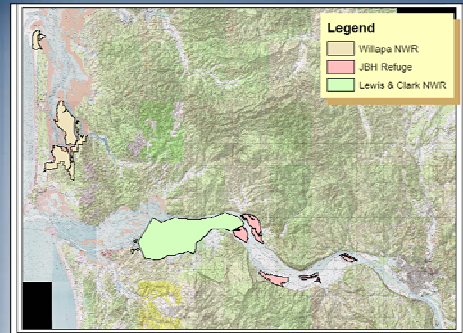


Willapa NWR Complex Fish Management Program "An Opportunity to Collaborate"



Willapa NWR Complex



Lewis and Clark NWR



Approximately 40,000 acres of tidally influenced open water, shoals, and vegetated islands in the Columbia River from Cathlamet to Astoria

Co-locate





Julia Butler Hansen Refuge
for the Columbian White-tailed Deer

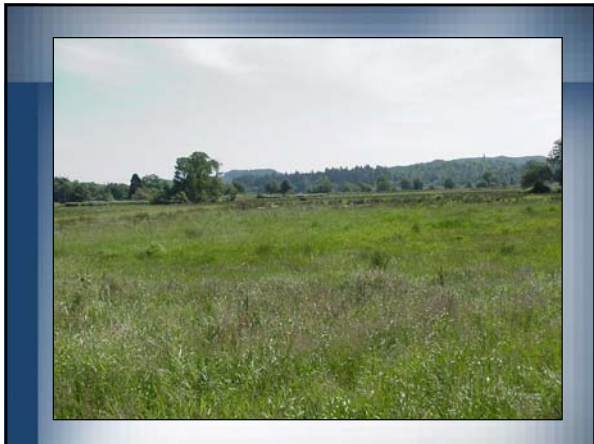
A helicopter is shown in flight against a bright blue sky with scattered white clouds. The helicopter is viewed from a low angle, looking up. A small red logo is visible in the bottom right corner of the image.

Approximately 6,000 acres of forested islands,
grasslands, and wetlands with approximately
3,000 acres enclosed by dikes

An aerial photograph of a wetland area. The landscape is a mix of green grasslands, brownish soil, and several interconnected water bodies. The water bodies are irregularly shaped and surrounded by low-lying vegetation. In the distance, there are rolling hills under a clear sky.

Four streams or rivers are part of the refuge

Co-locate





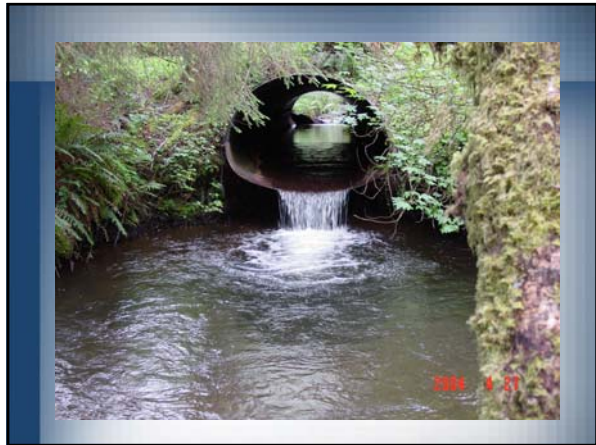
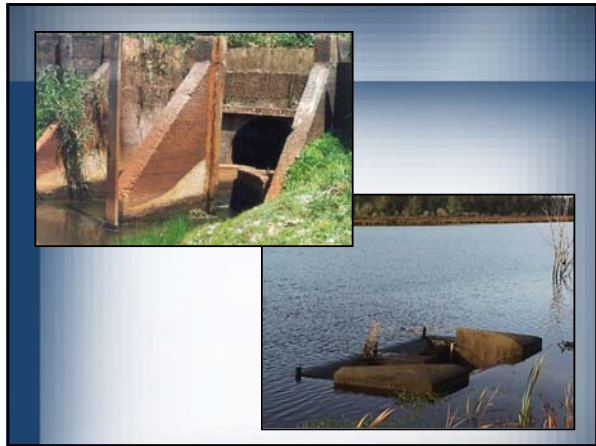
Willapa NWR

The collage includes five distinct images: a large tree trunk covered in moss, a wide river flowing through a landscape, a rocky streambed with water, a sandy dune with sparse vegetation, and a small waterfall cascading over rocks.

27,500 acres (15,500 fee title use deed, 12,000 presidential proclamation boundary). Habitats include sand dunes, forest, grasslands, estuarine mudflats and saltmarsh, fresh water wetlands and all or part of 19 rivers or streams

Co-locate



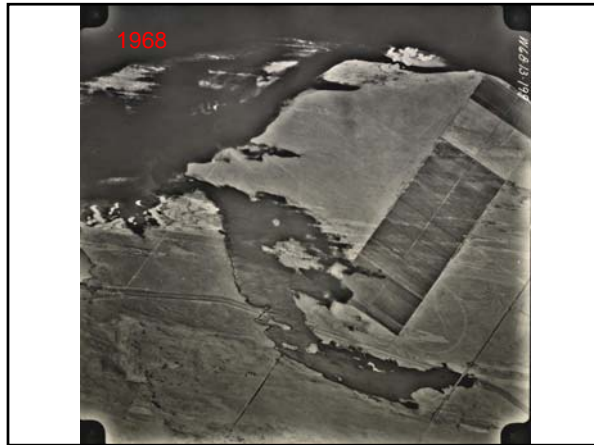
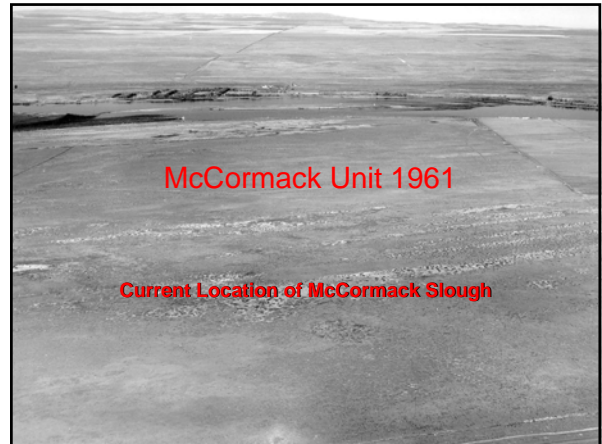
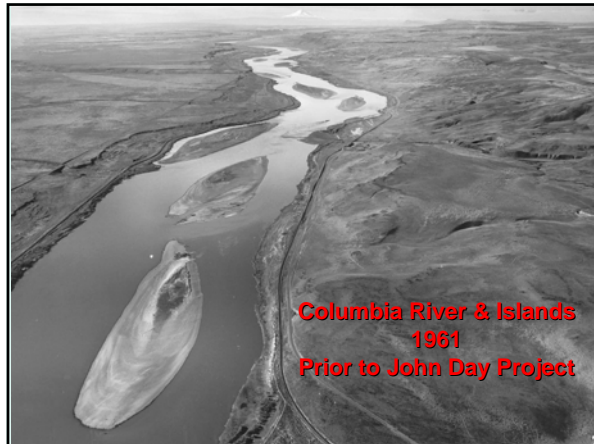






Co-locate



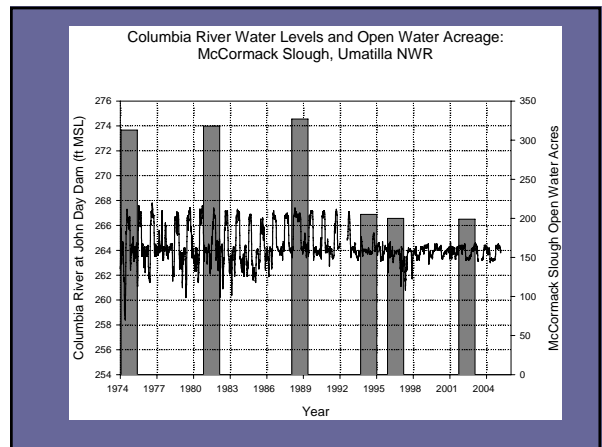


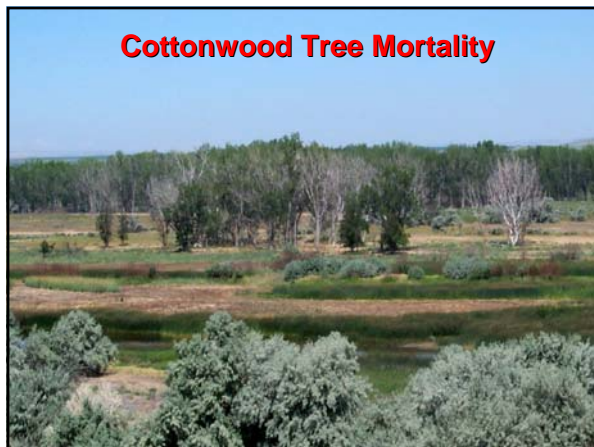
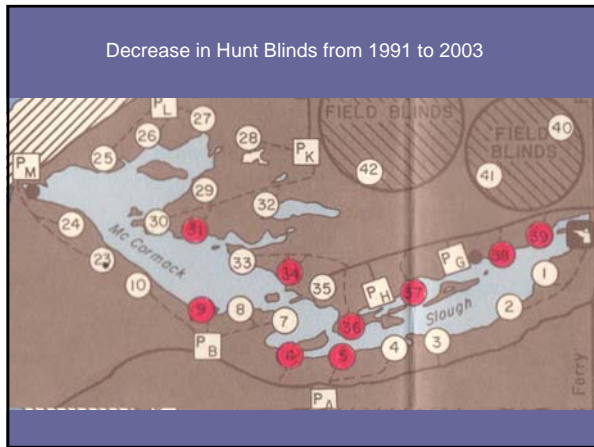
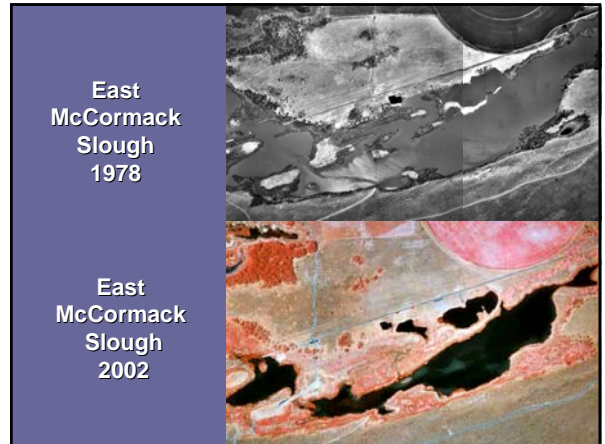
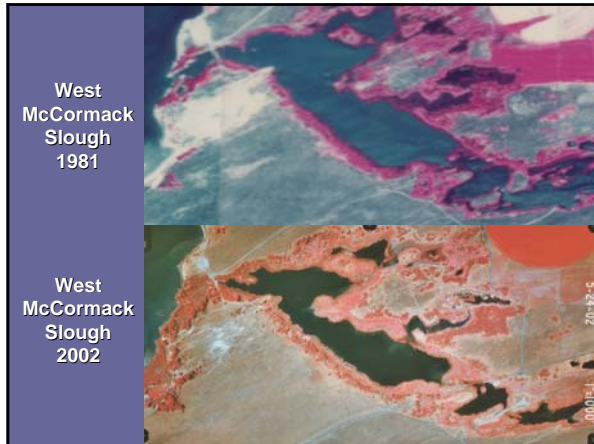
1976 - 2004

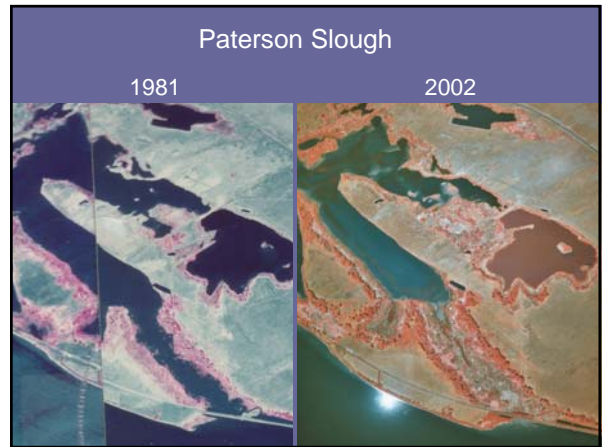
Columbia River upstream of John Day Dam
1976-2004

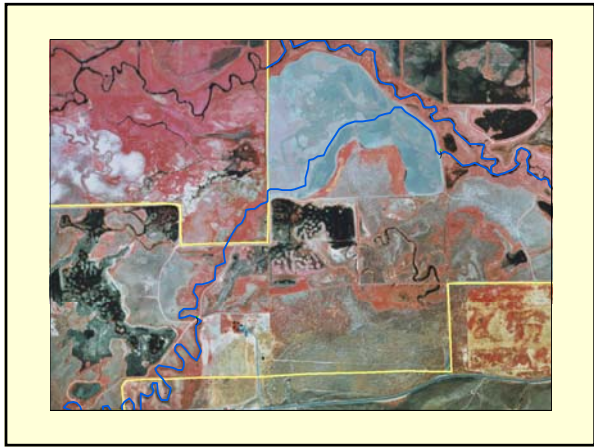
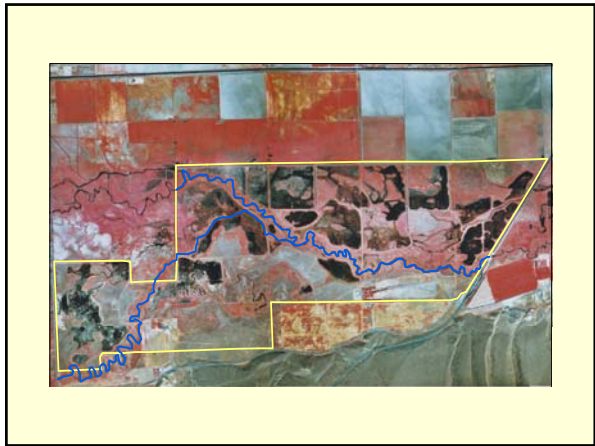
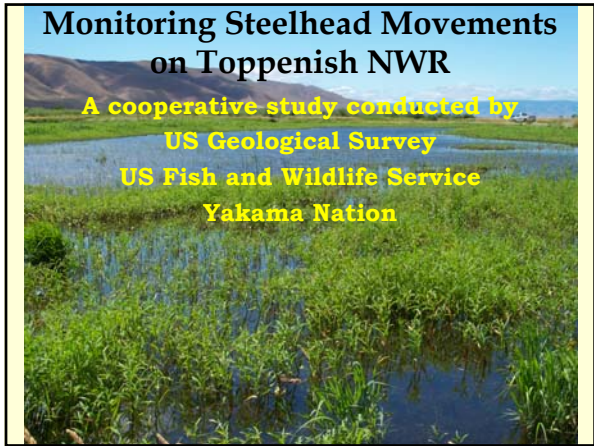
Hydrological Change

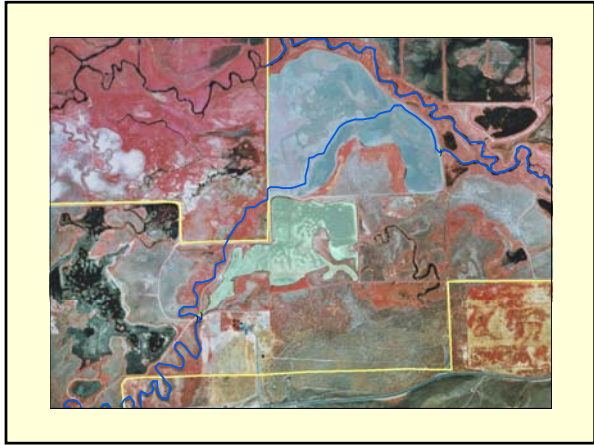
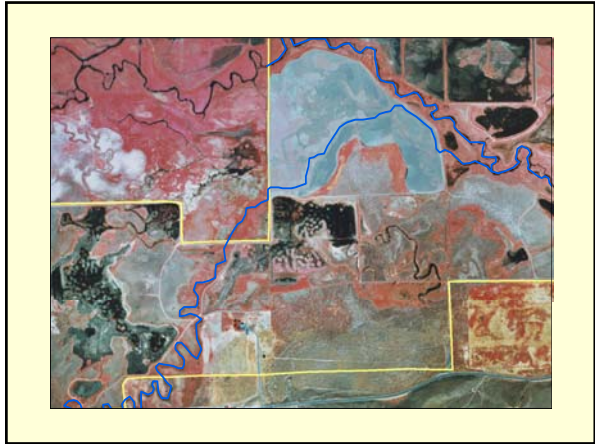
- 1991 Snake River Sockeye listed endangered
- 1993 FCRPS BiOp '94-'99 FCRPS operations & juvenile transportation program
- 1994 '93 FCRPS BiOp set aside by Federal Court
- 1994/95 Snake spring/summer and fall chinook reclassified endangered
- 1995 FCRPS BiOp '94-'98 FCRPS operations & juvenile transportation program
- 1998 Supp. FCRPS BiOp pursuant listing of 3 steelhead
- 2000 Supp. FCRPS BiOp pursuant listing of 6 more spp













Other Fish Species Captured

- Redside shiner
- Common carp
- Northern pikeminnow
- Pumpkinseed
- Goldfish
- Suckers (3 spp)
- Chiselmouth
- Largemouth bass
- Black bullhead
- Brook lamprey



Steelhead Pit-Tagged at 3A and 3B Entrances

Year/Trap	Number PIT-tagged	Number recaptured	Number Detected Downstream
February 21 – June 4, 2002			
3B Entrance	207	9 (4%)	83 (40%)
3A Entrance	111	1 (1%)	24 (22%)
Total	318	10	107 (34%)
March 25 – May 28, 2003			
3B Entrance	117	2 (2%)	55 (47%)
3A Entrance	106	0	24 (23%)
Total	223	2	79 (35%)



Steelhead PIT-Tagged at 3B Exit Trap

Year	Number PIT-tagged	Number detected downstream
2002	63	27 (43%)
2003	108	47 (43%)

Conclusions and Management Actions

- Steelhead are entrained into wetland units.
 - 717 steelhead pit-tagged in 2002 and 2003
- Steelhead are capable of exiting refuge wetlands, however, numbers are lower than desired.
 - 36% of tagged steelhead detected downstream
- Refuge will install fish screens at water diversions.
- Flow through channels will be constructed and maintained to facilitate steelhead egress during high water.
- Refuge will consult with NOAA Fisheries via section 7 of ESA.











Carp Management at Malheur National Wildlife Refuge

Richard Roy
Supervisory Wildlife Biologist
Malheur NWR

Rick Vetter
Fishery Biologist
Malheur National Forest

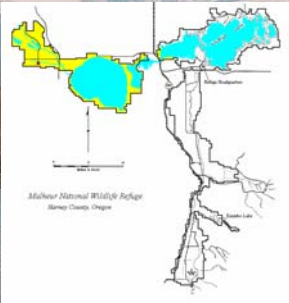
Malheur NWR Background

Refuge purpose: "as a refuge and breeding ground for migratory birds and other wildlife". Exec. Order #7106.

"With management emphasis on colonial nesting species and waterfowl, in that order of relative importance". USFWS 1985.

Malheur NWR Background


187,000 acres. Approximately one third to one half of the Refuge is either wetland and lake habitat.



Malheur National Wildlife Refuge
Harney County, Oregon

History of Carp on Malheur

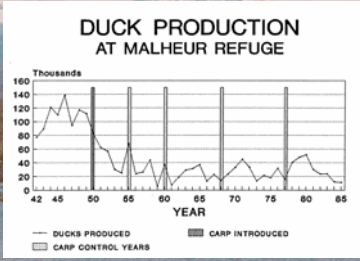
- Various urban legends about carp introduction into the Harney Basin in the early years of the 20th century (accidental or intentional release(s)).
- During the late 1940's carp were noted to be present in Malheur Lake.
- Rapid colonization and population expansion.



Rapid decline in wetland quality and waterfowl production

Carp have been the single most important issue facing wetland management on Malheur NWR and the greatest cause of the decline waterfowl productivity!!!

DUCK PRODUCTION AT MALHEUR REFUGE




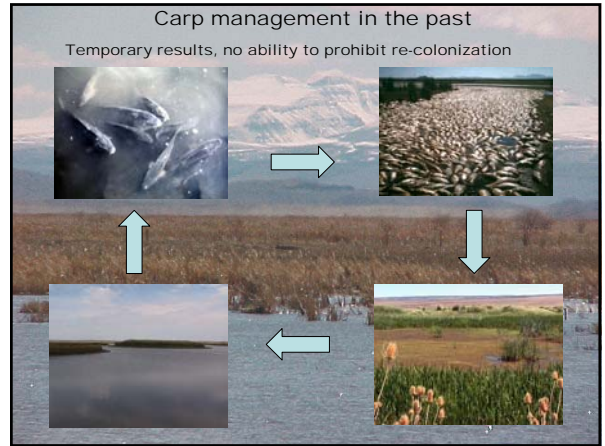
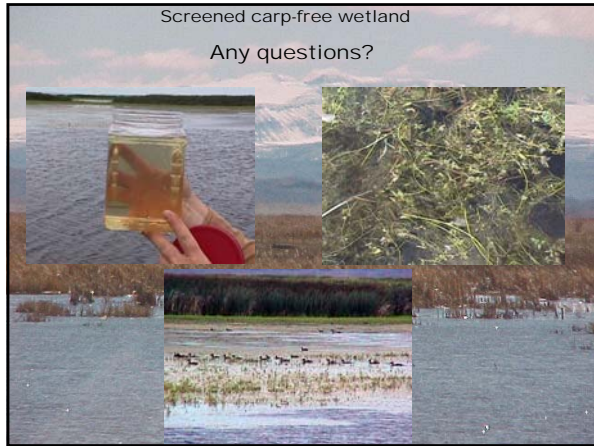
Year	Ducks Produced (Thousands)	Carp Introduced (Yes/No)	Carp Control Years (Yes/No)
42	100	No	No
45	120	No	No
50	100	No	No
55	100	No	No
60	100	Yes	No
65	100	Yes	No
70	100	Yes	No
75	100	Yes	No
80	100	Yes	No
85	100	Yes	Yes

Ivey et al. 1998

So, what are carp doing?

Carp increase turbidity, reducing light penetration and affecting photosynthesis of submerged aquatic plants. Carp also undermine submerged aquatic plants through feeding and spawning. Submerged aquatic plants are a food source for waterfowl and substrate for invertebrates which are also a food source.







Current approach to carp management
 Preventing carp movement, recolonization and better water management (engineered approach)

Preventing Carp Movement

Nothing new, we now have funding to construct screens, fishways and traps!

However, the funding was not generated because of carp concerns. The funding is available as a result of concerns over redband trout and water rights!!!

This infrastructure is dual functional (preventing loss of redbands and carp colonization of wetlands).

Implemented a three to five year wetland rotation to eliminate carp/maintain productive habitats

Permanent Marsh-Brood water 3-4 yrs

Spring drawdown

Germination of native annual broadleaf plants/grain planting

Late autumn/spring flood Spring migrants

Rotation in practice and results

Birds are not the only group affected by carp

Rare invertebrates, amphibians and fish also occupy these habitats and are affected by carp. However, any carp treatment must consider impacts to these species.



Summary

To address carp over the long haul, an integrated pest management plan must be prepared that includes the use of barriers, traps, chemicals, biological controls and water management.

It must be firmly ingrained in staff/agency/public that carp are the single most important factor affecting wetland habitat quality on Malheur NWR and carp control is paramount to meeting Refuge objectives.

Develop partnerships to generate funds from a variety of resources to implement effective carp management.

Explore the use of various technologies and their application in carp control on a landscape scale.



Overview of the Columbia River Fisheries Program Office



Overview of CRFPO

- Mission
- History of CRFPO
- Organizational structure
- Representation in management forums
- Current capabilities and expertise



CRFPO Mission

- Assist in status review of imperiled natural stocks
- Evaluate management measures for recovery
- Assist in recovery efforts for imperiled stocks
- Work to prevent the need for future listings

- Primary activities include:
 - Design & implementation of monitoring and evaluation
 - Management coordination
 - Generation & dissemination of fisheries information



CRFPO Mission continued

- Provide science-based management assistance for aquatic resources on federal and tribal trust lands throughout the Columbia River Basin
- Provide technical assessment, interagency coordination, and representation on numerous technical and policy level workgroups, committees, councils, and commissions for hydrosystem, hatchery, harvest, and habitat management



CRFPO Background & History

- Office established in 1973 as Vancouver Fishery Assistance Office
- Name was changed to Lower Columbia River Fishery Resource Office as other fishery resource offices were established in the Columbia Basin in the 1980s
- Office of the Columbia River Coordinator (OCRC) established in 1984
- LCRFRO and OCRC were combined in 1995 to form the Columbia River Fisheries Program Office (CRFPO)



Pacific Region: Fisheries Program Strategic Plan Vision

- Work with our Partners to:
 - Protect the health of aquatic habitats
 - Recover and restore fish and other aquatic resources
 - Provide opportunities to enjoy the benefits of healthy aquatic resources



CRFPO Organizational Structure

- Project Leader and Deputy oversee an office of 46 permanent, 13 term, and 5 temporary positions
- Office is structured into Teams:
 - Administration
 - Conservation, Habitat, and Population Assessment
 - Water Management and Evaluation
 - Hatchery Evaluation and Assessment
 - Hatchery Marking
 - Harvest/Hatchery Biometrics



CRFPO Service Representation

- CRFPO staff serve as Service representatives on numerous technical and policy level management forums in the Columbia Basin and region wide
- Harvest Management
- Production Management
- CBFWA & NPPC Management
- Water Management
- Recovery Planning
 - Salmon & Steelhead
 - Bull Trout



Status Review

- Assist with lamprey Status review
- Assist with bull trout 5 year status review



Service Forums

- FERC Re-licensing Team
- Refuge CCP
- Cutthroat Trout Strategic Conservation
- Regional Step-down Plan
- Lamprey Strategic Conservation



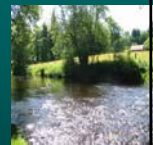
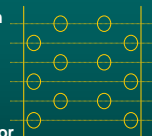
Evaluate operation and performance of hatcheries

- Develop hatchery and genetic management plans
- Evaluate wild and hatchery fish interactions, habitat use, and performance
- Conduct studies to evaluate hatchery performance relative to survival and fisheries contribution
- Conduct studies to improve hatchery performance and species conservation
- Implement fish marking programs at hatcheries



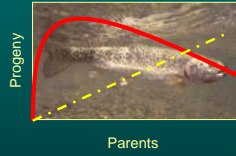
Conduct biological and habitat surveys and assessments

- Describe and assess fish and other aquatic organism populations (distribution, abundance, life history, movement, habitat use, diets)
- Assess the status and determine limiting factors for fish and other aquatic organism at a population level
- Describe and assess aquatic habitats (determine conditions, develop restoration actions)
- Develop assemblage indices of fish and invertebrates



Assess status and conservation needs of imperiled aquatic species

- Design and implementation of aquatic resource monitoring programs
- Provide analytic, biometric, and statistical support
- Develop and evaluate life cycle, harvest, and production simulation models
- Develop and evaluate recovery strategies
- Technical review and development of experimental design, modeling, and analytic approaches
- Application of conservation genetic principles for population identification and species conservation



Conduct instream flow and habitat assessments

- Application of instream flow methodologies
- Physical and biological habitat evaluation for anadromous and resident fish
- Perform hydraulic and habitat modeling
- Incorporate fish habitat requirements into FERC processes
- Evaluation of fish passage
- Design, implement, and assess large scale survival studies for fish populations that migrate through numerous mainstem dams



Questions?



Fish use and distribution at Franz Lake NWR



Columbia River Fisheries Program Office
July 2005

Mosquito monitoring and control



Taxa collected during 1996-1997

Species	Number (percent)	Species	Number (percent)
bluegill (l)	4 (0.5)	pumpkinseed (l)	113 (13.3)
brown bullhead (l)	79 (9.3)	peamouth (n)	63 (7.4)
channel catfish (l)	1 (0.1)	rainbow trout, steelhead (n)	7 (0.8)
chinook salmon (n)	19 (2.2)	redside shiner (n)	21 (2.5)
coho salmon (n)	87 (10.2)	sculpin species (n)	22 (2.6)
common carp (l)	77 (9.1)	smallmouth bass (l)	8 (0.9)
cutthroat trout (n)	31 (3.6)	threespine stickleback (n)	39 (4.6)
goldfish (l)	76 (8.9)	white crappie (l)	95 (11.2)
grass carp (l)	1 (0.1)	yellow bullhead (l)	17 (2.0)
largemouth bass (l)	4 (0.5)	yellow perch (l)	8 (0.9)
largescale sucker (n)	72 (8.5)		
northern pikeminnow (n)	6 (0.7)	total	850

Invertebrate study by Washington Coop Unit



Franz Lake NWR

Goal: Determine potential effects of mosquito control treatments on invertebrates and juvenile salmonids

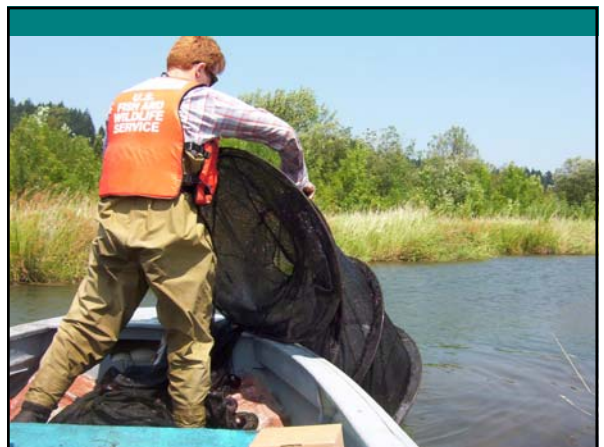
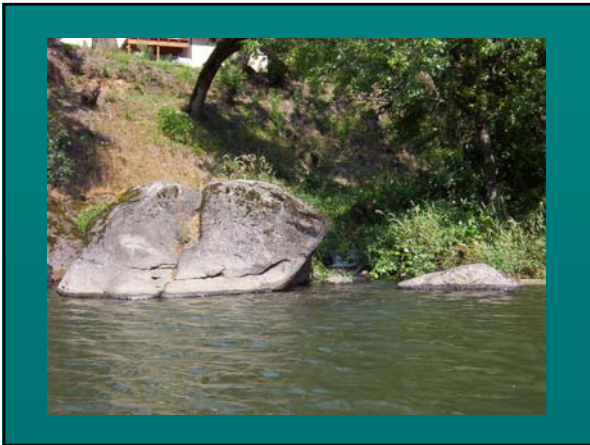
Objectives:

- determine fish species composition
- determine fish distribution in various areas of the refuge
- describe diets of juvenile salmonids

Approach

- ▶ Collect fish monthly using over-night sets of traps and boat electrofishing
- ▶ Conduct collections at the same representative areas during each sampling trip
- ▶ Collect stomach samples and describe diets of juvenile salmonids

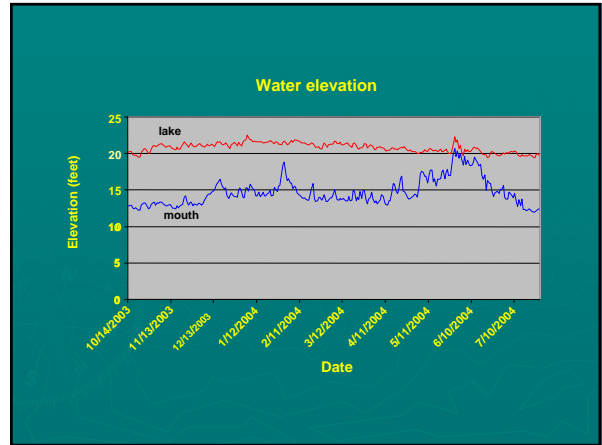
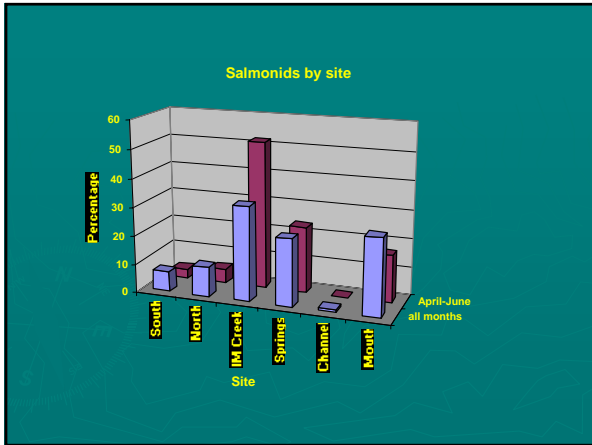
Franz Lake sample locations





Taxa collected during 2003-2005

Species	Number (percent)	Species	Number (percent)
American shad (i)	3 (0.2)	pumpkinseed (i)	306 (14.9)
bluegill (i)	50 (2.4)	peamouth (n)	45 (2.2)
bullhead (i)	77 (3.7)	rainbow trout, steelhead (n)	7 (0.3)
chinook salmon (n)	21 (0.9)	sculpin (n)	258 (12.5)
coho salmon (n)	75 (3.6)	smallmouth bass (i)	44 (2.1)
common carp (i)	32 (1.6)	speckled dace (n)	1 (<0.1)
cutthroat trout (n)	15 (0.7)	threespine stickleback (n)	526 (25.5)
Banded killifish (i)	234 (11.0)	unidentified sunfish (i)	48 (2.3)
largemouth bass (i)	8 (0.4)	western brook lamprey (n)	1 (<0.1)
largescale sucker (n)	47 (2.3)	white crappie (i)	193 (9.4)
northern pikeminnow (n)	70 (3.4)	total	2,060



- ### Summary
- ▶ 21 taxa collected in 2003-2005 and 22 in 1996-1997, about 50% individuals were introduced species for both surveys
 - ▶ Juvenile salmonids collected during November through June
 - ▶ Salmonids present at each sample area, higher abundance at mouth and confluences
 - ▶ Little material obtained from stomachs of fish collected in traps

The Chum Salmon Project



U.S. Fish and Wildlife Service
Columbia River Fisheries Program Office

Primary Management Issues



- Effects of hydrosystem operations on chum spawning habitat below Bonneville Dam
- Restoration or creation of spawning habitat in Columbia River tributaries

Location of study area



- Hardy Creek and Hamilton Springs are located downstream of Bonneville Dam at river KM 227

History of chum salmon work at Pierce National Wildlife Refuge

- USFWS has monitored adult and juvenile chum salmon populations on Hardy Creek since 1997
- Emergency habitat restoration actions were taken in lower Hardy Creek to mitigate the catastrophic flooding of 1996
- 1999 BPA funded CRFPO to monitor chum salmon runs in Hardy Creek and Hamilton Springs

Current Project Objectives



- Examine factors limiting chum salmon production
- Evaluate the relationship between fish spawning in the tributaries and Columbia River
- Enhance and restore chum salmon production in tributaries

Objective 1: Examine factors affecting chum salmon

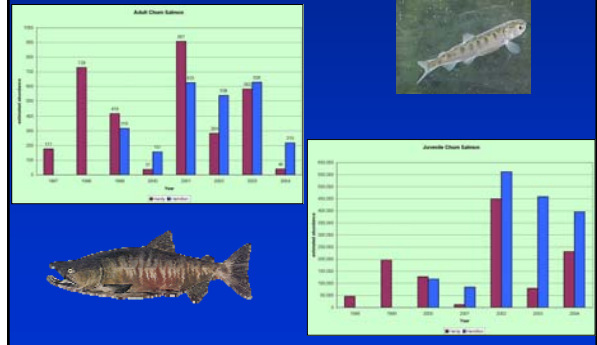


- Monitor adult and juvenile abundance
- Describe biological characteristics and calculate indices of production
- Assess environmental factors potentially affecting chum salmon

Method: Abundance Estimates

- **Adult** -Conduct spawning ground surveys
-Enumerate live chum salmon to estimate abundance using area-under-the-curve
-Calculate secondary abundance estimate using a carcass tag mark recapture technique
- **Juvenile** -Capture emigrating chum salmon smolts using stationary and floating fyke net traps
-Calculate trapping efficiency using mark recapture to estimate juvenile abundance

Abundance Estimates

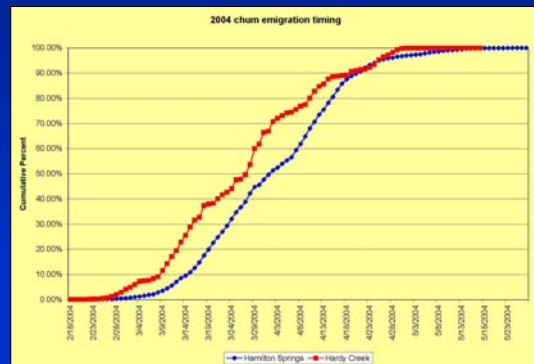


Methods: Describe biological characteristics and calculate indices

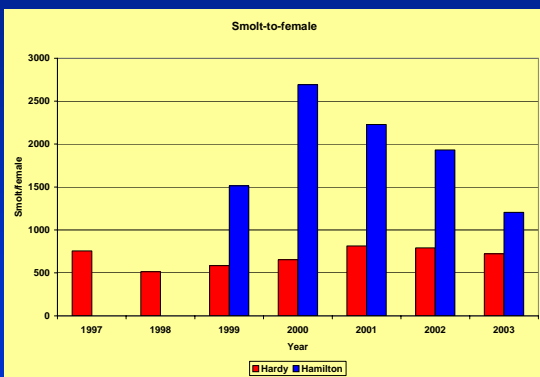


- **Adult** - Collect biological data from carcasses
- Entry and spawn timing
- **Juvenile** - Emigration timing
- **Indices** - Smolt-to-female ratios, egg-to-smolt survival

Juvenile emigration timing



Smolt-to-female ratios

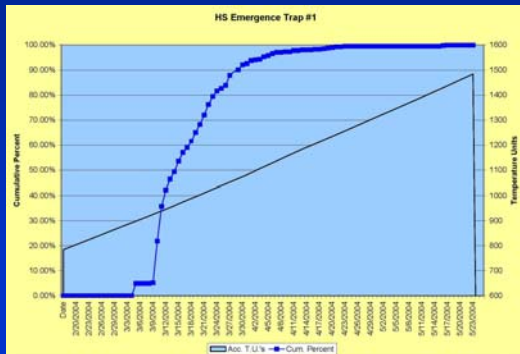


Methods: Assess environmental factors affecting chum salmon

- **Characterize redds**
 - geo-reference redd locations
 - record water depth, velocity, and substrate at use and non-use areas
- **Determine spawn success**
 - install juvenile emergence traps and piezometers
 - monitor TU's and emergence timing
 - compare intergravel conditions between redds and non-use areas



Juvenile Emergence Timing



Objective 2: Evaluate relationship between fish spawning in tributaries and the Columbia River



- Methods:
 - monitor movement among spawning areas using radio telemetry
 - WDFW Ives Island mark recapture study
 - DNA analysis

Objective 3: Enhance and restore chum salmon populations in tributaries



- Methods:
 - September 2000, CRFPO constructed an artificial spawning channel adjacent to Hardy Creek to provide spawning habitat during Columbia River backwater events

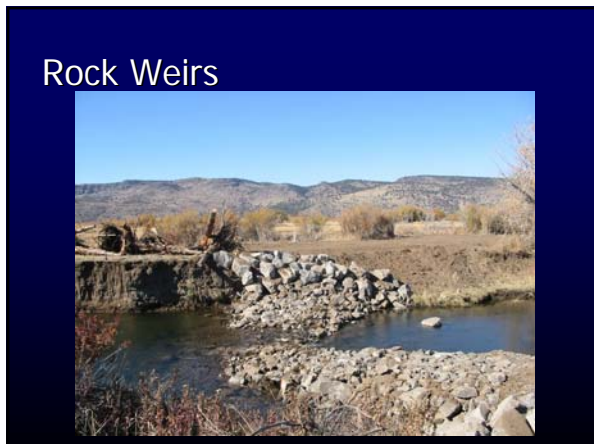
Hardy Spawning Channel Summary



- Operated 2001,2002
- Chum passage inhibited by high gradient and water velocity
- Operation limited to normal or high water years
- Installed temporary weir structure at mouth to reduce gradient and velocity
- Assessed feasibility of using alternate water supply
- Operated 1 week Spring 2005 to test effectiveness of weir structures and to document conditions in channel at various flows

The Future...





Malheur NWR

Goal: Evaluate biological responses to stream habitat improvements

Objectives:

Characterize fish and invertebrate assemblages before and after habitat work

Compare fish and invertebrate communities between reaches with and without habitat structures

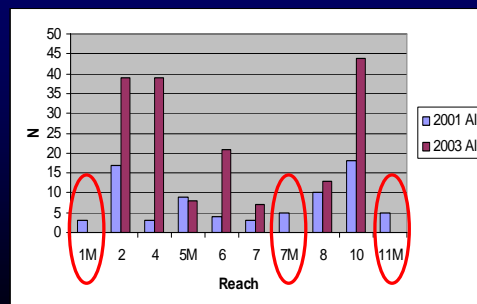
Approach

- Describe and compare fish assemblage by collecting fish in 100m reaches using multiple-pass boat electrofishing
- Characterize invertebrate assemblage using descriptive indices of biotic integrity
- Compare cross sectional profiling and substrate composition

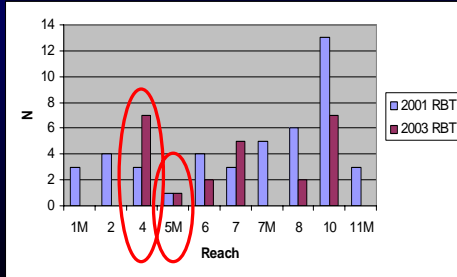


Species	2001 (10 reaches pre-construction)	2003 (4 reaches w/out structures)	2003 (6 reaches with structures)
Redband trout	45	1	26
Mountain whitefish	25		3
Redside shiner	7		102
Sculpin	1		5
Longnose dace		1	50
Bridgelip sucker		4	16
Tui chub		2	2
Bullhead			3
Total	78	8	207

Fish distribution by reach between 2001 and 2003



Species	2001 (10 reaches pre-construction)	2003 (4 reaches w/out structures)	2003 (6 reaches with structures)
Redband trout	45	1	26

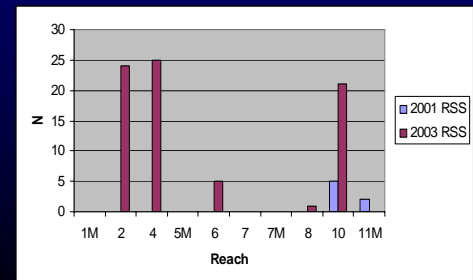


Mean length (mm) and weight (g) of redband trout

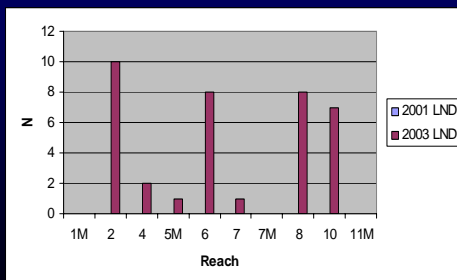
Year	N	Length (95% CI)	Weight (95% CI)
2001	45	326 (294-358)	523 (432-614)
2003	27	220 (201-240)	123 (72-148)

Species	2001 (10 reaches pre-construction)	2003 (4 reaches w/out structures)	2003 (6 reaches with structures)
Redband trout	45	1	26
Mountain whitefish	25		3
Redside shiner	7		102
Sculpin	1		5
Longnose dace		1	50
Bridgelp sucker		4	16
Tui chub		2	2
Bullhead			3
Total	78	8	207

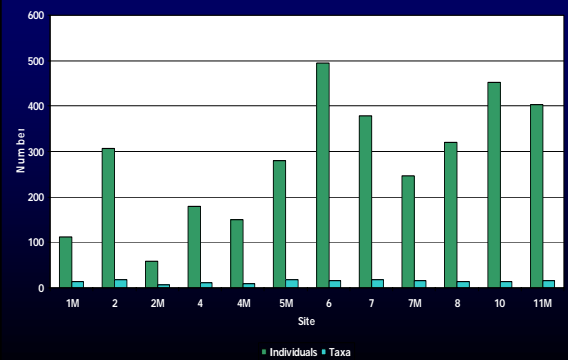
Species	2001 (10 reaches pre-construction)	2003 (4 reaches w/out structures)	2003 (6 reaches with structures)
Redside shiner	7		102



Species	2001 (10 reaches pre-construction)	2003 (4 reaches w/out structures)	2003 (6 reaches with structures)
Longnose dace		1	50



Number of invertebrate individuals and taxa at each site 2001



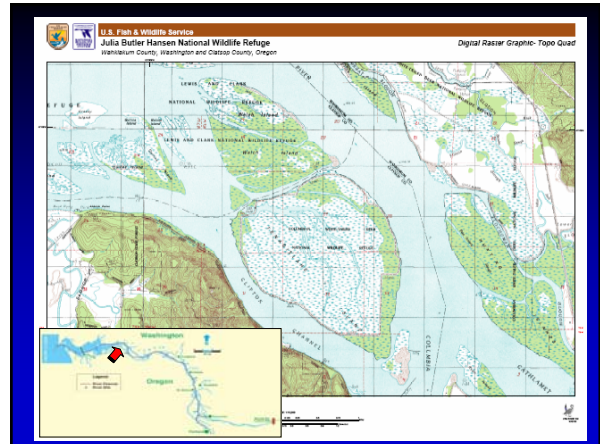
Summary

- Increase in species diversity between 2001 and 2003
- Decreased distribution of previously detected species among reaches between 2001 and 2003
- Decreased catch of redband trout and mountain whitefish in 2003
- Redband trout significantly smaller in 2003 than 2001

2005

- Determine abundance estimates for all species through entire study area in addition to density estimates for RBT
- Compare cross sectional profiles collected in 2001 (pre-construction) to those that will be collected in 2005 (post-construction)
- Compare invertebrate samples from 2003 and 2005 for changes in diversity and distribution

Lower Columbia River Channel Improvement: Assessment of Salmonid Populations and Habitat on Tenasillahe and Welch Islands



Opportunity

U.S. Army COE –

Lower Columbia River, Environmental Restoration Program.

The purpose of environmental restoration is to re-establish the attributes of a natural, functioning and self-regulating system.

Columbia River Channel Improvement Project

- Tenasillahe Island, NWR
- Shillapoo Lake
- Lord Walker Island, Longview
- Tidegate Replacements, Multiple Locations
- Bachelor Slough
- Howard Cottonwood Island

<https://www.nwp.usace.army.mil/pm/lcr/envres.asp>

Descriptions, habitat, sampling challenges ...

Tenasillahe Island

- Julia Butler Hansen NWR
- Lower Columbia River
- Approximately Rkm 55
- Actively managed
 - Columbia White-tailed deer
 - major influence from dikes



1.1 - large into Columbia







Welch Island

- Lewis and Clark NWR
- Lower Columbia River
- Approximately Rkm 55
- Not actively managed
- No influence from dikes



The Assumption

Habitat on W.I. is better (and approaches 'best' conditions) for juvenile salmon than habitat on T.I.

The Question

Can tide gates on T.I. be modified in a manner that habitat 1) remains good for deer and 2) improves for salmon?

The Plan

Comparisons will be conducted among sloughs on Tenasillahe Island (*treatment site*), before and after construction associated with the USACOE restoration project (after breaching?), and sloughs on Welch Island (*reference site*), which is not influenced by dikes and tidegates.

Study Objectives

Objective 1: Assess the periods, frequency and duration that existing tidegates.

Objective 2: Begin to describe presence, distribution, and biological characteristics (e.g., species, size) of salmonids inhabiting sloughs on Tenasillahe Island and compare to that observed at reference sloughs on Welch Island.

Objective 3: Begin to characterize habitats at the sloughs on Tenasillahe Island and compare to that observed at reference sloughs at Welch Island.

Objective 4: Describe the movement of juvenile salmon in and out of the sloughs as well as their residence in and use of the sloughs on Tenasillahe Island and compare to that observed at reference sloughs on Welch Island.

Findings already ... ?



March

July



Flow in July



Questions?



Hanford Reach National Monument Studies

•Goals

- Provide CRFPO Hanford Reach experience and expertise to support Service goals for fishery and aquatic resource management on the Monument
- Develop quantitative assessment tools to evaluate impacts of hydrosystem configuration and operation on fishery and aquatic resources
- Work through regional forums to secure streamflows for spawning and rearing fall chinook, as well as other aquatic resources
- Support the Service position regarding FERC relicensing of the Priest Rapids/Wanapum hydro project with the results from our quantitative assessment tools

Hanford Reach National Monument Studies

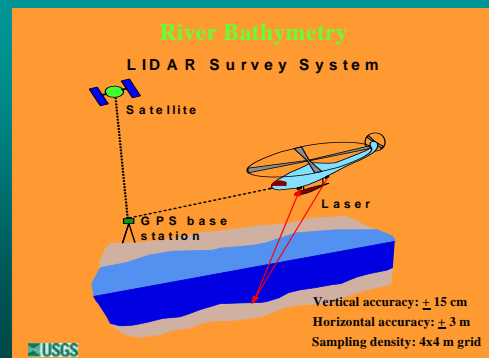
•Objectives

- Develop bathymetric/topographic surface for the Hanford Reach river corridor
- Build and calibrate a hydraulic model for the Reach
- Assimilate or develop biological habitat criteria for relevant components of the aquatic ecosystem, specifically fall Chinook salmon
- Integrate biological criteria with hydraulic model output to determine habitat conditions associated with a range of streamflows or hydrosystem operations

Hanford Reach National Monument Studies

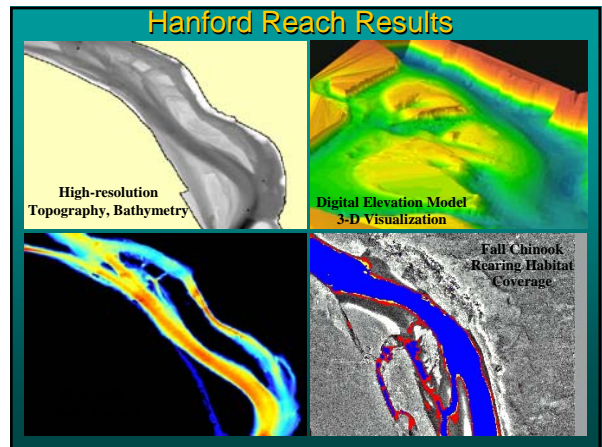
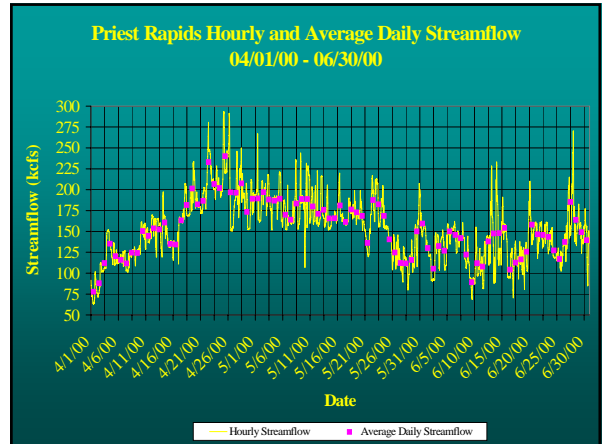
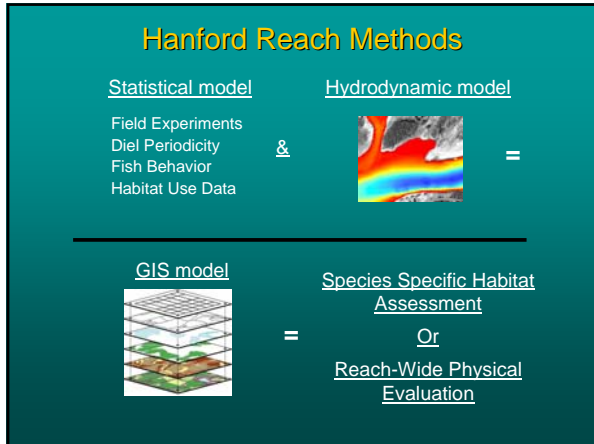
- Current work in progress consists of a spawning and rearing habitat assessment, and a stranding/entrapment evaluation for fall Chinook.
- Results of this work will be used to craft FWS Terms and Conditions for the new FERC license for Priest Rapids/Wanapum hydro projects.

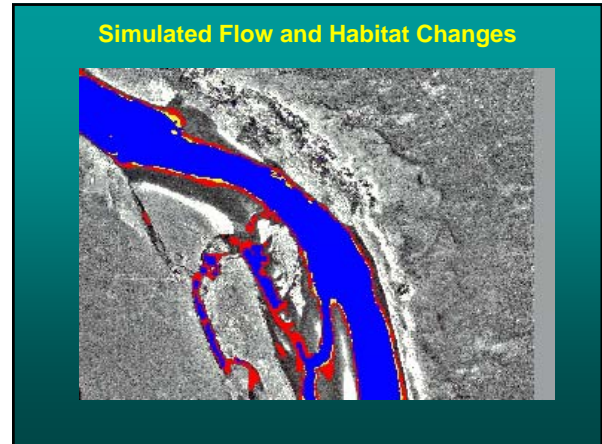
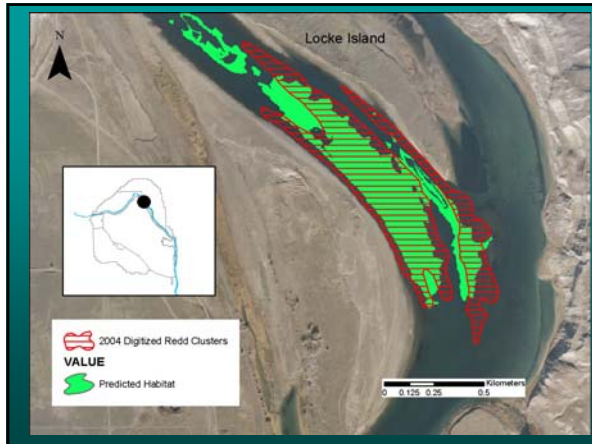
Hanford Reach Methods




Hanford Reach Methods








Bull Trout Studies


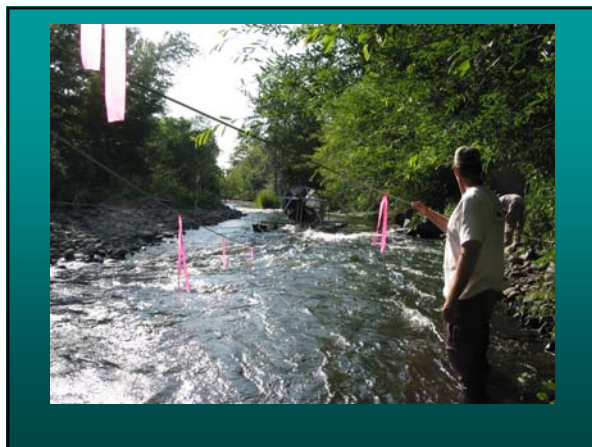


- Goal - Contribute to the long term recovery and eventual de-listing of bull trout
- Population Studies
 - Determine structure and abundance, movement, survival
 - Monitor trends in abundance and distribution to determine progress towards recovery
- Habitat Studies
 - Determine habitat requirements for spawning and rearing
 - Determine instream flows for spawning, rearing, and passage





Bull Trout Studies

- Population Size, Structure, Trend
 - Mark/Recapture studies to determine population size.
 - PIT tag passive arrays to detect movement and determine survival for individual fish.
 - Population modeling following multiple years of work to determine population trend.

Bull Trout Studies

- Habitat Studies
 - Goal - Optimize spawning and rearing habitat
 - Determine habitat requirements for spawning and rearing bull trout
 - Observations of physical parameters at redd locations
 - Observations of physical parameters at rearing fish locations
 - Develop logistic regression model that captures relative suitability of physical parameters

Bull Trout Studies

Habitat Mapping



Bull Trout Studies

•Habitat Studies

- Determine instream flows that provide spawning and rearing habitat for bull trout
- Measurement of physical parameters and hydraulic conditions
- Build hydraulic model
- Build habitat model
- Use output to determine instream flow needs



Bull Trout Studies



- Improve current instream conditions to expand distribution of usable habitat for bull trout
- Continue work by developing instream flow targets for other basins and recovery units

Cross Program Recovery Efforts

- Refuges
- Fisheries
- Ecological Services
- State Programs
- Migratory Birds






U.S. Fish and Wildlife Service
Pacific Region

Program Strategy



- What can the Service do?
- Use available resources and programs
- Utilize existing partnerships and develop new ones
- Focus on species where recovery is achievable in the near term
- Show success

FWS Programs

- Ecological Services
- Refuges
- Fisheries
- Migratory Birds/State Programs

- Review recovery plans
- Determine population status
- Develop recovery strategy
- Utilize Refuge lands for recovery test techniques, demonstrations
- Fund projects
- Identify grant opportunities
- Identify research needs
- Identify partners




Geographic Focus

- Lower Columbia/Coastal Washington and Oregon
- Willamette Valley/Puget Trough



Focus Species

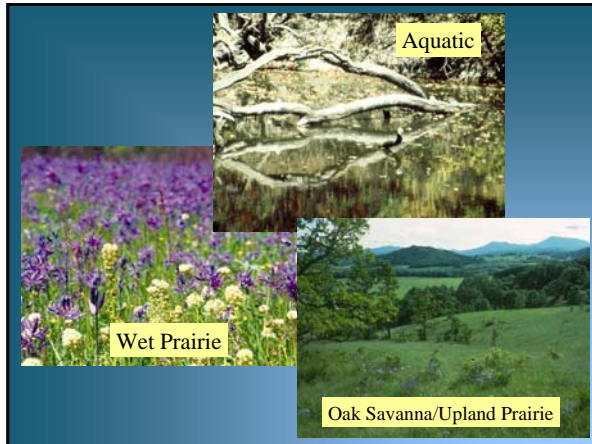
- Tier 1 species:
 - Nelson's checkermallow
 - Columbia white-tailed deer
 - Oregon chub
- Over 20 other species:
 - Oregon silverspot
 - Willamette daisy
 - Golden paintbrush
 - Fender's blue butterfly
 - Kincaid's lupine
 - Western snowy plover
 - Streaked horned lark
 - Coastal cutthroat trout
 - Pacific lamprey



Habitat Focus

- Focus on habitat types given the large number and overlap of species
- Restoration of native plant communities will lead to recovery of listed species
- Prevent future listings
- Restore native components to the landscape





Other Habitats:

- Coastal Dunes
- Late Successional Forests
- Estuary
- Coastal Prairie






Nelson's checkermallow

- Largest population (3-4k) at Baskett Butte NWR
- Threatened by encroaching successional species and non-natives
- Easy to propagate and reintroduce
- Landowner cooperation through Partners for Fish and Wildlife and NRCS



Columbia White-tailed Deer

- Cooperative effort to expand deer population
- Partnerships with FWS, industry, and private landowners
- Acquisition and restoration of habitat
- Population studies
- Deer re-introductions
- Result:
 - ✓ Population growing
 - ✓ Started delisting process

Oregon Chub



- Identified chub re-introduction sites on secure properties
- Non-native species control and monitoring
- Created new chub habitat
- Installed fish screens, repaired dikes
- Transfer of fish from stable populations

FY 2003 and 2004

- Over \$3.8 M of FWS funds leveraged over \$11.2M
- On-the ground conservation benefiting multiple species and habitats



Future Collaboration

- RDT has recognized effort as way to do business
- Interest growing in new focal areas
 - ✓ Oregon Coast
 - ✓ Hawaiian Islands
 - ✓ Others?

