

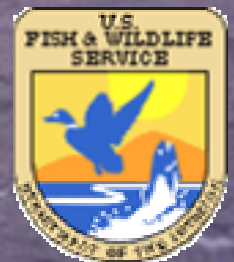
WHITE STURGEON MITIGATION AND RESTORATION



IN THE COLUMBIA AND SNAKE RIVERS UPSTREAM FROM BONNEVILLE DAM



198605000



GOALS

A large white sturgeon fish is shown swimming in water, viewed from above. The fish is oriented horizontally, with its head to the right and tail to the left. The water is a deep blue color, and the fish's body is a lighter, silvery-blue. The fish's scales are visible, and its long, pointed snout is prominent. The background is a solid blue color.

Protect and Restore White Sturgeon Downstream from McNary Dam

Identify Potential Measures to Protect and Restore White Sturgeon Upstream from McNary Dam

Annual harvest or use equivalent to 5 kg/ha

WHITE STURGEON PROGRAM SUMMARY

A large white sturgeon is shown swimming in water, viewed from above. The fish is oriented horizontally, with its head to the right and tail to the left. The water is a deep blue color, and the fish's body is a lighter, silvery-blue. The fish's head is large and pointed, with a prominent snout. The body is elongated and tapers towards the tail. The tail is large and deeply forked. The fish's scales are visible, and the overall appearance is that of a large, powerful aquatic animal.

Consequences to white sturgeon severe without project

Harvest in reservoirs requires intensive management

Production will remain extremely limited

Abundance will remain low

HISTORY/ACCOMPLISHMENTS



1986-1992

Dams limit movements –isolate populations

Population dynamics unique in each reservoir

Productivity 10-100x higher below Bonneville

Discharge and temperature influence spawning habitat

Reservoirs provide habitat for juveniles and adults

Over-fishing had occurred in reservoirs

HISTORY/ACCOMPLISHMENTS

1992 - Recommendations

Intensify fisheries management in reservoirs

Evaluate augmented discharge in May and June

Evaluate feasibility of transplanting juveniles

Identify habitat requirements / quantify habitat

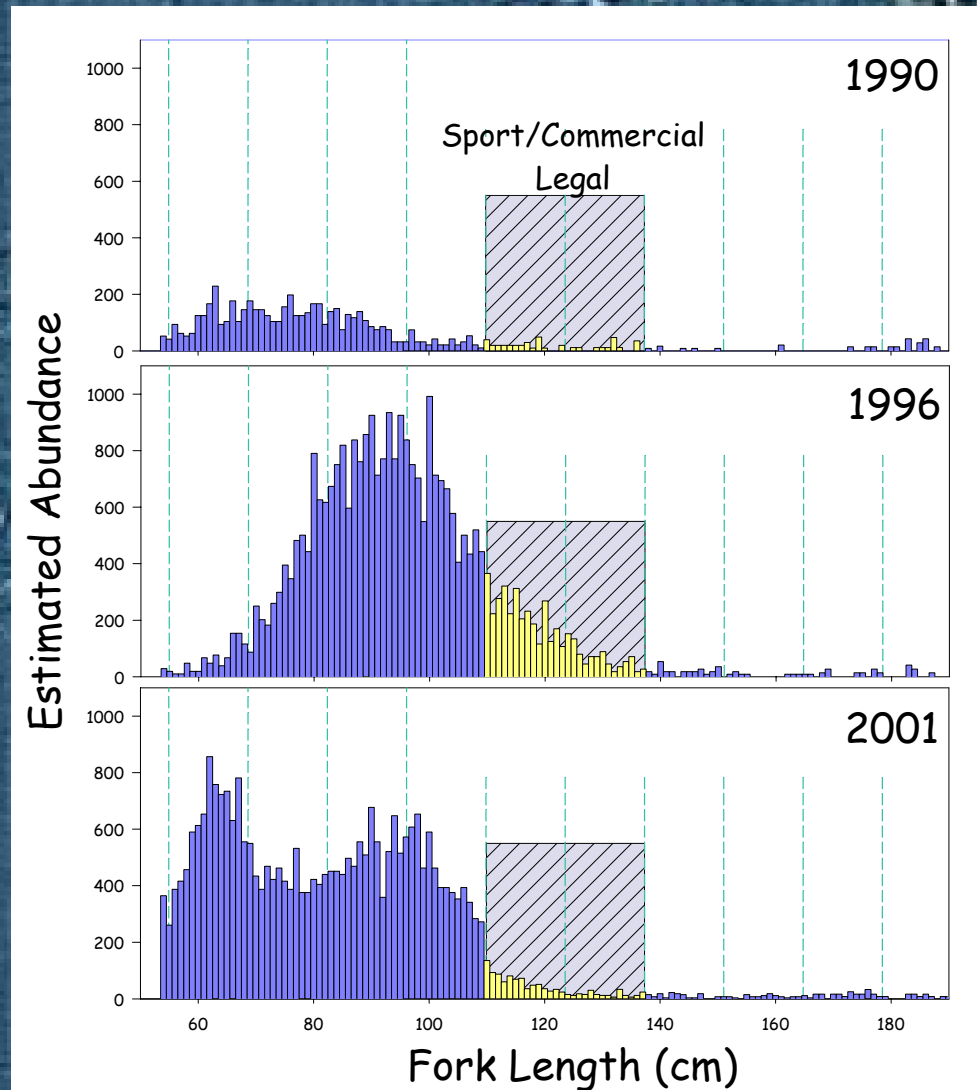
Refine and evaluate hatchery technology

Investigate populations upstream from McNary

HISTORY/ACCOMPLISHMENTS

1993-2002

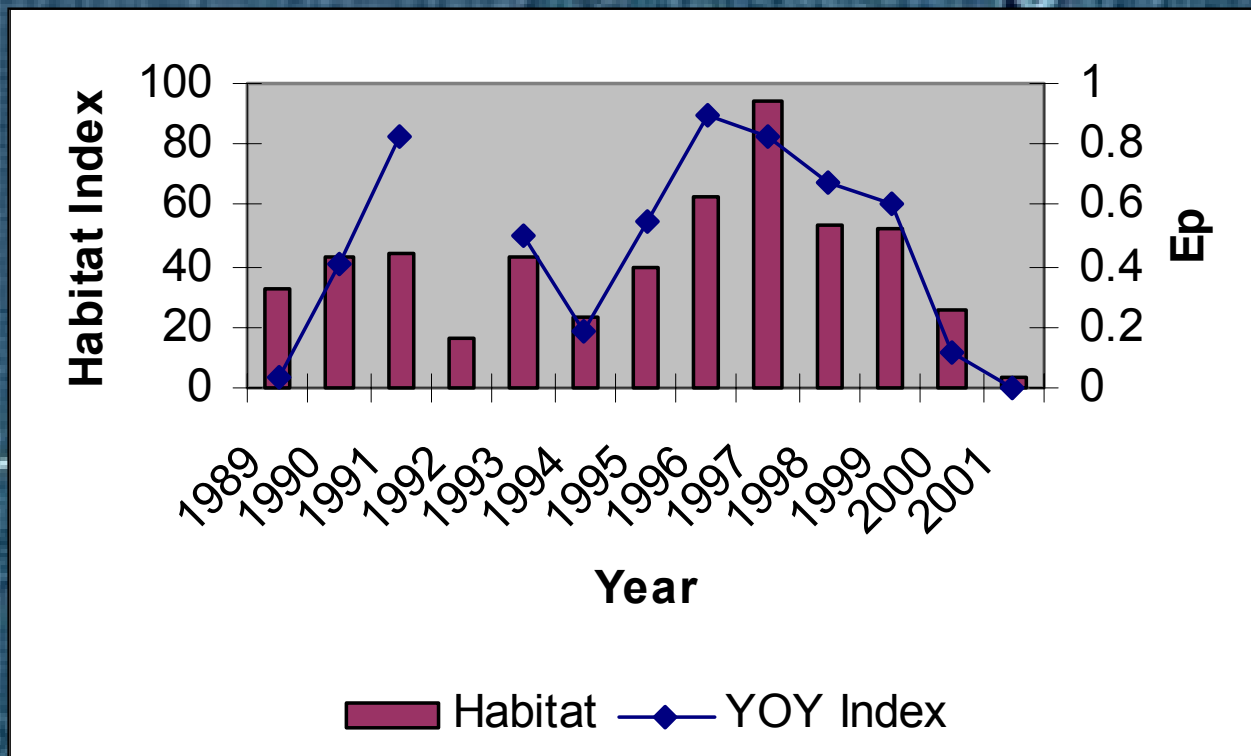
Intensify fisheries management in reservoirs



HISTORY/ACCOMPLISHMENTS

1993-2002

Evaluate augmented discharge in May and June



HISTORY/ACCOMPLISHMENTS

1993-2002

Evaluate feasibility of transplanting juveniles

Experimental releases in 1994 (2,935) and 1995 (5,611)

Demonstrated excellent survival and growth

	The Dalles	John Day	Total
1998	3,257	5,534	8,791
1999	77	4,171	4,248
2000	1,163	4,019	5,182
2001	1,262	5,227	6,489



HISTORY/ACCOMPLISHMENTS

1993-2002



Identify habitat requirements / quantify habitat

Examined habitat use and movements

Quantified spawning and rearing habitat

Described effects of water level manipulations

Assessed effects of temperature on egg development

Described food habits of larvae and age-0

Investigated predation vs size and turbidity

HISTORY/ACCOMPLISHMENTS

1993-2002

Refine and evaluate hatchery technology



Collection/holding/spawning techniques

Marking/tagging evaluations

Coordination

Successful spawning



HISTORY/ACCOMPLISHMENTS

1993-2002

Investigate populations upstream from McNary

% of CATCH THAT IS SUBADULT

Lake Roosevelt 2%

Lake Rufus Woods 0%

Rock Island Reservoir 0%

Range in other reservoirs = 24% - 99%



PLANS 2003-05



Objective 1 – Implement actions that do not involve changes to the hydropower system

Objective 2 – Recommend actions that involve changes to the hydropower system

Objective 3 – Monitor and evaluate actions

PLANS 2003-05

Objective 1 – Implement actions that do not involve changes to the hydropower system

Annual transplants

TRAWL



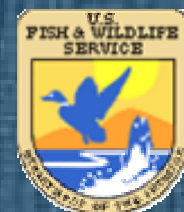
HAUL



PLANS 2003-05

Objective 1 – Implement actions that do not involve changes to the hydropower system

Hatchery Technology



PLANS 2003-05

Objective 1 – Implement actions that do not involve changes to the hydropower system

Intensive fisheries management



PLANS 2003-05

Objective 2 – Recommend actions that involve changes to the hydropower system

Complete lab work and finalize reports

Effects of temperature on egg development

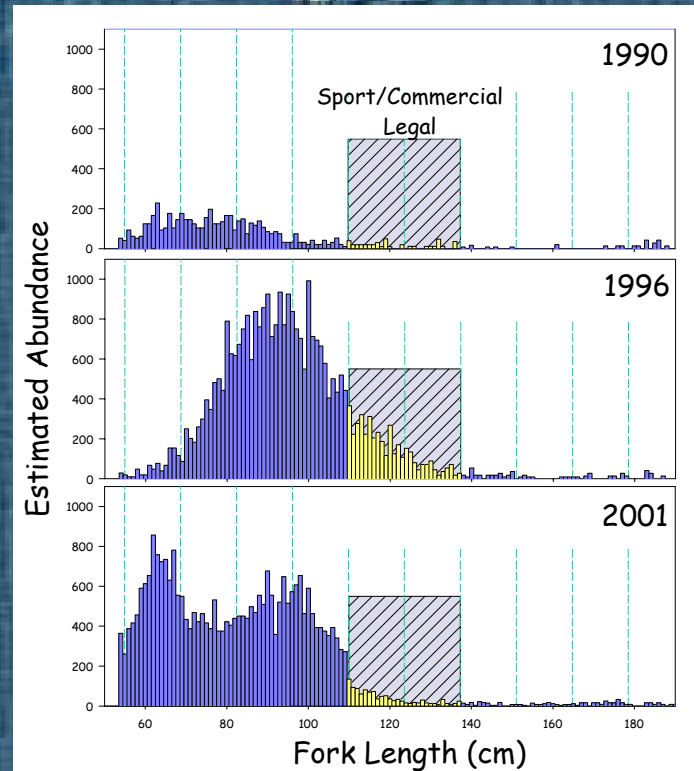
Predation vs size and turbidity

Habitat use and movements

PLANS 2003-05

Objective 3 – Monitor and evaluate actions

Monitor population status



PLANS 2003-05

Objective 3 – Monitor and evaluate actions

Determine sex, maturational status and reproductive potential



PLANS 2003-05

Objective 3 – Monitor and evaluate actions

Describe annual variation in recruitment



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