

**NWR-CRFPO Workshop 2009**

A report on a workshop between National Wildlife Refuges in Region 1  
and the Columbia River Fisheries Program Office

May 14, 2009

Vancouver, Washington

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U.S. Fish and Wildlife Service  
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## **Executive Summary**

On May 14, 2009, the Columbia River Fisheries Program Office (CRFPO) hosted a workshop with National Wildlife Refuges (NWRs). The goal of the workshop was to provide a forum to promote effective information exchange and coordination among NWRs, CRFPO, and the Partners for Fish and Wildlife Program (PFW). The scope of the workshop focused on select geographic areas where the CRFPO has ongoing work with NWRs and suggested topics. Five objectives were addressed:

1. Update NWRs about results and activities by the CRFPO at Oregon Coast and lower Columbia River NWRs;
2. Identify and discuss aquatic issues relative to management planning at Oregon Coast and lower Columbia River NWRs;
3. Identify fish passage issues and discuss needs at Willamette Valley NWRs;
4. Discuss joint PFW-Fisheries lower Columbia River-North Coast habitat position and explore application of SHC; and
5. Develop action items.

The purpose of the workshop was to build upon efforts initiated during earlier workshops. The workshop was organized according to four main sessions: 1) Oregon Coast NWRs—Fisheries work at Bandon Marsh and Nestucca Bay NWRs, aquatic issues, and management planning; 2) Lower Columbia River NWRs—Fisheries work at Julia Butler Hansen NWR, aquatic issues, and management planning; 3) Willamette Valley NWRs—Discussion of fish passage issues and needs at W.L. Finley and Baskett Slough NWRs; and 4) Lower Columbia River-North Coast Habitat Position and SHC.

This report summarizes the 2009 NWR-CRFPO workshop in four sections: 1) Background, which provides context relative to the initial workshop; 2) 2009 NWR-CRFPO Workshop, which reports on each of the four workshop sessions; 3) Action Items, which include activities for ongoing and planned projects, and actions specifically discussed at the workshop; and 4) Appendices of supporting materials.

## I. Background

Because of efforts to increase interactions between Service programs and complementary missions of National Wildlife Refuges (NWRs) and the Columbia River Fisheries Program Office (CRFPO), the CRFPO hosted a day-long workshop with NWRs<sup>1</sup> and representatives of programs from the regional office in July 2005. The goal of this initial workshop was to provide a forum to promote effective information exchange between NWRs and the CRFPO. The intent of exchanging information was to improve familiarity between programs, identify immediate aquatic resource issues and needs at NWRs, and explore opportunities and strategies for the programs to cooperatively work toward addressing resource issues and needs. The resulting report summarizes information presented at the workshop, as well as describes approaches NWRs and the CRFPO intend to use in working together.

Since the initial workshop in 2005, NWRs and the CRFPO have been cooperatively working on several ongoing and new monitoring and evaluation projects. The CRFPO has also been working with NWRs to provide technical assistance on various issues to the extent possible with existing resources, assisting in the development of Comprehensive Conservation Plans (CCPs), and jointly pursuing various internal and external sources of funding to address aquatic resource needs. Because a formal and regular exchange of information encourages continued cooperative efforts to work together in addressing mutual goals and resource issues and needs, holding annual workshops is an efficient approach to exchange the most current information. This report summarizes topics and discussions from the 2009 workshop, and includes supporting materials. It is the third workshop held since 2005. This and all previous reports are available at the CRFPO webpage (<http://www.fws.gov/columbiariver/programs/RAP/refuge.html>).

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<sup>1</sup> Primarily NWRs within the CRFPO geographic area of responsibility (i.e., Columbia River basin below McNary Dam, Oregon waters excluding the Klamath River basin, small tributaries of Willapa NWR).

## **II. NWR-CRFPO Workshop 2009**

The intent of the 2009 workshop was to build upon efforts initiated at earlier workshops with the goal of providing a forum to promote effective information exchange and coordination among NWRs, CRFPO, and the Partners for Fish and Wildlife Program (PFW). Because work on various projects funded under the American Recovery and Reinvestment Act constrained time for Service personnel, the scope of the workshop focused on select geographic areas where the CRFPO has ongoing work with NWRs (i.e., lower Columbia River and Oregon coast) and suggested topics (e.g., fish passage issues at Willamette Valley NWRs and the new joint PFW-Fisheries position). Five objectives were addressed:

1. Update NWRs about results and activities by the CRFPO at Oregon Coast and lower Columbia River NWRs;
2. Identify and discuss aquatic issues relative to management planning at Oregon Coast and lower Columbia River NWRs;
3. Identify fish passage issues and discuss needs at Willamette Valley NWRs;
4. Discuss joint PFW-Fisheries lower Columbia River-North Coast habitat position and explore application of SHC; and
5. Develop action items.

The workshop was organized according to four main sessions to accomplish objectives (see agenda—Appendix A): 1) Oregon Coast NWRs—Fisheries work at Bandon Marsh and Nestucca Bay NWRs, aquatic issues, and management planning; 2) Lower Columbia River NWRs—Fisheries work at Julia Butler Hansen NWR, aquatic issues, and management planning; 3) Willamette Valley NWRs—Discussion of fish passage issues and needs at W.L. Finley and Baskett Slough NWRs; and 4) Lower Columbia River-North Coast Habitat Position and SHC. This portion of the workshop report summarizes each of the sessions, as well as notes additional NWR needs discussed. The attendance list (Appendix B), workshop notes (Appendix C) compiled by Ruby Bourne and Sam Lohr (CRFPO), and presentations (Appendix D) are also included.

### **A. Oregon Coast NWRs—Fisheries work at Bandon Marsh and Nestucca Bay NWRs**

About 80 acres of tidal wetland habitats were restored at Nestucca Bay NWR by removing a dike and an associated tide gate adjacent to the Little Nestucca River during summer 2007. To evaluate physical and biological responses of the project, the CRFPO collected data beginning in winter 2007 through summer 2008, encompassing the periods immediately before and after construction. For physical habitat, restoration has resulted in more rapid movement of water into and out of the marsh, increasing the duration of tidal stages at both high and low tides and wetted width of channels. For fish use, four salmonids have been collected, coho salmon, coastal cutthroat trout, Chinook salmon, and steelhead. Juvenile coho salmon was the most abundant salmonid captured and individuals were present during all seasons. The pattern of abundance and body length suggests that smaller individuals enter the marsh in spring and may reside there before

emigrating the following spring. Coastal cutthroat trout were collected during all seasons except fall 2007, with the greatest numbers (i.e., 20 individuals) captured in June 2008 after construction. Chinook salmon appear to make brief movements into the marsh during spring-summer, with significantly larger juveniles present later in the year. Steelhead was primarily collected between February and June 2008, with all but one individual originating from a hatchery. Restoration appears to have increased fish species richness resulting in species diversity more similar to that of a natural system. Although lack of frequently collected long-term data does not allow a rigorous analysis of fish, abundance of salmonids appears to have increased in the marsh after restoration. Drift samples of aquatic invertebrates were collected both before and after construction, and have been preserved for later analysis. It would be beneficial to evaluate the site in five years to assess potential longer-term changes. Questions concerning when, where, and why to monitor projects similar to the one at Nestucca Bay NWR were discussed relative to illustrating benefits and why. Overall, observing changes over time, especially relative to initial expectations and anticipated benefits, would make positive contributions to future restoration projects.

Bandon Marsh NWR is planning to restore over 400 acres of tidal wetland habitats by removing dikes, tide gates, and potentially filling up to 15 miles of ditches at the Niles'tun Unit adjacent to the Coquille River. Construction for the restoration project is planned for 2010. To evaluate physical and biological effects of the project, the CRFPO began collecting data in fall 2007, focused on sampling habitat, fish, and aquatic invertebrate drift within a portion of the unit, Fahy Creek. The scope was expanded to include additional areas, Redd Creek and Fahy Lake, as well as increasing fish sample frequency from about quarterly to six-week intervals. Salmonids collected in Fahy Creek include coastal cutthroat trout, steelhead, apparent cutthroat-steelhead hybrids, coho salmon, and Chinook salmon. Coho salmon were the most abundant salmonid, primarily occurring in the most downstream reaches, whereas coastal cutthroat trout were more abundant in the upstream reaches. With the exception of steelhead, the same salmonid species and apparent hybrids were also collected in Redd Creek. Chinook salmon and coho salmon were the only salmonids collected at reference sites in the Coquille River and an undiked side channel. Sculpin and threespine stickleback were the only fish species collected in Fahy Lake. Drift samples of aquatic invertebrates were collected in spring 2008 and 2009, and have been preserved for later analysis. The intent is to continue monitoring the unit after construction to generate long-term data.

Additional aquatic issues noted was to continue the assessment work at Bandon Marsh NWR, and the need for assistance on CCPs for estuarine NWRs, which are expected to begin in the fall.

#### **B. Lower Columbia River NWRs—Fisheries work at Julia Butler Hansen NWR**

Eight sloughs on the mainland of Julia Butler Hansen NWR are enclosed by dikes. Four sloughs are “closed” (i.e., have no direct connection to river channels) and the remaining four have tide gates. The CRFPO is conducting an assessment of fish passage, fish communities, and aquatic habitats at the sloughs prior to installation of tide gates at closed sloughs and modifying existing tide gates intended to improve fish passage and

habitats that provide potential rearing habitat for juvenile anadromous salmonids. Riparian vegetation will also be planted along sloughs as part of the project. Construction is planned for 2009 and 2010. Two years of pre-construction data have been collected, and collecting data for two years post-construction is anticipated. Passage rates of juvenile Chinook salmon were consistently higher into two reference sloughs without tide gates than into three sloughs with tide gates that were evaluated. Passage of coho salmon varied among the five sloughs. For fish communities among 10 sloughs (4 closed, 4 with tide gates, and 2 reference sloughs without dikes and tide gates), 13 fish taxa (6 introduced, 7 native) were collected in closed sloughs, 10 fish taxa (5 each introduced and native) were collected in sloughs with tide gates, and 6 fish taxa (all native) were collected in reference sloughs. For aquatic habitat, water temperature may be limiting juvenile salmonids in gated sloughs, and dissolved oxygen may be limiting in closed sloughs and one slough with a tide gate. The possibility of conducting shorter net sets to refine information of when fish enter sloughs and the potential of locking tide gates open when there is no risk of flooding were discussed.

Additional aquatic issues noted was the need for assistance on restoration planning for Nelson and Risk creeks, restoration of salt marsh habitat on about 750 acres behind dikes at Willapa NWR, and assessment of small streams.

### **C. Willamette Valley NWRs—Discussion of fish passage issues and needs at W.L. Finley and Baskett Slough NWRs**

Baskett Slough and W.L. Finley NWRs have several permanent and seasonal wetlands that are primarily inundated by winter rains or flood waters from the Willamette River and tributaries. Water levels in some may be later managed for waterfowl, turtles, and vegetation using water control structures. Examples include: Turtle Flats and McFadden Marsh, both of which receive flood waters from Muddy Creek; and Impounded wetlands at Baskett Slough, which primarily receive water from Morgan Reservoir. The Oregon Department of Fish and Wildlife sent a letter noting sites at the refuges where fish passage can be improved, and requested that passage be provided during winter through early spring. For W.L. Finley, coastal cutthroat trout may have access during high water in Muddy Creek. For Baskett Slough, ODFW has assumed that steelhead may have access to the refuge after passing dikes on private lands downstream. Overall, issues include: Upstream and downstream passage during high water; Fish entrapped by water control structures and spillways during low water levels; Dikes on private lands downstream that are likely barriers; Lack of fish data and information on timing; and Possible increases in water temperatures as water levels decline. Potential solutions are installing or modifying existing water control structures, spillways, channels, and fish ladders; earlier draining of wetlands and refilling using screened pumps; off-site habitat restoration for mitigation; and assessing likelihood of fish use. The discussion focused on specific details about how wetlands are managed and for what reasons, fish species that may be affected, and whether potential solutions compromise operation of the refuges. Suggestion was made to have ODFW express their concerns (e.g., fish species thought using the refuges, when fish may be using the refuges, specific issues, etc.) in writing, and CRFPO may be able to assist the NWRs.

**D. Lower Columbia River-North Coast Habitat position and SHC—Intent of joint position and discussion of coordination among programs and application of SHC**

The PFW Program has identified seven focus areas in which to target habitat restoration activities. These areas were covered by 1.5 FTEs in FY2008, and personnel were increased to 2.5 FTEs in January 2009. For 2010, 3.5 FTEs will be working on the seven areas with one full time position focused on the lower Columbia River-North Coast focus area. This is a recently created joint PFW and Fisheries position that is stationed at the CRFPO. Impetus for focusing the position on the lower Columbia River-North Coast area is the presence of multiple service trust resources, strong PFW presence, collaborative opportunities with NWRs, and strong Fisheries role and interests. Roles of the PFW program include: Working directly with local groups on habitat restoration projects; Soliciting involvement from landowners; Evaluating sites for potential restoration actions; The selection, planning, design, permitting, funding, contracting, and implementation oversight of habitat restoration projects; and Assistance for watershed assessments, limiting factor analyses, analyses and design, and capacity building. Examples where PFW and CRFPO are collaborating in the focus area include fish passage projects in Elk and Salmon creeks (Nehalem and Scappoose rivers), and an assessment at Deer Island (near St. Helens) that will contribute to habitat restoration planning. The new position will encourage and expand collaboration between PFW and Fisheries where aquatic expertise concerning assessment and monitoring can more directly contribute to restoration projects, project credit can be shared among programs, projects can be developed in consideration of landscape level planning (i.e., strategic habitat conservation—SHC), and encourage opportunities to collaborate with NWRs and other programs.

Relative to SHC over the last two years, focal area teams were formed that identified focal species for applying the SHC framework, assessed the status of SHC implementation relative to the species, and proposed high priority actions for a subset of the species. To date, it appears that overall little additional resources or activities have been committed to the teams for application of SHC beyond that already existing. The joint PFW-Fisheries position offers opportunities to engage a range of internal and external partners where a landscape-scale perspective could substantially contribute to various aspects of habitat restoration. To help contribute to these efforts, the CRFPO has started work to develop a planning tool identifying data needed (e.g., spatial data, habitat, biological) and associated analytic tools (e.g., population-habitat models) to apply SHC for coastal cutthroat trout in the lower Columbia River. This is intended to foster coordination among Service programs, and be applicable to other species and focal areas.

Several topics were discussed relative to the PFW Program, how the Program relates to SHC, and intent of the efforts concerning coastal cutthroat trout. Overall, the PFW Program has strategic plans for each state, and it has to be strategic because of budget constraints. The Program targets projects that are most important and it is beneficial to have more guidance on what is important, including where SHC can assist. Relative to coastal cutthroat trout, the hope is to build a planning tool, identifying the area, threats, and bottlenecks, for the species. Directing some resources into monitoring a few projects

will contribute information to the application of SHC, as well as help focus activities and partners. An intent is to improve how science contributes to our activities.

#### **E. Aquatic Issues and Needs at Other NWRs**

Participants from NWRs not specifically addressed on the agenda (i.e., Tualatin NWR and the Ridgefield NWR Complex) were asked to describe aquatic issues and needs at their NWRs. For Tualatin NWR, issues and needs included: Assistance with the upcoming CCP; Generating information on salmonid use of off-channel areas and ability to avoid potential fish entrapment; Assessment of whether there is an effect of wetland water management on Tualatin River temperatures relative to the TMDL; and Assistance with restoring channelized portions of streams.

For the Ridgefield Complex, issues and needs included: Funding for a watershed assessment of Gee Creek; Information on salmonid use of lower Gee Creek during migration; Whether Post Office Lake can support fish; Approches for improving connectivity between the Columbia River and Steigerwald Lake; and Rebuilding a beaver dam to benefit amphibians at Pierce NWR.

### **III. Action Items**

The following are action items resulting from the 2009 NWR-CRFPO Workshop. Some are activities for ongoing projects and assistance that the CRFPO has been engaged with NWRs during the past, as well as needs for which resources and plans have yet to be developed.

1. Continue assessment of physical and biological attributes of Bandon Marsh NWR to characterize pre-construction conditions for evaluation of the habitat restoration project planned for construction in 2010.
2. Continue assessment of fish passage, fish community, and aquatic habitats at Julia Butler Hansen NWR to characterize post-construction conditions for evaluation of tide gate installations and modifications.
3. Assist Willapa NWR Complex with restoration planning for salt marsh habitats and Nelson and Risk creeks, and with assessment of small streams.
4. Encourage ODFW to identify concerns and specifics regarding fish passage at Willamette Valley NWRs in writing (e.g., fish species thought using the refuges, when fish may be using the refuges, specific issues, etc.), and work with NWRs to assess and address concerns.
5. Coordinate among NWRs in the Lower Columbia River and north Oregon coast, PFW, and CRFPO on aquatic habitat restoration and explore opportunities to apply SHC.

6. Assist Tualatin NWR with aquatic issues concerning salmonid use of off-channel areas and potential fish entrapment, wetland management-river temperature relations, and restoration of channelized streams, to the extent possible.
7. Assist Ridgefield NWR with aquatic issues concerning a watershed assessment and fish use of Gee Creek, conditions at Post Office Lake, and potential for improved connectivity between the Columbia River and Steigerwald Lake, to the extent possible.
8. CRFPO fisheries assistance for National Wildlife Refuges
  - Continue providing assistance for CCP development, technical support, and general surveys to address aquatic resource issues to the greatest extent possible with existing resources.
  - Continue to work with NWRs to develop FONS and other proposals for resources to address aquatic resource issues and needs.
9. Unless otherwise advised, the CRFPO will organize annual workshop for April 2010 to promote effective information exchange, coordination, and further develop working relationships among programs.

## **IV. Appendices**

## Appendix A

### **NWR-FISHERIES WORKSHOP AGENDA**

**May 14, 2009**

**Columbia River Fisheries Program Office**

**1211 SE Cardinal Court, Suite 100**

**Vancouver, WA 98683**

Geographic and Topic Focus: Fisheries work and NWR management on the Oregon Coast and lower Columbia River NWRs, Fish passage issues at Willamette Valley NWRs, lower Columbia River-North Coast Coordinator PFW-Fisheries position and SHC application

Goal: Provide a forum to promote effective information exchange and coordination among NWRs, CRFPO, and PFW.

#### Objectives:

1. Update NWRs about results and activities by the CRFPO at Oregon Coast and lower Columbia River NWRs.
2. Identify and discuss aquatic issues relative to management planning at Oregon Coast and lower Columbia River NWRs.
3. Identify fish passage issues and discuss needs at Willamette Valley NWRs.
4. Discuss joint PFW-Fisheries lower Columbia River-North Coast Coordinator position and explore application of SHC.
5. Develop action items.

10:00-10:05 Welcome and overview of workshop (Lohr)

#### 1. Oregon Coast NWRs

10:05-10:35 Fisheries work at Bandon Marsh and Nestucca Bay NWRs (Hudson)

10:35-11:05 Discussion of aquatic issues and NWR management planning

#### 2. Lower Columbia River NWRs

11:05-11:35 Fisheries work at Julia Butler Hansen NWR (Johnson)

11:35-12:05 Discussion of aquatic issues and NWR management planning

12:05-1:05 Lunch

#### 3. Willamette Valley NWRs

1:05-2:05 Discussion of fish passage issues and needs at W.L. Finley and Baskett Slough NWRs (Spencer)

#### 4. Lower Columbia River-North Coast Coordinator and SHC

- 2:05-3:05 Intent of joint position and discussion of coordination among programs and application of SHC framework
- 3:05-3:15 Wrap-up

## Appendix B

### Workshop Attendees

Mark Bagtovitch	RO Fisheries
Ruby Bourne	CRFPO
Alex Chmielewski	Ridgefield NWR
Justin Cook	CRFPO
Lynn Cornelius	WSU Extension/Ridgefield NWR
Lee Folliard	OFWO
Amy Horsteman	OFWO/CRFPO
Mike Hudson	CRFPO
Jeff Johnson	CRFPO
Kevin Kilbride	RO Refuges
Sam Lohr	CRFPO
Roy Lowe	Oregon Coast NWR Complex
Fred Pavalgio	RO Refuges
Tim Roth	CRFPO
Howard Schaller	CRFPO
Pete Schmidt	Tualatin NWR
Joe Skalicky	CRFPO
Doug Spencer	Willamette Valley NWR Complex
Charlie Stenvall	Willapa NWR Complex
Brad Thompson	WWFWO
Tim Whitesel	CRFPO

## Appendix C

### **NWR-FISHERIES WORKSHOP NOTES**

**May 14, 2009**

**Columbia River Fisheries Program Office**

**1211 SE Cardinal Court, Suite 100**

**Vancouver, WA 98683**

Geographic and Topic Focus: Fisheries work and NWR management on the Oregon Coast and lower Columbia River NWRs, Fish passage issues at Willamette Valley NWRs, lower Columbia River-North Coast Habitat PFW-Fisheries position and SHC application

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3. Identify fish passage issues and discuss needs at Willamette Valley NWRs.
4. Discuss joint PFW-Fisheries lower Columbia River-North Coast Habitat position and explore application of SHC.
5. Develop action items.

Welcome and overview of workshop (Lohr)

Sam welcomed everyone, noted workshop logistics, and discussed justification of the geographic and topical focus of the workshop (i.e., due to ARRA and activities relative to its objectives). Everybody introduced themselves.

#### 1. Oregon Coast NWRs

Nestucca Bay NWR Habitat Restoration Project (Hudson)

Mike summarized results of the project, which is evaluating physical and biological responses to restoring tidal inundation of a marsh by comparing physical habitat, fish use, and aquatic invertebrates before and after a dike was removed during summer 2007. Most data were collected during 2007 and 2008, immediately before and after construction for the project, and focused on physical attributes, fish, and aquatic invertebrates. For physical habitat, restoration has resulted in a more rapid movement of water at the marsh and protracted duration of both high and low tidal stages. There are also significant differences in wetted widths of channels when tides are 3-8 feet. For fish,

four salmonids, juvenile coastal cutthroat trout, steelhead, Chinook salmon, and coho salmon, were collected in the marsh before and after construction. A juvenile chum salmon and an adult Chinook salmon were also observed. Coastal cutthroat trout were collected during all seasons except fall 2007, with the greatest numbers, 20, captured after construction in June 2008. Coho salmon were the most abundant, and were collected during all seasons in the marsh and at a reference site. Based on length and abundance, smaller individuals likely enter the marsh in spring and reside there before emigrating the following spring. Chinook salmon appear to make brief movements into the marsh during spring-summer, with significantly larger juveniles present later in the year. One hatchery individual was collected. Almost all steelhead were collected between February and June 2008, and all but one were hatchery fish. Even though a rigorous analysis of salmonids could not be done due to lack of long-term data, it looks like abundance of salmonids increased in the marsh after restoration. Overall fish species richness increased after restoration and resembles a natural system more than before restoration. Howard noted difficulties with quantifying salmonids, so keeping track of species richness and diversity is important for monitoring these types of projects. Invertebrate drift samples have been collected and preserved for analysis later. Mark asked about whether the project was fish friendly and if it is where we should be monitoring because of the need to show benefits and why, which affects receiving funds for other restoration projects. Howard noted that showing what happens over time relative to project expectations is important. Question was asked whether the area was planted. Roy said no because there is a large seed bank. As far as costs, \$40K was allocated for monitoring, construction was \$700K.

#### Bandon Marsh Habitat Restoration Project (Cook)

Justin presented an update for ongoing work at Bandon Marsh NWR. The work is to collect physical habitat and biological data prior to construction that will involve removing a dike to restore tidal influence to the Ne'les tun unit, which includes about 400 acres with 15 miles of ditches. Work initially focused on sampling habitat, fish, and invertebrates within Fahy Creek, but additional funding has allowed expanding the scope by also sampling Redd Creek and Fahy Lake, which is on adjacent private land. Also, this has enabled an increase in fish sample frequency from about quarterly to six-week intervals. The intent is to continue sampling after construction, which is currently planned for 2010, hopefully 5-years out. Salmonids have been collected among six reaches in Fahy Creek, and include include coastal cutthroat trout, steelhead, cutthroat-steelhead hybrids, coho salmon, and Chinook salmon. Question was asked about how the six reaches were determined. Reaches were based on habitat differences. The most abundant salmonid has been coho salmon, which is mostly in the downstream reaches. Coastal cutthroat trout are mainly found in the upper reaches. The same salmonid species and hybrids have been collect in Redd Creek except for steelhead. Only two species have been collected in Fahy Lake, sculpin and threespine stickleback. Coho salmon and Chinook salmon have been the only salmonids collected at a reference site not affected by dikes and at sites in the Coquille River. Question was asked about the connection between Fahy Creek and the lake. The lake is on the opposite side of Highway 101 than

the NWR and survey reaches. The site of an old mill near the lake and the highway culvert are likely fish passage barriers.

For aquatic issues and management planning, Roy said that the NWR would like to continue the assessment work at Bandon, and that CCPs for the three estuary NWRs will be starting in the fall, for which fisheries assistance will be needed. Mike noted that it would be good to revisit Nestucca Bay in five years to see how things have changed from the restoration project.

## 2. Lower Columbia River NWRs

### Julia Butler Hansen NWR Assessment of Fish, Habitat, and Tide Gates (Johnson)

Jeff presented results for a pre-construction assessment of sloughs at the mainland unit of the refuge. There are eight sloughs at the unit that are enclosed by dikes. Four of them have tide gates and the other four sloughs do not, so that these have no direct connection to the river or its side channels. The Corps is funding the installation of gates on closed slough and modifying existing gates to improve water exchange and opportunities for fish access to the sloughs. Construction is planned for 2009 and 2010. The assessment is looking at fish passage, fish communities, and aquatic habitats of the mainland sloughs relative to two reference sloughs not associated with dikes and tide gates. Passage rates for juvenile Chinook salmon into the two reference sloughs were consistently greater than passage rates at three sloughs with tide gates that were assessed. Passage rates varied among the five sloughs for coho salmon. Joe noted that doing shorter net sets would help to determine when fish move into sloughs during the tidal cycle. Question was asked whether the tide gates can be locked in an open position during times when there is low potential for flooding. Locking gates open will be possible with the new tide gates. For fish communities, reference sloughs contained only native species, six total with three of them being salmonids. Sloughs with tide gates contained a total of 10 fish species, with 6 of them being native. Closed sloughs contained a total of 16 species, with 6 of them being native. For aquatic habitat, 7-day average maximum water temperatures exceeded the thermal-stress threshold of 16°C more often in closed sloughs, followed by gated sloughs and then reference sloughs. Dissolved oxygen levels were consistently lower in closed sloughs and Duck Lake Slough, which has a tide gate, than other sloughs with tide gates and the reference sloughs. Pre-construction data were collected in 2007 and 2008, and the plan is to collect post-construction data for two years. Charlie noted that tide gates are only a portion of the work that will be going on with the sloughs, native vegetation will be planted along the sloughs as well.

For aquatic issues and management planning, Charlie said that the NWR can use fisheries assistance concerning habitat restoration planning for Nelson and Risk creeks, which are adjacent to the refuge or cross it. At Willapa NWR, plans are being made to restore salt marsh habitat on about 750 acres that is presently behind a 5-mile long dike. Assistance with planning the project, as well as with assessments of small streams, is needed.

### 3. Willamette Valley NWRs

#### Willamette Valley WNRC Fish Passage/Entrapment (Spencer)

Doug discussed fish passage and entrapment issues at the Willamette Valley NWR Complex. There are several permanent and seasonal wetlands at Baskett Slough and W.L. Finley NWRs. These wetlands receive most of their water from winter rains or flood waters from the Willamette River itself or some of its tributaries. Morgan Reservoir was originally built to store runoff water for agriculture, and is a water source for impounded wetlands at Baskett Slough. Water is managed with control structures in many wetlands for waterfowl, western pond turtles, and vegetation. Question asked about whether Oregon chub are present in the wetlands. They are in the Display Pond at Finley, which is exempt from passage requirements, and a chub pond at Ankeny NWR. The ponds receive runoff from the coast range. Turtle Flats and McFadden Marsh at Finley typically get flood waters from Muddy Creek, a tributary of Mary's River. At Baskett Slough, most of the water for impounded wetlands comes from Morgan Reservoir. The Oregon Department of Fish and Wildlife has informed the refuges about sites in the wetlands where fish passage can be improved. They requested the refuges to provide fish passage during winter-early spring. Question asked about what species ODFW is concerned and whether they are listed. For Finley, coastal cutthroat trout may have access during high water in Muddy Creek. For Baskett Slough, the assumption is that steelhead may have access to the refuge, but they have to pass dikes on private lands downstream to get there. Overall issues are that passage is only during flood events, fish are entrapped during low water levels and may be unable to pass control structures and spillways, there are barriers off the refuges on private lands, lack of fish data, and potential for elevated water temperatures with lower water levels. Some of the possible solutions being considered are to install additional water control structures at Turtle Flats and drain in spring with refill from screened pumps, lower water levels at McFadden Marsh during late spring, and consider installing or modifying spillways and control structures at Baskett Slough, or constructing fish ladders and deepen channels. The suggestion was made to meet with ODFW, with the first step to have them get their concerns, including species that might be present and when, in writing, and the CRFPO can help. It would also help to see any correspondence from the state concerning fish passage at the refuges. Brad mentioned that a Bio-blitz approach using volunteers might be an option if any field sampling for fish is planned.

### 4. Lower Columbia River-North Coast Habitat Position and SHC (Horstman and Lohr)

Amy presented an overview of the PFW program in Oregon and how the recently created joint PFW-Fisheries position fits. The PFW has identified seven focus areas within in Oregon where it is working. These were being covered by 1.5 FTE in FY2008, and staffing was increased to 2.5 FTEs in January 2009. Allocations were revisited in 2009 resulting in 3.5 FTEs to cover the areas in FY2010. One of these is the new joint position that will be working only on the lower Columbia River-North Coast focus area. Habitats in the focus area include freshwater and tidal wetlands, riparian areas, floodplains, and instream and off channel areas. The PFW also addresses fish passage within the habitats.

Reasons for creating the joint position targeting the focus area are the presence of multiple trust resources—such as salmon, coastal cutthroat trout, steelhead, lamprey, Columbian white-tailed deer, red-legged frog, and numerous migratory birds; strong PFW presence, collaborative opportunities with NWRs, and strong Fisheries role and interests. There are a number of various roles of the PFW program. It is performance based on delivering restoration projects, with acres or miles reported for accomplishments. A technical team approach is taken by working with other groups involved in habitat restoration, like OWEB and LCREP, to work directly with local groups to prioritize projects, solicit involvement from landowners, evaluate sites for potential projects, and provide technical review. The program provides resources to assist with watershed assessments, limiting factor analysis, and reach-scale analysis and design. PFW and CRFPO has been collaborating within the focus area on projects concerning fish passage in Elk and Salmon creeks, and an assessment at Deer Island that will contribute to habitat restoration planning. The new joint position will encourage and expand collaboration between PFW and Fisheries where aquatic expertise concerning assessment and monitoring can more directly contribute to restoration projects, project credit can be shared among programs, projects developed in consideration of landscape level planning (SHC), and opportunities to collaborate with NWRs and other programs.

Sam discussed opportunities for coordination among programs and application of strategic habitat conservation. He summarized previous activities in R1 to develop and apply SHC over the last two years—focal area teams were formed that identified focal species for applying SHC; teams assessed the status of SHC implementation for each of the focal species, and they proposed high priority actions for a subset of the species. The implementation status of SHC for coastal cutthroat trout in the lower Columbia River was then presented, which has a lot of information gaps for many elements of SHC such as those in biological planning and conservation design. Overall, it appears that little additional resources or activities have been committed to apply SHC. The joint position Amy discussed offers opportunities to work with a range of internal and external partners where a landscape scale perspective can contribute to habitat restoration. To help contribute to these efforts, the CRFPO is working to develop a planning tool identifying the types of data (e.g., spatial data, habitat, biological) and potential analytic tools (e.g., population-habitat models) needed to apply SHC for coastal cutthroat trout in the lower Columbia River. The effort is intended to help coordination among the different programs of the Service working in the lower river and ultimately be applicable to other species as well as focal areas.

Question was asked about how much PFW is constrained by SHC and how the program fits with it. PFW is driven by a strategic plan for each state, but projects can contribute depending on where they are. SHC is likely to be considered more in the future with the President's direction that agencies' actions will rely on science. PFW is going after projects that are the most important, so the better off we will be with more guidance and information. Budget limitations force the program to be strategic. We are trying to build a planning tool that identifies the areas of concern for coastal cutthroat trout, the threats and bottlenecks so that actions are coordinated and monitoring a few projects can feed information into SHC.

Additional NWR needs:

Pete noted aquatic issues at Tualatin NWR that could use Fisheries assistance. These include help with the CCP, which is planned to begin in September, fish passage in streams and at diversion structures, the need to rebuild Chicken Creek diversion structure to accommodate increased flows, information on salmonid use of off-channel habitats, information on the ability to provide flows for fish through managed wetlands, assessing whether wetland management affects river temperature when fish are present relative to meeting the TMDL, and help with restoring sinuosity to streams that have been channelized.

Lynn and Alex noted aquatic issues at the Ridgefield complex that could use Fisheries assistance. These include the CCP, for which a draft is expected by the end of September, funding to conduct a watershed assessment of Gee Creek, information about fish use in lower Gee Creek, information on whether Post Office Lake can support fish and what types, approaches for improving the connection between the Columbia River and Steigerwald Lake, and whether a failed beaver dam should be rebuilt at Pierce NWR.

**Appendix D**  
**Workshop Presentations**

## Nestucca Bay NWR Habitat Restoration Project



*Native Trout Program  
Columbia River Fisheries Program Office  
Vancouver, WA  
May 2009*

## Nestucca Bay NWR

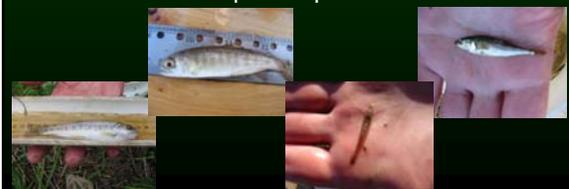


## Habitat Restoration



## Restoration Benefits

- Coastal Cutthroat Trout
- Coho, Chinook, and chum salmon and steelhead
- Other native aquatic species



## Goal and Objectives

- Goal
  - Evaluate physical and biological response to habitat restoration
- Objectives
  - Quantify physical characteristics of aquatic habitats relative to suitability for native trout and other salmonids before and after habitat restoration
  - Describe native trout and other salmonid use of the site before and after habitat restoration
  - Collect invertebrates from representative aquatic habitats before and after habitat restoration

## Monitoring Timeframe

- Pre-restoration
  - Winter-early summer 2007
  - Other data available
- Post-restoration
  - Fall 2007 – Summer 2008



## Monitoring Components

- Physical
  - GIS analysis of physical attributes
- Fish
  - Hoop nets
- Invertebrates
  - Pelagic



## Approach – Fish



## Approach – Fish

- Sampling schedule
  - March 2007
  - May 2007
  - June 2007
  - October 2007
  - February 2008
  - April 2008
  - June 2008



## Approach - Invertebrates

- Pelagic
  - Three replicate drift samples collected in five reaches delineated by fish sampling sites
  - Boat drifts



## Approach - Invertebrates



## Results



## Progress to Date



## Results - Physical

- More rapid movement of water in and out of the marsh
- More protracted duration of tidal marsh stage level at both ends of the spectrum
- Significant differences in wetted width at stage levels between 3-8 mean feet above sea level



## Results - Fish

- Salmonids using marsh (pre and post)
  - Juvenile CCT, STH, coho and Chinook
  - Juvenile chum
  - Adult Chinook



## Results – Salmonids

- CCT
  - Found in marsh in all seasons except Oct 2007
  - Largest numbers captured were post-construction in June 2008 (n=20)



## Results - Salmonids

- Coho
  - Most abundant salmonid encountered in the study area
  - Captured in marsh and reference sites in all seasons
    - Abundance relatively higher in marsh throughout year
  - Significant differences in mean fork length across seasons
  - Pattern of abundance and length frequency distributions indicate a movement of smaller coho into the area in the spring and resident use of the marsh until outmigration the following year coinciding with immigration of the next cohort



## Results – Salmonids

- Chinook
  - Use reflects a protracted seaward migration period through the spring that includes brief movement into tidal marshes and other off-channel habitat
  - Significant increase in FL between April and June 2008
    - No significant differences between marsh and reference samples
  - One hatchery stocked Chinook captured



## Results – Salmonids



- STH
  - All but one caught in marsh between February 2008 and June 2008 (n=17)
    - Most were caught in April 2008 (n=14)
    - All but one were hatchery stocked
      - February 2008
        - » 65 mm
        - » Identified as probable STH, naturally produced

## Results – Salmonids

- Species richness appears to have increased across the study area since restoration
- Species diversity may more closely mimic that of the natural system post-restoration

## Results



- Invertebrates
  - Spring sampling conducted in 2007 and 2008
  - Samples preserved for later analysis

## Conclusions



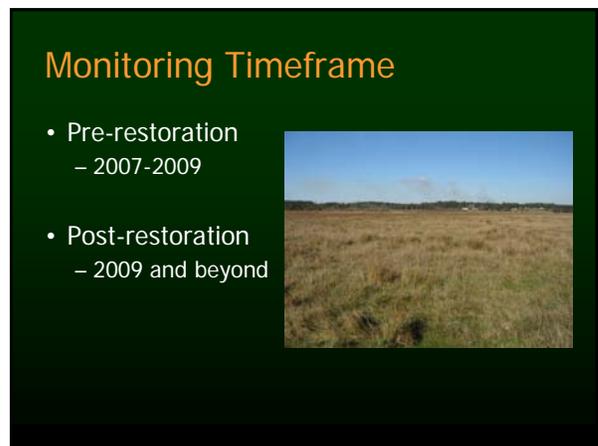
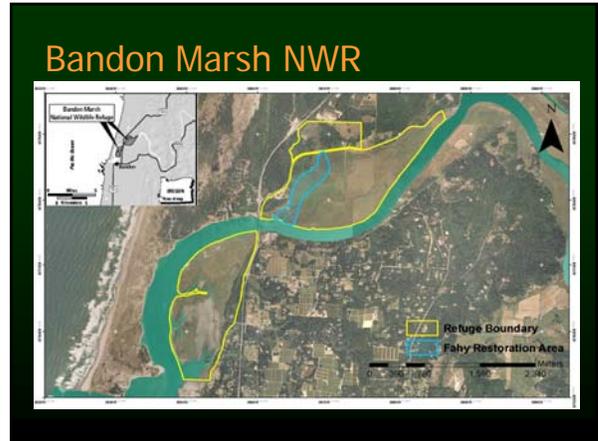
- Lack of a long-term dataset collected on more frequent intervals using a standardized, systematic approach prevents a rigorous quantitative analysis of salmonid trends
- Qualitatively, given the changes in physical conditions and the total catch in the tidal marsh, it appears that increased numbers of salmonids may be using the study area
- Additional sampling in future years may further validate this conclusion

## Acknowledgements



- Siletz Tribe
- Oregon Coast NWR Complex
  - Roy Lowe
- Sam Lohr
- Joe Skalicky and David Hines
- Justin Cook, Joel Miller, Greg Silver, and Darby Caton, Sheila Davis
- NFWF





## Monitoring Components

- Physical
  - GIS analysis of physical attributes
- **Fish**
  - Hoop nets
  - E-fishing
  - Seining
  - Gill nets
  - Minnow Traps
- **Invertebrates**
  - Pelagic



## Approach – Fish Sampling

- Systematic hoop net approach
  - Fahy Creek - 9 sites in study area sampled
  - Redd Creek - 3 sites in study area sampled
  - Reference site – 1 site in a non-diked channel

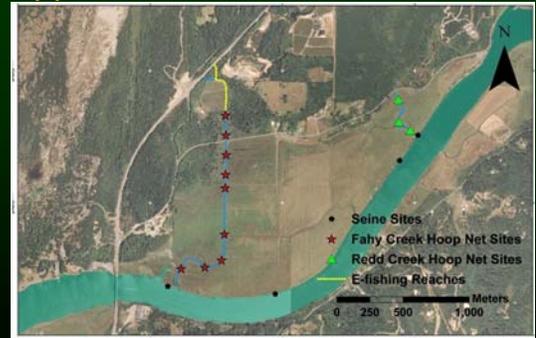


## Fish Sampling (cont.)

- Electrofishing – Spring and Fall
  - Fahy Creek E-fishing – salmonids and lamprey
  - Fahy Lake boat E-fishing
- Minnow Traps and Gill Nets
  - Fahy Lake
- Seine netting
  - Mainstem Coquille River



## Approach – Fish



## Approach - Invertebrates

- Pelagic - Spring
  - Three replicate drift samples collected in reaches delineated by fish sampling sites
  - Boat drifts (4) and set drifts (6)



## Approach - Invertebrates



### Progress To Date

- Fish Sampling- 8 trips
  - Fall: 11/07 and 11/08
  - Winter: 1/08 and 1/09
  - Spring: 4/08, 3/09, 4/09
  - Summer: 5/08
- Invertebrates
  - Spring sampling conducted 4/08 and 4/09
  - Samples preserved for later analysis



### Results – Fahy Creek

- Native species collected
  - Coastal cutthroat trout
  - Steelhead
  - CCT/STH Hybrids
  - Coho salmon
  - Chinook salmon
  - Surf perch
  - Shrimp
  - Eulachon Smelt
  - Gunnel fish
  - Pacific giant salamander
  - Red-legged frogs
  - Mink
  - Rough-skinned newt
  - Cottid species
  - 3-spine stickleback
- Nonnative Species Collected
  - Mosquito fish
  - Brown bullhead
  - Largemouth bass
  - Bluegill
  - Bull Frog



\* Species captured in Fahy Lake

### Results – Redd Creek

- Native species collected
  - Coastal cutthroat trout
  - CCT/STH Hybrids
  - Coho salmon
  - Chinook salmon
  - Cottid species
  - 3-spine stickleback
  - Shrimp
  - Red-legged frogs
  - Mink
- Nonnative Species Collected
  - Brown bullhead

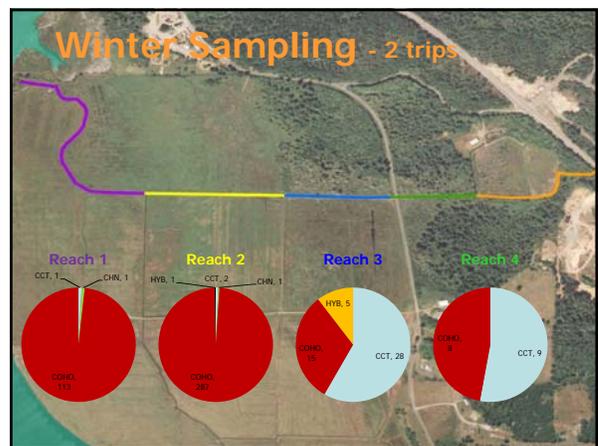
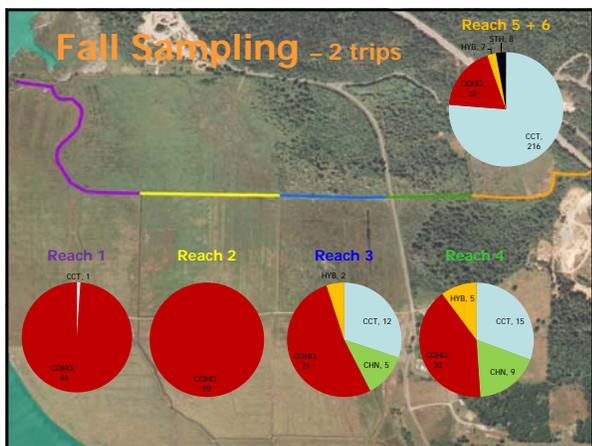


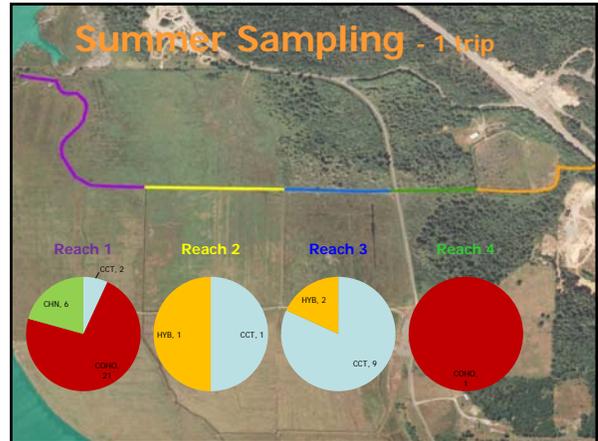
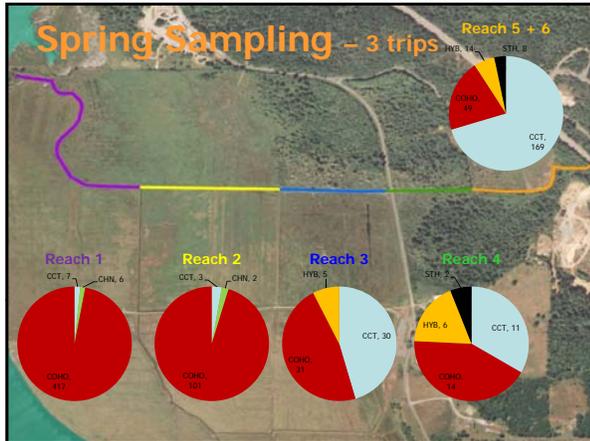
### Results – Reference site and Coquille River

- Native species collected
  - Coho salmon
  - Chinook salmon
  - Cottid species
  - 3-spine stickleback
  - Shrimp
  - Gunnel Fish
  - Surf Perch
  - Starry Flounder
  - Crabs (2 species)
  - American Shad
  - Eulachon Smelt



\*Not captured behind dike





- ### Future Plans
- Continue Pre-restoration monitoring
    - Hoop netting and seining every 6 weeks
    - Spring and Fall electrofishing
    - Continue to gather and analyze invertebrate samples
    - Gather further data on Fahy Lake
  - Post-restoration monitoring
    - Continue all methodologies to monitor changes over time

- ### Acknowledgements
- Siletz and Coquille tribes
  - Oregon Coast NWR Complex
    - Roy Lowe and Dave Ledig
  - Sam Lohr
  - Joe Skalicky
  - Mike Hudson, Sheila Davis, Brook Silver and Greg Silver
  - CPR
  - Jess, John, Dale and Pam
- 



Julia Butler Hansen National Wildlife Refuge  
Assessment of Fish, Habitat and Tide Gates



- Eight sloughs enclosed by dike
- Four are "closed"
- Four controlled by tide gates
- Four types of gates
- Two reference sloughs
- No dike, no gate



Pre-construction assessment

Objectives:

- Fish passage at tide gates
- Describe fish community
- Describe aquatic habitat



Objective 1: methods  
•Fish passage at tide gates

- Trap net inside slough, immediately inside of tide gate(gates sloughs) or confluence of mainstem (reference)
- Seine outside of gate (or at confluence) to determine fish presence



### Fish passage

Species	Trap Type	S. Hunting E.	Steamboat	Duck lake	W201+30	W259+50
Chinook	hoop	0.958 (67)	3.415 (265)	0.024 (1)	0.169 (8)	0.758 (57)
Salmon	seine	0.015 (7)	0.017 (7)	0.008 (1)	0.028 (7)	0.002 (1)
Coho	hoop	0.057 (4)	0.129 (10)	0.071(3)	0.570 (27)	0.160 (12)
Salmon	seine	0	0	0	0	0
Chum	hoop	0	0.026 (2)	0	0	0
Salmon	seine	0	0	0	0	0

### Objective 2: methods

- Fish community

Seine representative reaches within each slough  
 14 reaches in Closed sloughs  
 13 reaches in gates sloughs  
 6 reaches in reference sloughs



### Fish community (2007 all sloughs)

Species	Closed	Gated	Reference
3-spine Stickleback	73.9 (99)	57.3 (220)	80.4 (295)
Bluegill	2.2 (3)	1.3 (5)	0.0 (0)
Chinook Salmon	0.7 (1)	22.7 (87)	18.0 (66)
Chum Salmon	0.0 (0)	0.0 (0)	0.3 (1)
Coho Salmon	0.7 (1)	3.1 (12)	0.8 (3)
Dace	0.0 (0)	0.0 (0)	0.3 (1)
E. Banded Killifish	3.0 (4)	7.6 (29)	0.0 (0)
Largemouth Bass	1.5 (2)	1.3 (5)	0.0 (0)
Largescale Sucker	0.7 (1)	0.0 (0)	0.0 (0)
N. Pike Minnow	2.2 (3)	0.0 (0)	0.0 (0)
Peanmouth	6.7 (9)	0.2 (1)	0.0 (0)
Pumpkinseed	0.0 (0)	1.6 (6)	0.0 (0)
Sculpin	0.0 (0)	0.5 (2)	0.3 (1)
Smallmouth Bass	0.7 (1)	0.0 (0)	0.0 (0)
Unknown Sunfish	5.2 (7)	4.4 (17)	0.0 (0)
Yellow Bullhead	0.7 (1)	0.0 (0)	0.0 (0)
Yellow Perch	1.5 (2)	0.0 (0)	0.0 (0)

### Objective 3: methods

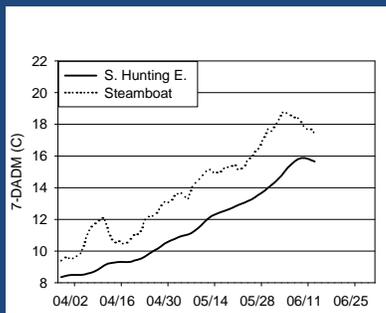
- Aquatic Habitat

Install temperature loggers in each slough  
 -Calculate 7-DADM and median daily temp range

Collect habitat data at each sample reach within each slough  
 -Dissolved Oxygen

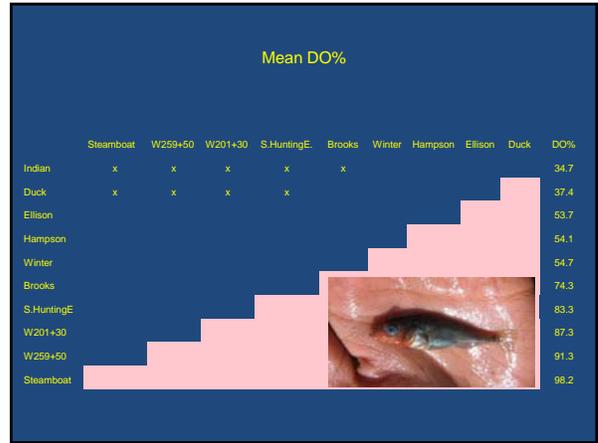
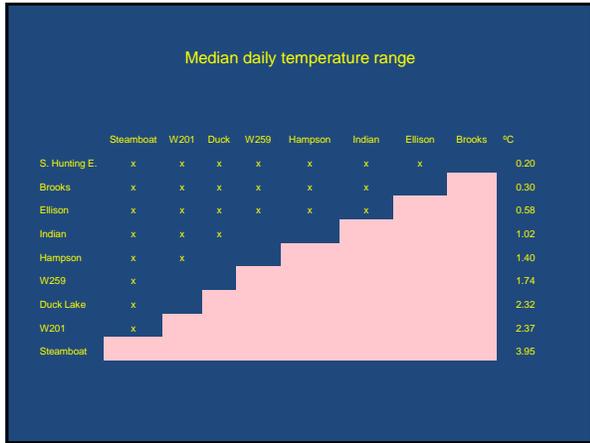


### 7-DADM Seven Day Average Daily Maximum



### 7-DADM Days above 16 °C

Closed	Gated	Reference
5/31 (Ellison)	6/2 (Brooks)	-- (S. Hunting E.)
5/28 (Hampson)	5/28 (W259)	5/26 (Steamboat)
5/12-5/20, 5/31-6/11 (Indian Jack)	5/16-5/21, 5/27 (W201)	
	5/10 (Duck)	



### Summary

- Juvenile salmon are able to enter through existing tide gates (though only when gates are open)
- Gated and closed sloughs appear to contain more species (and more non-natives) than reference sloughs
- Water temperature in gated sloughs may be more limiting to juvenile salmonids than reference sloughs.
- Dissolved oxygen in closed sloughs and Duck Lake may be more limiting to juvenile salmon than reference sloughs




### Willamette Valley NWRC Fish Passage/Entrapment



### Aerial View of Baskett Slough NWR Impounded Wetlands



### Aerial Photos of William L. Finley NWR Impounded Wetlands



### Exemption to Fish Passage/Entrapment



- Display pond
- Oregon chub – threatened or endangered species
- Source of water – run off from surrounding slopes
- Permanent water
- Impounded with Water control structure
- Seasonal wetlands – no fish, such as.....

### Pigeon Butte



- Winter flood waters in the Willamette Valley
- Fish accessibility to and from permanent and seasonal wetlands
- Seasonal fish passage and entrapment

### Muddy Creek Tributary of Mary's River



### Turtle Flats

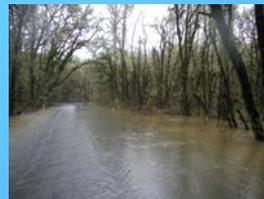


- Cutthroat trout sampling
- Fish entrapment
- Seasonal flooded
- Secondary source of water – portable pumps
- Western pond turtle/migratory bird habitat

### Turtle Flats Cont.



- Muddy Creek is the source of water from winter floods
- William L. Finley auto tour route



- Flood waters entering the "Turtle Flats" area of William L. Finley NWR

### Other Users of Turtle Flats



### Fish Movement Through Culverts at Turtle Flats



### Turtle Flats Fish Barrier



### McFadden Marsh – Impounded Wetland



### Southern Unit of McFadden Marsh – Bruce Road



### Low Profile Dikes and Spillways McFadden Marsh



- Dikes and spillways were permitted by ODFWs review of design
- 18" depth of water on an average within the wetland
- Designed for waterfowl use
- Secondary use – flood retention

### Minnow Use Within the Spillways



### Main Channel/WCS Within McFadden Marsh



Water Exiting McFadden Marsh into Muddy Creek



Low Water at McFadden Marsh During the Summer Months



Water Flowage Within Baskett Slough NWR Through Impounded Wetlands



- Morgan Reservoir is the source of water for the impounded wetlands
- Man-made reservoir – run off from the butte slopes
- Historically, no summer flow of water
- Dammed – no fish passage presently available
- Built for agricultural purposes



Water flow from Morgan Reservoir Into Impounded Wetlands



Through Water Control Structures



## Through Spillways During Flood Events

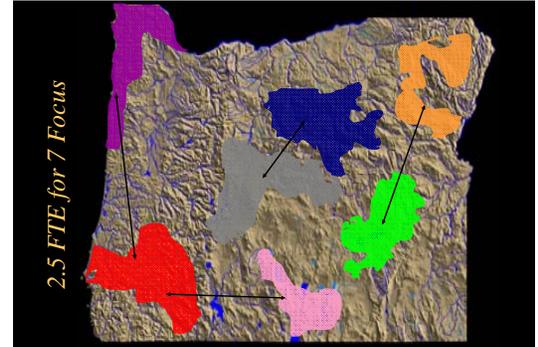
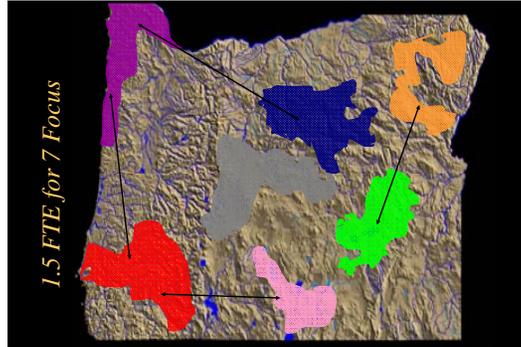
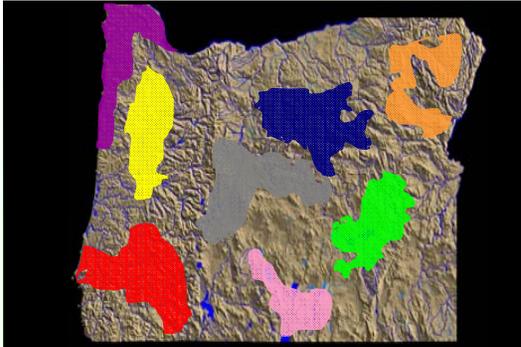


## Issues

- Upstream/downstream fish passage only during flood events
- Low water entrap fish, can't exit water control structures or spillways
- Water eventually empties out into the Willamette River
- Off refuge barriers on private lands
- Lack of fish data by the Service or ODFW
- Timing of fish passage
- Low water/higher water temperatures

## Possible Solutions

- Turtle Flats – Install a WCS and drain wetland in late spring. Fill wetland with screened pumped water from Muddy Creek
- McFadden Marsh – lower water levels through the main channel WCS in late spring for a few weeks
- Baskett Slough NWR wetlands – lower or modify spillways or install fish ladders or deepen channels in the impounded wetlands and lower water levels in late spring, provide moist soils on the perimeter of the wetlands or manage for Oregon chub and other T/E species other than fish.



**2009 Focus Area Re-Alignment...**

- *An opportunity to revisit allocations*
- *Focusing on program fidelity*
- *A move to reward high achievement*



**2009 Focus Area Re-Alignment...**

*Restoration Program Staffing Situation:*

FY2008: 1.5 FTE for 7 Focus Areas  
 Jan 2009: 2.5 FTE  
 FY2010: 3.5 FTE – Full Time Person for Lower Columbia/North Coast

**Lower Columbia/N. Coast: Focus Habitats**



- Fresh & Tidal Wetlands
- Riparian & Floodplain
- In-Stream & Off Channel
- Instream Fish Passage

### Lower Columbia/N. Coast: Focus Habitats



- Strong PFW presence
- Multiple Service Trust Resources
- Strong Fisheries role/interest
- Long-term NWR opportunities

### Focus Species

- ❖ Coho Salmon
- ❖ Sea-run Cutthroat Trout
- Pacific & Western Brook Lamprey
- Steelhead
- Chum & Chinook Salmon
- Northern Red-legged Frog
- Columbian White-tailed Deer
- Migratory Birds

### Partners Program Role?

- **Deliver Restoration projects**
  - Project Selection, Planning, Design, Permitting/ESA, Funding, Contracting, Oversight
  - Acres / Miles....performance based

### Partners Program Role?

- **Deliver Restoration projects**
  - Project Selection\**, Planning, Design, Permitting/ESA, Funding, Contracting, Implementation Oversight
  - Acres / Miles....performance based

### Partners Program Role?

- **Selecting Projects – Tech Team Role**
  - Working directly with local groups to prioritize
  - Approaching landowners to solicit involvement
  - Evaluating potential sites for conservation actions
- **Technical Review (OWEB, LCREP)**

### Partners Program Role?

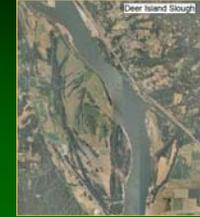
- **Selecting Projects – Tech Team Role**
  - Upper Nehalem
  - Scappoose Bay
  - Lower Columbia
  - North Coast WA
  - Necanicum
  - Nestucca/Neskowin
  - Tillamook Bay

### *Partners Program Role?*

- Assist with Resources for...
  - Watershed Assessment
  - Limiting Factors Analysis
  - Analysis/Design at Reach Scale
- Capacity Building (training, outreach...)



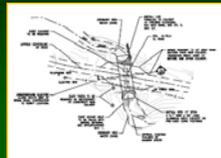
### *Collaboration with Fisheries: Deer Island Assessment*



### *Collaboration with Fisheries: Elk Creek Fish Passage (FY06, FY09)*



### *Collaboration with Fisheries: Salmon Creek Fish Passage (FY08, FY09)*



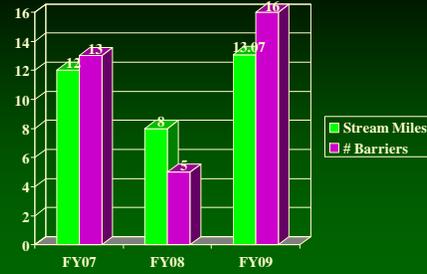
### *Service Programs*

- Endangered Species Recovery
- Fisheries Coordination: FRIMA / Fish Passage Program
- National Wildlife Refuges
- Migratory Birds

### Service Programs

- Contaminants Program: Damage Assessment \$
- Private Stewardship Grant Program (ended FY07)
- Coastal Program
- Lacey Office Coordination – WA Side of River

### Projects (GPRA)



### Accomplishments



### Future Directions?

- **Internal leverage:** PFW project shared credit to meet Fisheries GPRA targets? Fisheries expertise (assessment, M&E) to help direct OTG funding?
- Incorporate landscape level planning / assessment (SHC / LCC)?
- Design and Analysis?
- Creative partnerships with refuges to bring equip to private lands? WRP program delivery?

## Opportunities for Coordination and Application of SHC Framework

## Focal Species

**Lower Columbia River**  
Coastal cutthroat trout, Columbian white-tailed deer, streaked horned lark

**Coastal Oregon and Southwest Washington**  
coastal cutthroat trout, western snowy plover, Oregon silverspot butterfly, common murre

**Willamette Valley**  
Oregon chub, Nelson's checker-mallow, streaked horned lark

## What is Strategic Habitat Conservation ?

An iterative, 4-step adaptive framework to achieve conservation goals  
(Can be considered a specific application of adaptive management, payoff is gradual improvement in management through time)

- **Biological Planning**
  - Priorities and measurable population objectives
- **Conservation Design**
  - What type of habitat, how much, and where
- **Conservation Delivery**
  - Take action, program response
- **Monitoring & Research**
  - Tie monitoring & research to management

## Status of SHC Implementation for Coastal Cutthroat Trout in Lower Columbia River

1. Population objectives needed
2. Limiting factors described generally
3. Landscape population-habitat models needed
4. Decision support tools needed
5. State of species variously described
6. Priority areas not ID
7. Quantitative habitat objectives needed

8. Several conservation actions implemented
9. Effects of actions rarely monitored
10. Population objectives needed to assess
11. Implementation/habitat-based accomplishments

## Timeline of SHC Focal Area Team Activities

- August 2007 Notice of focal area team nominations
- October Focal area summaries compiled
- December Focal area action plan assignment, due in March
- January 2008 SHC workshop I, refine assignment
- February FY10 Over-target budget request
- March Action plans submitted
- July SHC workshop II, teams identify two projects per focal area

## Activities to Contribute to SHC Application for Coastal Cutthroat Trout

- Continued participation with cutthroat trout conservation initiative and ongoing work in the lower Columbia River
  - (priorities-improve understanding of life history mechanisms and develop monitoring strategy, range-wide data base)
- Identify broad-scale habitat variables and other landscape attributes potentially relevant to coastal cutthroat trout conservation
  - Variety of data available in GIS format (e.g., hydrologic, topographic, vegetation, land use, etc.)
- Review models describing habitat selection and potentially suitable for predicting population-habitat relations
  - Various types of models and associated data requirements in the literature