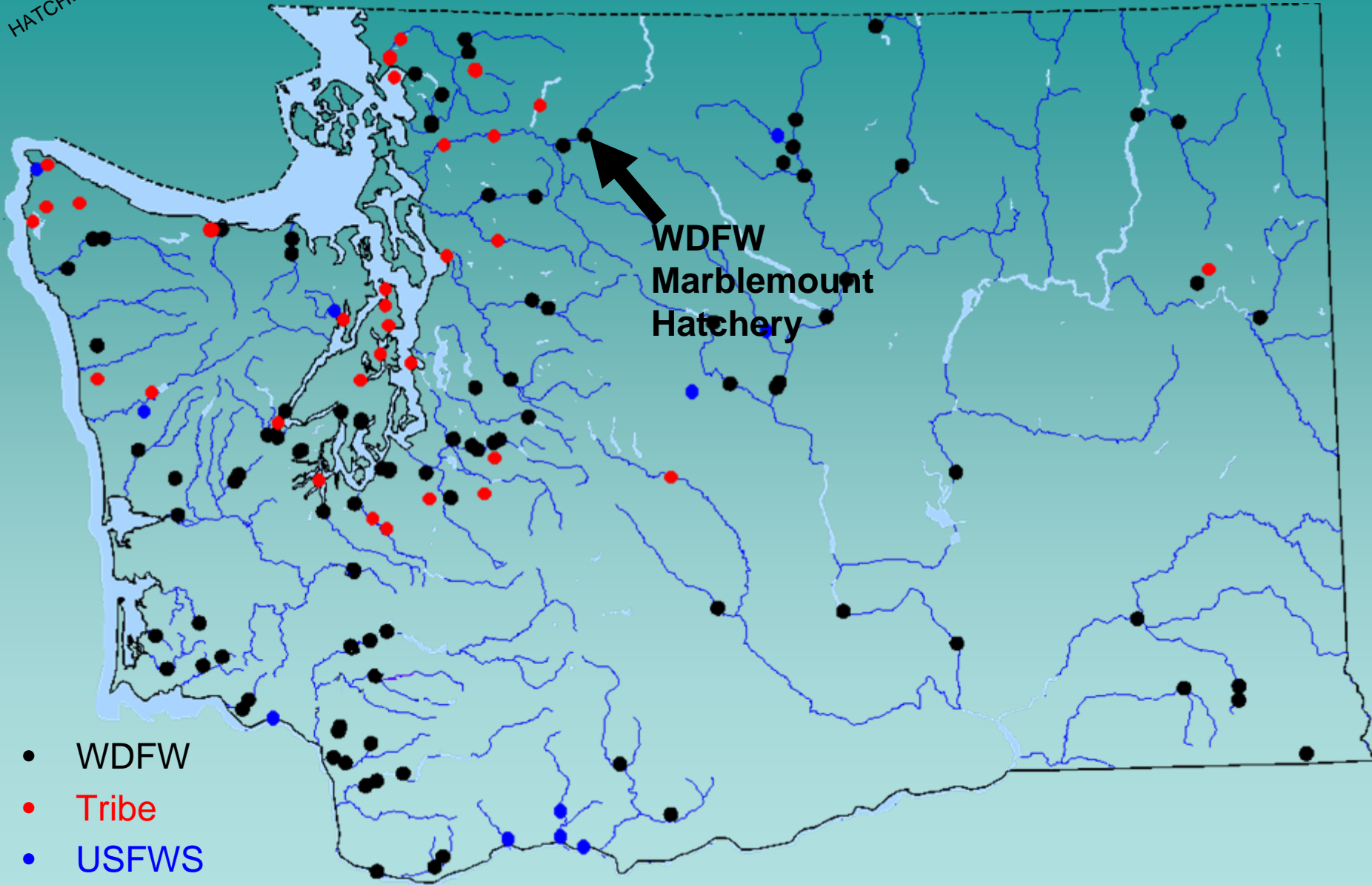
Skagit Basin
Summary



**Marblemount
Hatchery**

Washington State Hatchery System

HATCHERIES



WDFW Marblemount Hatchery



Steelhead Smolt Production Program

Program Objective



**Increase steelhead production
in the upper Skagit River to offset any residual project
impacts on the steelhead fishery resource.**

Steelhead Smolt Production Program

How To Accomplish?



- Expand existing WDFW Marblemount hatchery



- Increase steelhead smolt production from 250,000 to 500,000 for 15-20 years

Planned Implementation Steps & Schedule

Year 1

Year 2

Year 5

Year 30



**Facility
Engineering**

Planned Implementation Steps & Schedule

Year 1

Year 2

Year 5

Year 30



**Facility
Engineering**



**Facility
Construction**

Planned Implementation Steps & Schedule

Year 1

Year 2

Year 5

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**Facility
Engineering**



**Facility
Construction**



Annual Smolt Production

Actual Implementation Steps & Schedule

Year 1

Year 10

Year 20

Year 30



6-Year Program
Implementation
Delay

Actual Implementation Steps & Schedule

Year 1

Year 10

Year 20

Year 30



6-Year Program
Implementation
Delay



1Year Design Phase

Actual Implementation Steps & Schedule

Year 1

Year 10

Year 20

Year 30


6-Year Program
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1Year Design Phase


1Year Construction Phase

Actual Implementation Steps & Schedule

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6-Year Program
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4 Year Smolt Production

Actual Implementation Steps & Schedule

Year 1

Year 10


Year 20

Year 30


6-Year Program
Implementation
Delay


1Year Design Phase


1Year Construction Phase


4 Year Smolt Production


Smolt Production Funds
Reprogrammed to Wild
Steelhead Research and
Restoration Activities

Why So Many Changes From Initial Agreement?

Year 1

Year 10

Year 20

Year 30


Why So Many Changes From Initial Agreement?

Year 1

Year 10

Year 20

Year 30

 1995
5 -Year License
Issuance Delay
(1990-95)

2007-?

Why So Many Changes From Initial Agreement?


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Year 10

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 1995
5 -Year License
Issuance Delay
(1990-95)

 2000
License Implementation Begins
On 7 Fish Mitigation Programs (1995-2000)

- Program Implementation Priorities
- WDFW Wild Salmonid Policy (1998)
- Skagit Managed For Wild Production
- Chinook ESA Listing (1999)
- Bull Trout ESA Listing (1999)
- HSRG (Hatchery Reform (2000-04)
- Resource Agency Priority Shift (SRSC)

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 2001-06
Program Completed In 6 Years
and Funds Reprogrammed

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 2007-?
Wild Steelhead Research and
Restoration Activities

A photograph of several steelhead fish in a woven basket. The basket has a pattern of red and yellow circular holes. The fish are silvery with some darker spots. One fish is in the foreground, looking towards the camera. Another is in the background, partially obscured. A third is on the right side, facing right. The lighting is bright, highlighting the texture of the basket and the scales of the fish.

Program Goal : Increase Steelhead Production

Assumption

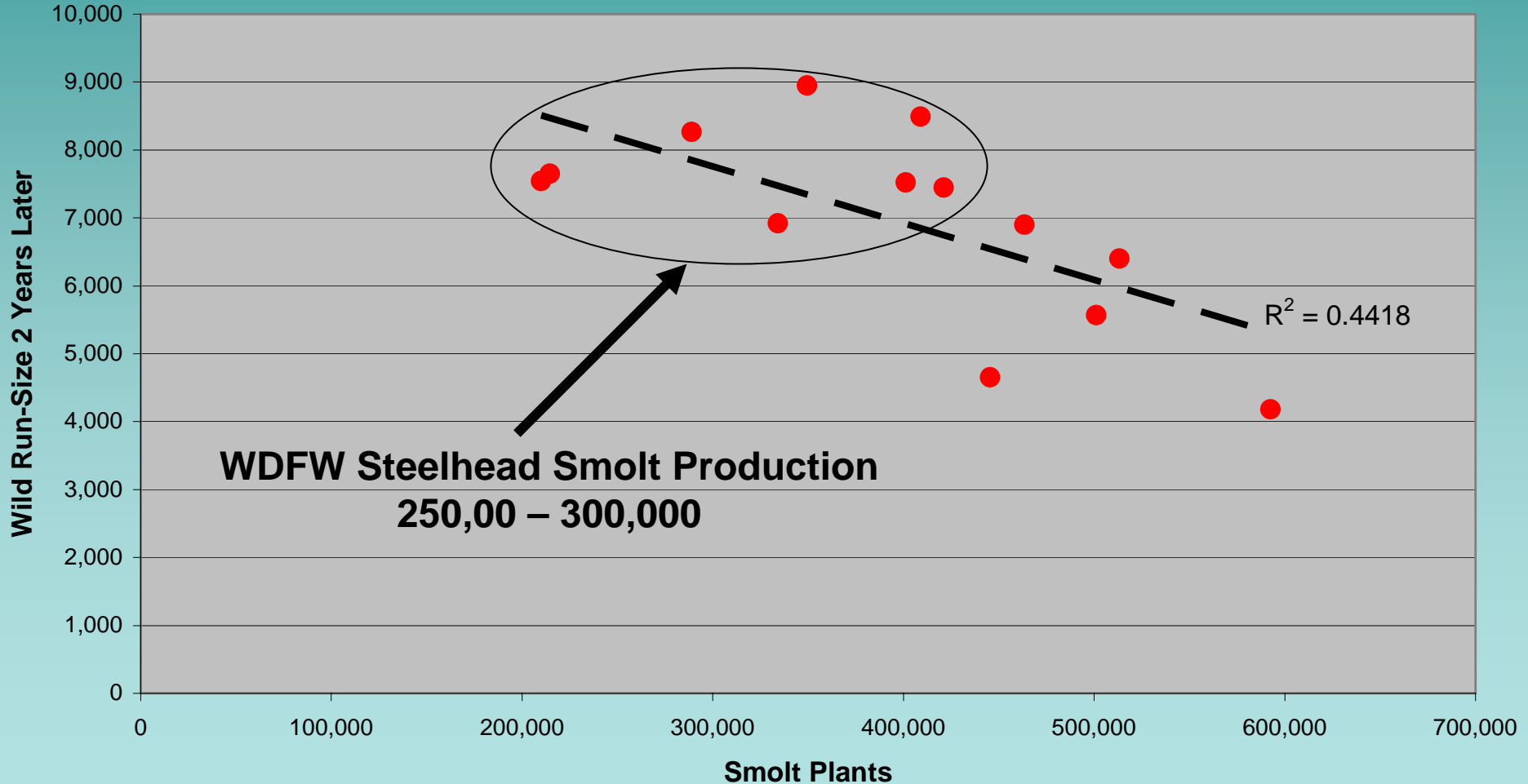
More Smolts → More Adults

Actual Result

More Smolts → Less Adults

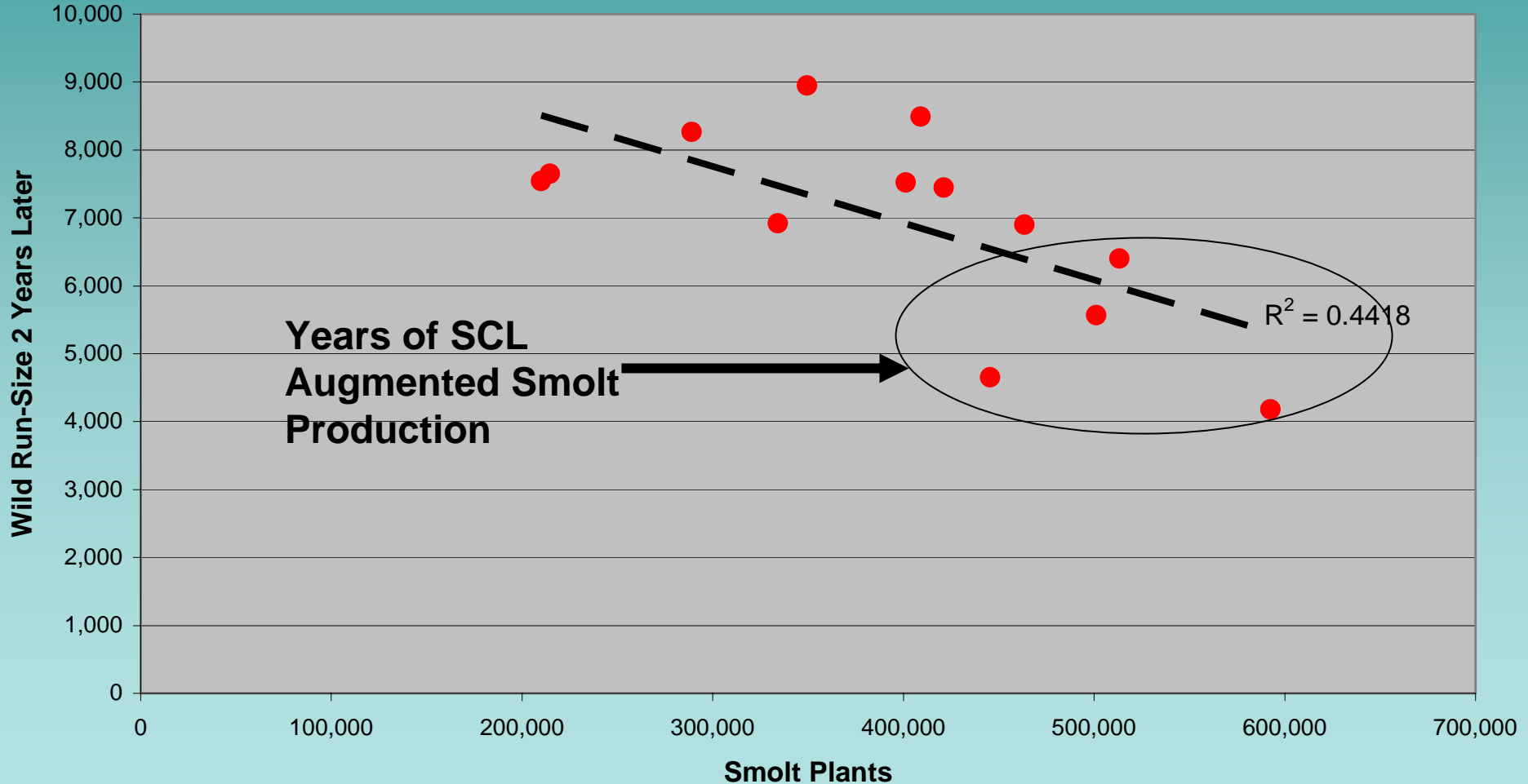
A Comparison of Hatchery Smolt Plants (1989-2003) To Wild Steelhead Run-Size for Skagit River

[Significant decline in wild run-size per smolts planted in this climate period; larger smolt plants led to significantly fewer wild adults returning.]



A Comparison of Hatchery Smolt Plants (1989-2003) To Wild Steelhead Run-Size for Skagit River

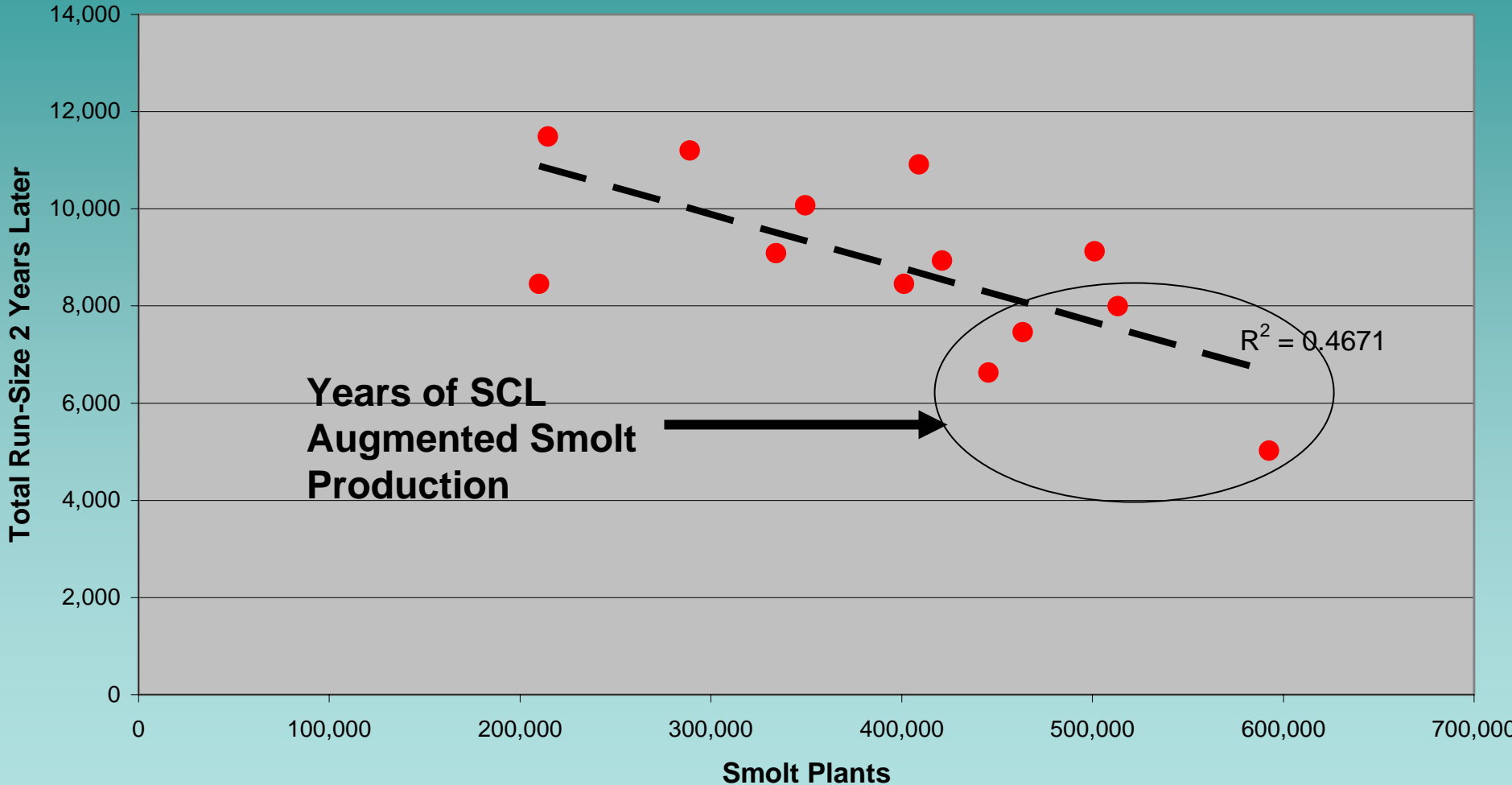
[Significant decline in wild run-size per smolts planted in this climate period; larger smolt plants led to significantly fewer wild adults returning.]



A Comparison of Hatchery Smolt Plants (1989-2003)

To Total Steelhead Run-Size for Skagit River

[Significant decline in total run-size per smolts planted in this climate period; larger smolt plants led to significantly fewer total steelhead returning.]





Hatchery vs. Wild Consideration

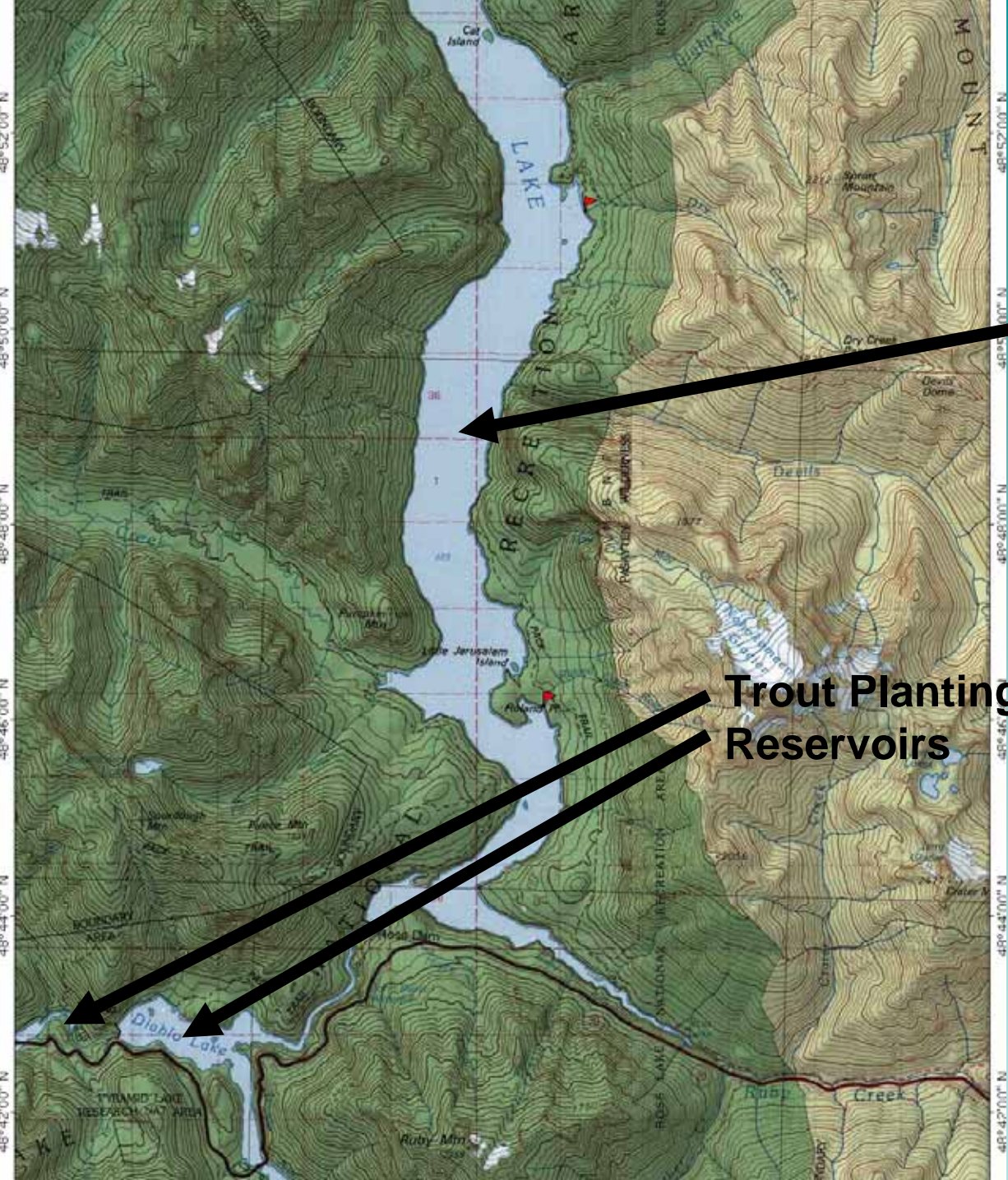


Wild Steelhead Research and
Restoration Activities



A scenic view of a large reservoir, likely Diablo and Gorge Reservoir, surrounded by forested mountains. The water is calm and reflects the surrounding landscape. The sky is clear and blue. The text is overlaid on the upper portion of the image.

Diablo and Gorge Reservoir Rainbow Trout Fishery Enhancement Program



Brood Stock Donor Reservoir

Trout Planting Recipient Reservoirs

- 
- A large number of speckled trout are packed in a mesh net. The fish are arranged in rows, filling most of the frame. They have a greenish-brown body with numerous dark spots. The net is made of a light-colored, fine-mesh material. The background is slightly blurred, showing more of the net and the fish.
- **12 Year Later Program Unchanged From Settlement Agreement Provisions**
 - **Supplementation Goals Reached**
 - **Consistent With State and Federal Management Policies**

Take Home Message 1

**Is There A Place For Hatchery Mitigation
In The Future?**

Take Home Message 1

**Is There A Place For Hatchery Mitigation
In The Future?**

**Yes; if other project flow and non-flow
measures fall short**

And

**Consistent With Resource Management Policies,
ESA Concerns and Hatchery Reform Mandates**

Take Home Message 2

Build in language that provides for program flexibility, adaptive management and changing resource policies & priorities