NWR-CRFPO Workshop 2005

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

July 20, 2005

Vancouver, Washington

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Executive Summary

On July 20, 2005, the Columbia River Fisheries Program Office (CRFPO) hosted a day-long workshop with National Wildlife Refuges (NWRs) and representatives of programs from the regional office. The goal of the workshop was to provide a forum to promote effective information exchange between NWRs and the CRFPO. Specific objectives were to:

1. Inform CRFPO about NWRs and their aquatic resource issues and needs.
2. Inform NWRs about fisheries expertise at CRFPO and results of ongoing work.
3. Explore possibilities for cooperative efforts between NWRs and CRFPO.
4. Identify potential areas for demonstration projects for watershed restoration.
5. Develop workshop document with action items.

The NWRs represented at the workshop were primarily within the geographic area of responsibility of the CRFPO, that is, the Columbia River basin below McNary Dam, Oregon waters excluding the Klamath River basin, small tributaries of Willapa NWR.

The intent of the workshop was to exchange information to identify appropriate opportunities where the CRFPO may assist NWRs using existing resources, and also opportunities for assistance that require additional resources. The CRFPO and NWRs consider the workshop an initial step to develop a systematic approach of working collaboratively and envisions annuals meetings with managers.

Prior to the workshop, the CRFPO requested that each NWR complete a template for its aquatic resource issues and needs. The completed templates were intended to provide background information on the NWR, to identify aquatic species of interest, and to facilitate discussion on watershed restoration opportunities and on aquatic issues and needs. The CRFPO provided the NWR managers with an overview of the office to inform them of the capabilities and expertise present.

The workshop was organized by four main sessions: 1) Overview of each NWR; 2) CRFPO technical capabilities and work on refuges; 3) Regional programs and involvement that promote fisheries assistance to NWRs; and 4) Facilitated discussion. During the first session, representatives of each NWR gave presentations for their respective NWRs. These presentations summarized the information in the templates and included descriptions of the NWR and its aquatic resources and habitats, refuge history and purposes, its management focus, and aquatic issues or needs. Refuges represented at the workshop included Willapa NWR complex, Ridegefield NWR complex, Mid-Columbia NWR complex, Oregon Coast NWR complex, Tualatin River NWR, Willamette Valley NWR complex, Malheur NWR, and Sheldon-Hart Mountain NWR complex. Although outside the CRFPO geographic area, Nisqually NWR was represented.

The second session consisted of a history and overview of the CRFPO; followed by presentations of fisheries projects the CRFPO has been conducting on NWRs. A presentation about culvert surveys on Service lands (NWRs and hatcheries) conducted by the Western Washington Fish and Wildlife Office was also made. For the third session, regional office representatives described several programs and efforts that may facilitate opportunities for fisheries assistance to NWRs. These include Cross Program Recovery, National Fish Habitat Initiative, Joint Venture, Science Support, Invasive Species, and Fish Restoration and Irrigation Mitigation Act and Fish Passage Program.

The final session of the workshop was a discussion that centered around three topics: 1) Identification of NWRs aquatic resource needs corresponding to CRFPO mission and capabilities; 2) Identification of potential opportunities for demonstration projects for watershed restoration associated with NWRs; and 3) Identification of contacts (NWR, CRFPO, RO) responsible for developing project proposals for RONS, FONS, internal and external funding sources. Fisheries assistance on Comprehensive Conservation Plans (CCPs) and the need to have fisheries staff present on CCP teams was extensively discussed. Managers were also asked to categorize other needs by their immediacy. Fisheries idea of a demonstration watershed that includes a NWR was introduced, and several potential watersheds were discussed. Points of contacts for the CRFPO (Sam Lohr), NWRs (Fred Paveglio/Forrest Cameron), and the Regional Office (Vicki Finn) were noted for developing proposals. The CRFPO and NWRs committed to work together concerning CCPs, developing a list of demonstration projects, identifying fisheries needs for immediate work, and jointly developing FONS/RONS proposals.

The final section of this report (Section III) describes approaches the CRFPO and NWRs will use in working together to address fisheries and aquatic resource issues and needs discussed at the workshop. The approaches are guided by the mission of the CRFPO, and greatly relied on information provided during the workshop and subsequent conversations with attendees to further clarify issues. The approaches consist of addressing four topics that formed the focus of discussions during the workshop: 1) CCP support, 2) watershed demonstration projects, 3) immediate needs, and 4) anticipated role of regional programs and efforts.

I. Rationale for Fisheries Assistance to NWRs

The Service is moving in a direction of improving efficiency and interaction among its various programs, especially with a focus on Service lands (e.g., through the Cross-Program Recovery efforts and as discussed in the Regional Fisheries Program Strategic Plan). The Columbia River Fisheries Program Office (CRFPO) has worked with National Wildlife Refuges (NWRs) concerning several aquatic resource issues in the past (e.g., monitoring fish populations, conducting stream habitat surveys, and assisting with the preparation of Comprehensive Conservation Plans (CCPs)). Although the work was very useful for both the CRFPO and NWRs, it has been somewhat sporadic and depended largely on the nature of aquatic issues as well as available staff and funding. A workshop was held for NWRs and the CRFPO to discuss aquatic resources issues, needs, and capabilities with the intent that exchanging information would lead to formalizing how the different program offices may work together in support of achieving the missions of each, and thus, maximize work efficiency during a time of increasingly limited resources.

A. Mission of the CRFPO

The mission of the CRFPO is to: Assist in the status review of imperiled natural stocks; Evaluate management measures for recovery; Assist in recovery efforts for imperiled stocks; and Work to prevent the need for future listings under the Endangered Species Act. Pursuing the CRFPO mission entails conducting several types of activities (e.g., designing and implementing monitoring and evaluation studies, providing management coordination and science-based management assistance, generating and disseminating fishery information, and providing technical assistance and representation to various management forums) primarily within the office's geographic area of responsibility. The geographic area of responsibility for the CRFPO is the Columbia River basin below McNary Dam, waters in Oregon excluding the Klamath River basin, and small tributaries of Willapa NWR. Occasionally, some activities encompass other areas due to the broader scope of some issues and also due to specialized capabilities within the office.

The four elements of the CRFPO mission are directly related to a number of objectives and tasks in the Regional Fisheries Program Strategic Plan, namely those focused on addressing aquatic species conservation and management, and aquatic habitat conservation and management. The Strategic Plan and other guiding efforts (e.g., Cross Program Recovery and the developing National Fish Habitat Initiative) encourage closer coordination and work among various programs of the Service as well as other partners, and are supportive of addressing aquatic resource issues at various scales (e.g., at the watershed level). The CRFPO mission, Fisheries Plan, and other efforts guide the office in its activities.

B. Mission of Nation Wildlife Refuges

The mission of the NWR system is: "To administer a network of lands and waters for the conservation, management and where appropriate, restoration of the fish, wildlife and plant resources and their habitats within the United States for the benefit of present and future generations of Americans." The mission, as well as administrative processes and guidance for determining management direction of NWRs, was included in the National

Wildlife Refuge System Improvement Act of 1997, which amended earlier legislation. The legislation mandated that that wildlife and wildlife conservation must come first in administering the system. Several policies and Director's Orders have been developed to assist in complying with the provisions of the legislation.

In applying policies and orders, overall management direction and specific activities on each NWR, or individual management unit of a NWR, are determined by several factors. The foremost factor is that management achieves the purposes for which a NWR or unit was established, and in so doing, contributes to fulfilling the NWR System mission. Implicit within fulfilling the NWR System mission is the maintenance and, where appropriate, restoration of biological integrity, diversity, and environmental health of NWRs, as well as management of legislatively mandated trust species. Trust species include migratory birds, inter-jurisdiction fish, some marine mammals, and species listed under the federal Endangered Species Act. The relations among NWR purpose, NWR System mission, directives, and legislative mandates influence management goals, objectives, and strategies described in CCPs developed for each NWR.

C. Intent of the Workshop

There are several complementary elements of the missions of NWRs and the CRFPO, notably those concerning the maintenance and potential restoration of biological integrity, diversity, and environmental health relative to aquatic species and habitats. This, in conjunction with efforts to increase interactions among programs, highlighted the need to formalize communication between NWRs and CRFPO more than had been done previously, and to improve familiarity about aquatic resource issues and capabilities. Thus, a workshop was organized with the goal to provide a forum to promote effective information exchange between NWRs and the CRFPO. Five objectives were addressed:

1. Inform CRFPO about NWRs and their aquatic resource issues and needs;
2. Inform NWRs about fisheries expertise at CRFPO and results of ongoing work;
3. Explore possibilities for cooperative efforts between NWRs and CRFPO;
4. Identify potential areas for demonstration projects for watershed restoration; and
5. Develop workshop document with action items.

The intent of the workshop was to exchange information so that appropriate opportunities where the CRFPO and NWRs might assist each other could begin to be identified. These included opportunities using existing resources and also opportunities for assistance that require additional resources. The workshop was an initial step to develop a systematic approach to work together. The goal is NWRs and CRFPO working collaboratively, and to have annual meetings with a focus on meeting needs and recently identified aquatic resource issues.

II. NWR-CRFPO Workshop 2005

This portion of the report summarizes each of the main sessions of the workshop agenda (Appendix A). These sessions include: 1) overviews of each NWR with specific information on aquatic resources issues and needs; 2) CRFPO technical capabilities and work with refuges; 3) regional programs and involvement; and 4) a discussion session. The attendance list (Appendix B) and detailed notes (Appendix C) taken by Sharon Miller (CRFPO) are included in this report.

Prior to the workshop, the CRFPO requested that each NWR complete a template for its aquatic resource issues and needs. The completed templates were intended to provide background information on the NWR, to identify aquatic species of interest, and to facilitate discussion on watershed restoration opportunities and on aquatic issues and needs. The CRFPO provided the NWR managers with an overview of the office to inform them of the capabilities and expertise present. The completed templates (Appendix D), CRFPO overview (Appendix E), and presentation graphics and other materials electronically available that were discussed at the workshop (Appendix F), are also included in this report.

A. National Wildlife Refuge Information

Representatives of each NWR gave presentations for their respective refuges. These presentations summarized the information in the templates and included descriptions of the refuge and its aquatic resources and habitats, refuge history and purposes, its management focus, and aquatic issues or needs. The following are brief summaries of the individual presentations for each NWR.

1. Willapa NWR Complex (Willapa NWR, Julia Butler Hansen NWR, Lewis and Clark NWR) (Charlie Stenvall)

Aquatic habitats at Willapa NWR consist of estuarine mudflats and salt marsh areas, freshwater wetlands, and 19 streams that are entirely or partially within the NWR. Primary fish species of concern are chinook salmon, coho salmon, chum salmon, steelhead, coastal cutthroat trout, and lamprey. The NWR has conducted several habitat restoration projects (e.g., culvert replacement, dam removal, fish ladder installation), and has worked with the CRFPO. Aquatic resource issues and needs include fish passage, habitat assessment, assistance with monitoring and evaluation of habitat restoration actions and species reintroduction, and limiting factors.

Aquatic habitats at Lewis and Clark NWR consist of tidally influenced islands with shoals and sloughs. Primary fish species of concern are all Columbia River stocks of anadromous salmonids. Habitats on the islands have not been directly affected by dikes or tidegates. Aquatic resource issues and needs include effects of bird predation and placement of dredge spoils on juvenile salmonids.

Aquatic habitats at Julia Butler Hansen NWR consist of tidally influenced wetlands and sloughs. Primary fish species of concern are all Columbia River stocks of anadromous

salmonids. The majority of habitats on both mainland and island portions of the NWR are enclosed by dikes with tidegates. A habitat restoration project is being conducted on Crims Island. Aquatic resource issues and needs include improving potential rearing habitat for juvenile salmonids without affecting habitat for Columbia white-tail deer, and restoration of streams that traverse the NWR.

2. Ridgefield NWR Complex (Ridgefield NWR, Steigerwald NWR, Franz Lake NWR, Pierce NWR) (Joe Engler, Jim Clapp)

Aquatic habitats at Ridgefield NWR consist of riverine wetlands, floodplain lakes, sloughs, and small tributaries (e.g., Gee Creek) to the Columbia River. Two of five management units are not directly affected by dikes, whereas the majority of the other three units are affected by dikes. Primary fish species of concern are all Columbia River stocks of anadromous salmonids, and coastal cutthroat trout. Aquatic resource issues and needs include fish surveys and habitat assessments of areas open to the Columbia River; assessment of fish passage at the mouth of Gee Creek; and technical assistance concerning mosquito control, invasive species; contaminants monitoring, and CCP preparation.

The Columbia Gorge Refuges consist of Steigerwald NWR, Franz Lake NWR, and Pierce NWR. Aquatic habitats at the Gorge NWRs consist of floodplain lake-wetlands with constructed stream channel all behind dikes (Steigwald NWR); floodplain lake and wetlands (Franz Lake NWR), and historically constructed stream channel, sloughs, and impoundments (Pierce NWR). Primary species of concern are coho salmon, chinook salmon, steelhead, and cutthroat trout at Steigerwald and Franz Lake NWRs, and chum salmon at Pierce NWR. Aquatic resource issues and needs include technical assistance with preparing fish management plans for the three NWRs, habitat restoration planning at Steigerwald NWR, continuation of ongoing monitoring work (e.g., chum salmon at Pierce NWR) and follow up of past work (e.g., re-survey Gibbons Creek at Steigerwald NWR), and completion of fish surveys (Franz Lake NWR).

3. Mid-Columbia NWR Complex (Umatilla NWR, template and presentation for Toppenish NWR included in Appendices D and F) (Brian Allen, Howard Browers)

Aquatic habitats at Umatilla NWR consist of open water (i.e., John Day pool on the Columbia River) and four main backwater sloughs. Primary fish species of concern are all Columbia River stocks of anadromous salmonids from upstream areas and bull trout. Changes in operation of John Day Dam have lowered water elevations of the pool resulting in a loss of shallow-water areas and connections with the Columbia River at the NWR. The NWR has conducted habitat restoration projects to increase wetlands and riparian vegetation. Aquatic resource issues and needs include fish surveys and habitat assessments of backwater areas, especially at McCormack slough to evaluate whether it should be connected to the river as part of a restoration project.

4. Oregon Coast NWR Complex (Bandon Marsh NWR, Siletz Bay NWR, Nestucca Bay NWR) (Roy Lowe)

Aquatic habitats at Bandon Marsh NWR consist of tidal salt marsh, mudflats, and sloughs; tidally influenced wetlands; and ditches and streams behind dikes with tidegates. Primary fish species of concern are coho salmon, chinook salmon, steelhead, and coastal cutthroat trout. The NWR has initiated limited fish inventories and habitat surveys in cooperation with the Confederated Tribes of the Siletz Indians, and also planning for a 430-acre tidal marsh restoration project involving dike and tidegate removal to be implemented in 2007. Aquatic resource issues and needs include fish surveys and habitat assessments to establish a baseline for the restoration project, post-construction monitoring to assess effects of the restoration project, and technical assistance on fishery issues for CCP preparation.

Aquatic habitats at Siletz Bay NWR consist of tidal salt marsh, mudflats, and sloughs; diked historic tidal marsh, and forested wetlands. Primary fish species of concern are coho salmon, chinook salmon, and coastal cutthroat trout. The NWR has initiated fish inventories and habitat surveys in cooperation with the Confederated Tribes of the Siletz Indians, and conducted two tidal marsh restoration projects (one at Drift Creek (4 acres) in 2000, and the other at Millport Slough (100 acres) in 2003). Pre- and post-construction fish survey information was collected for the Millport Slough project. Aquatic resource issues and needs include developing a systematic approach for long-term monitoring of fish and habitats relative to restoration projects at the NWR; and technical assistance with data analysis and reporting of information collected for the Millport Slough restoration project.

Aquatic habitats at Nestucca Bay NWR consist of tidal salt marsh, diked tidally influenced brackish marsh, and freshwater ditches and streams with tidegates. Primary fish species of concern are coho salmon, chinook salmon, and coastal cutthroat trout. The NWR has initiated fish inventories and habitat surveys in cooperation with the Confederated Tribes of the Siletz Indians, and also planning for a 88 acre restoration project involving dike and tidegate removal to be implemented in 2006. Aquatic resource issues and needs include fish surveys and habitat assessments to establish a baseline for the restoration project, post-construction monitoring to assess effects of the restoration project, and technical assistance on fishery issues for CCP preparation.

5. Willamette Valley NWR Complex (Ankeny NWR, Baskett Slough NWR, Finley NWR) (Doug Spencer)

Aquatic habitats involving fishery issues at the NWR complex are primarily at Ankeny and Finley NWRs, and consist of wetlands, sloughs, and tributary streams to the Willamette River. Primary fish species of concern are Oregon chub, anadromous salmonids of the Willamette River, and resident cutthroat trout in Muddy Creek at Finley NWR. The NWR has a memorandum of understanding with the Natural Resources Conservation Service concerning the Wetland Reserve Program. The NWR is active in designing and implementing wetland restoration projects with private landowners, which may ultimately benefit Oregon chum. The NWR is also scheduled to begin preparing a CCP in 2007. Aquatic resource issues and needs include information concerning genetics

of Oregon chub populations, especially to determine whether declines in chub may be caused by inbreeding depression, and technical assistance with water quality monitoring.

6. Tualatin River NWR (Ralph Webber)

Aquatic habitats at Tualatin River NWR consist of floodplain riparian forests, seasonal wetlands, and small streams and portions of the Tualatin River. Primary fish species of concern are winter steelhead, spring chinook salmon, coho salmon, and Pacific lamprey. The NWR is in the process of acquiring land for the proposed Wapato Lake NWR, which is located upstream of the Tualatin NWR in the basin. The NWR is actively managing and conducting restoration work on wetlands. Aquatic resource issues and needs include technical assistance concerning the effects of raising Scoggins Dam and use of shallow wells, information on salmonid fish presence and juvenile movement relative to water control structures, water temperature relations with wetland management, and fish passage information on culverts.

7. Malheur NWR (Donna Stovall)

Aquatic habitats at Malheur NWR include the Donner und Blitzen River, Silvies River, Silver Creek, and numerous wetlands formed by springs or runoff. Primary fish species of concern are common carp and redband trout. The NWR actively manages wetlands with water diversions, and has installed fish ladders and screens to protect redband trout and also to exclude carp. Physical and chemical methods have been used to reduce carp in various areas at the NWR. The NWR conducted a habitat enhancement project on a reach of the Donner und Blitzen River using rock weirs and rootwads to increase habitat complexity for redband trout. Preparation of a CCP is scheduled to begin in 2007. Aquatic resource issues and needs include technical assistance in the design and implementation of a study to develop approaches to control carp for the benefit of redband trout and other native fishes, and on potential effects that rainbow trout stocked in Krumbo Reservoir may have on native redband trout; funding for additional fish screens; and fish species survey and habitat assessments.

8. Sheldon-Hart Mountain NWR Complex (Sheldon NWR, Hart Mountain National Antelope Range) (David Johnson)

Aquatic habitats at the NWR Complex consist largely of spring-fed streams, all occurring in closed basins, and several reservoirs. Primary fish species of concern are Lahontan cutthroat trout and tui chub at Sheldon NWR, and redband trout at Hart Mountain NWR, where there are historical records of tui chub at the NWR. Warmwater fishes have been introduced, and rainbow trout stocked in some reservoirs at the NWRs. Sheldon NWR has an active program to remove feral horses that are degrading aquatic and riparian habitats, and is scheduled to begin preparing a CCP in 2006. Cattle grazing was discontinued at Hart Mountain NWR in 1990. Aquatic issues and needs include fish survey and habitat assessments to evaluate effects of feral horses at Sheldon NWR, and to compare to the results of surveys at Hart Mountain NWR conducted during the early 1990s after cattle grazing was eliminated; and technical assistance with preparing the CCP.

B. CRFPO Technical Capabilities and Specific Work with NWRs (Howard Schaller)
The CRFPO was formed in 1995 when the Office of the Columbia River Coordinator, which focused on large-scale regional management forums and planning, merged with the Lower Columbia River Fisheries Resource Office. The CRFPO has retained responsibilities of both offices by representing the Service on management councils and forums and, conducting work to address specific fisheries management issues. Activities of the CRFPO are guided by the Pacific Region Fisheries Program Strategic Plan and the office's mission. The mission is to assist in status reviews of imperiled natural fish stocks, evaluate management measures for recovery, assist in recovery efforts for imperiled stocks, and work to prevent the need for future listings. The CRFPO is structured around a number of teams that focus on such activities as providing Service representation, evaluating operation and performance of hatcheries, conducting biological and habitat surveys and assessments, assessing status and conservation needs of imperiled aquatic species, and conducting instream flow and habitat assessments.

1. Culvert Inventories on Service Lands (Bob Wunderlich)
The Western Washington Fish and Wildlife Office (WWFWO) in Lacey completed a culvert survey on Service lands (NWRs and National Fish Hatcheries) within the office's area of responsibility of western Washington using the Washington Department of Fish and Wildlife protocol for assessing fish passage barriers. The survey was a followup to the Boldt Decision, and was funded through a FONS submitted in 2002. The WWFWO then conducted culvert surveys on Service lands in the remaining areas of western Washington, which included the Willapa and Ridgefield NWR Complexes, during 2005. A report of the initial surveys has been completed, and one for the latter surveys is expected to be available by the end of FY05. Preliminary results indicate that quite a few culverts exist at Willapa NWR.

2. Franz Lake NWR Fish Studies (Sam Lohr)
Mosquito control treatments proposed for Franz Lake by Skamania County raised the concern that treatments may negatively affect juvenile salmonids by reducing abundance of non-target aquatic invertebrates on which salmonids forage. The NWR funded the Washington Cooperative Fish and Wildlife Research Unit to investigate effects of control treatment on aquatic invertebrates, and the CRFPO to determine fish species presence, distribution, and diets of salmonids. The CRFPO has conducted fish surveys of representative areas of Franz Lake NWR monthly since August 2003. Preliminary results indicate low use of the area proposed for mosquito control treatments by juvenile salmonids. A report will be available after the surveys conclude in September.

3. Pierce NWR Chum Salmon Studies (Jennifer Poirier)
Hardy Creek, located at Pierce NWR, is one of only a few tributaries of the Columbia River in the vicinity of Bonneville Dam where chum salmon, which are listed as threatened, spawn. The CRFPO has consistently monitored adult and juvenile chum salmon abundance in Hardy Creek since 1997, and is receiving funds from Bonneville Power Administration to investigate factors affecting chum salmon in Hardy Creek, fish movement between the Columbia River and the tributary, and means to enhance production. The project is developing a time series of fish abundance, characterizing

spawning habitat, and evaluating feasibility of operating the artificial spawning channel at Pierce NWR.

4. Malheur NWR Donner und Blitzen River Fish Studies (Michael Hudson)
Malheur NWR conducted a habitat improvement project in the Donner und Blitzen River, which included riparian vegetation plantings and placement of root wads and rock weirs in the stream, to increase habitat complexity for redband trout and other native fishes. The CRFPO conducted habitat, fish, and aquatic invertebrate surveys before (2001) and one year after construction for the habitat project (2003), and is scheduled to conduct an additional survey in fall 2005. Preliminary results indicate that the project substantially increased pool habitat, and almost twice the number of fish species were collected after construction than before.

5. Julia Butler Hansen and Lewis and Clark NWR Habitat Restoration Studies (Tim Whitesel)
As part of the Lower Columbia River Channel Improvement Project, the U.S. Army Corps of Engineers has proposed a restoration project at Tenasillahe Island, located at Julia Butler Hanson NWR, intended to benefit juvenile salmonids. If hydraulic analyses indicate that habitat for listed Columbia white-tailed deer will not be negatively affected, activities of the interim phase include modifications to tidegates and construction of controlled water inlets to improve water exchange and juvenile salmonid passage between island sloughs and the Columbia River. Possible long-term activities include breaching dikes on the island to restore tidal circulation. The CRFPO conducted preliminary surveys to describe habitat and fish presence and distribution in sloughs on Tenasillahe Island and at Welch Island, which lacks dikes and tidegates and is a portion of Lewis and Clark NWR. These data will contribute to establishing a baseline to which data collected after construction will be compared to evaluate the effects of restoration activities.

6. Instream Flow Studies at Hanford Reach National Monument (Don Anglin)
Grant County Public Utility District is in the process of relicensing Priest Rapids and Wanapum hydroelectric projects with the Federal Energy Regulatory Commission. Operation of the projects greatly affects spawning and rearing habitat of fall chinook salmon and other aquatic resources at the Hanford Reach National Monument, which is administered by the NWR system. The CRFPO has used state-of-the-art tools and approaches to develop a bathymetric surface and hydraulic model of the reach, assess chinook salmon spawning and rearing habitat, and evaluate stranding and entrapment of juvenile salmon. These physical and biological components are being integrated so that habitat conditions associated with a range of streamflows and hydroelectric project operations can be determined. The results of this work are intended to contribute to developing terms and conditions of the new license for the two hydro projects.

C. Regional Programs and Involvement that Could Promote Opportunities for Fisheries Assistance to NWRs

1. Cross Program Recovery (Vicki Finn)
Cross Program Recovery (CPR) is an effort by five Service programs (Refuges, Fisheries, Ecological Services, State Programs, and Migratory Birds) to coordinate and work together for the recovery of listed and imperiled species. The strategy is to use available resources and programs to focus on species where recovery is achievable in the near future (e.g., those considered tier 1 species—Columbia white-tailed deer, Oregon chub, and Nelson's checker-mallow), especially at NWRs. Efforts concentrate on habitat, and have initially been directed toward specific geographic areas (i.e., lower Columbia River, coastal areas in Washington and Oregon, Willamette River valley, and the Puget Sound trough). Over the last two fiscal years, $3.8 million of Service funds have leveraged over $11.2 million for conservation activities. An example of a fishery issue at a NWR addressed by CPR include various recovery actions for Oregon chub at Willamette Valley NWRs.

2. National Fish Habitat Initiative (Mark Bagdovitz)
The National Fish Habitat Initiative is an effort involving partnerships to develop a nationwide strategic plan to improve aquatic and riparian habitats. The Sport Fishing and Boating Partnership Council recommended that the Service initiate the effort, and the International Association of Fish and Wildlife Agencies, Service, and other partners have been developing the plan. The plan will be modeled around a joint venture approach, which relies on partnerships with local groups, agencies, and programs to restore fish habitat. The Western Native Trout Initiative is an example of the approach that the National Fish Habitat Plan will take. Current discussions between the CNO and R1 focus on how to establish a joint venture program. The House side of the FY06 budget includes $1.75 million for fish habitat.

3. Joint Venture (Carey Smith)
The Pacific Coast Joint Venture (PCJV) works to protect, restore, and enhance coastal wetlands to benefit of birds, fish, and other wildlife. It was established under the North American Waterfowl Management Plan in 1991, and is 1 of 14 joint ventures in North America. The approach is to pool resources among public and private agencies and organization as partners, enabling the PCJV to fund habitat projects in British Columbia, Alaska, northern California, Hawaii, Oregon, and Washington. The PCJV has a management board and six steering committees, one in each state and province, which coordinate conservation projects with partners and direct planning at the state or provincial level. The PCJV has completed over 1,000 projects since 1991. Many of the projects involve aquatic habitats that can provide benefits to fish; and some have been implemented through partnerships with NWRs in Oregon and Washington.

4. Science Support/Invasive Species (Paul Heimowitz)
The Service's Invasive Species Program establishes regional coordinators within fisheries that organize activities focused on preventing the introduction and spread of invasive species, their eradication or control, and providing information. The core strategy for

invasive species relative to NWRs is information and education to prevent their introduction to NWRs. Hazard Analysis and Critical Control Point Planning (HACCP) is an approach to identify risks of introducing invasive species and practices to prevent their introduction. Within the region, the program is working with hatcheries and NWRs to develop HACCP plans. Draft plans have been developed for Ridgefield and Conboy NWRs, which focus on early detection and rapid response.

The Science Support Program is administered by the Biological Resources Discipline (BRD) of the U.S. Geologic Survey. The program is to address research needs identified by the Service. Appropriate BRD personnel develop proposals and conduct research for the proposals selected for funding. The program offers an opportunity that research needs identified by NWRs may be met.

5. Fisheries Restoration and Irrigation Mitigation Act and Fish Passage Program
(Jerry Van Meter)

The Fisheries Restoration and Irrigation Mitigation Act (FRIMA) is to provide funding for making improvements in screens and fish passage at water diversions operated by local governmental entities. The geographic scope of FRIMA is Idaho, western Montana, Oregon, and Washington. Non-federal cost share for partners is 35%. Additional information concerning the program can be found at the Service website (http://pacific.fws.gov/Fisheries/FRIMA/).

The Fish Passage Program is a national program to provide funding to reconnect aquatic habitats fragmented by barriers. Projects are intended to remove barriers and build structures to improve fish passage. Partners can be individuals as well as federal, tribal, state, and local governments and agencies. Average cost share has been 50%, and a FONS proposal needs to be submitted for a project to be considered for funding by the program. Service contacts are Ron Rhew for NWRs in Oregon and Brian Peck for NWRs in Washington. Additional information can be found at the Service website (http://pacific.fws.gov/Fisheries/fishpassage/).

D. Discussion

1. Identification of NWR aquatic resource needs corresponding to CRFPO capabilities

Common to several NWRs was the need for technical assistance (i.e., participation by the CRFPO) on aquatic issues during the development of CCPs. The NWRs would benefit from a high level of participation by fisheries staff at the beginning of the CCP process. In particular, assistance is needed to select target species, to develop habitat goals and objectives for fish and other aquatic resources, and to prepare management strategies to achieve objectives concerning aquatic resources. Assistance is also needed to generate information that will contribute to CCPs, such as fish species present at a NWR, their distribution, and habitat conditions. Depending on the nature of information needed, it may be necessary to develop a FONS proposal whose funding would allow generating the information. Possible participation by CRFPO staff for CCPs could include membership on core teams (i.e., planning team responsible for preparing a CCP) or extended teams (i.e., planning team that provides information and analysis to core team,

and reviews internal drafts of a CCP). The Columbia Gorge NWR was noted as an example of a CCP where the CRFPO has already provided a high level of participation on an extended team.

Except for NWRs in Washington, most have not been systematically surveyed to identify fish passage barriers. Therefore, a common need is to conduct a survey to identify potential fish passage barriers on NWRs in Oregon. The scope of the survey should include other Service lands (e.g., National Fish Hatcheries) within the geographic area that the CRFPO is responsible.

Each NWR had identified specific needs in the templates prepared prior to the workshop (Appendix D). These needs were further discussed for clarification, and also with respect as to whether they were considered immediate or longer term needs. The CRFPO committed to contact managers to define the most immediate needs.

2. Identification of potential opportunities for demonstration projects for watershed restoration associated with NWRs

A potential approach to conducting aquatic habitat restoration with NWRs is to develop a focused restoration effort for an entire watershed that contains a NWR. If a watershed has a resource management plan, taking such an approach would not only focus efforts at the scale of a natural unit for restoration, but would also provide opportunities to demonstrate how a management plan can be implemented efficiently (e.g., by addressing limiting factors and status of resources). The NWR within the watershed could be a focal point, especially for education and outreach activities concerning the project, and implementing the management plan would draw upon the integrated components of the Service (e.g., NWR friends group, partners program, fish passage program, FRIMA).

In addition to having a resource management plan, it would be ideal for a candidate watershed to already have an established watershed group or partners actively involved in management and restoration issues. It would also be advantageous to initially select a small watershed with relatively simple resource issues to implement watershed restoration efforts. Lessons learned from doing so would be informative for subsequently addressing restoration of a larger watershed with more complex issues.

The Tualatin River was noted as a potential candidate for watershed restoration. The watershed has a subbasin plan approved by the Northwest Power and Conservation Council, and Tualatin River NWR is the largest federal landowner in the basin. Examples of smaller watersheds with less complex issues than the Tualatin River are Gee Creek at Ridgefield NWR and Gibbons Creek at Steigerwald NWR. Restoration work at Nisqually NWR and within the watershed was noted as a successful model of watershed restoration involving a NWR and several other groups. The CRFPO committed to learn more about work in the Nisqually River watershed and also follow up with attendees about their ideas.

3. Contacts

The following persons were identified as contacts (CRFPO, NWRs, and RO) for issues concerning CRFPO work with NWRs:

CRFPO: Sam Lohr
NWRs: Fred Paveglio/Forrest Cameron
RO: Vicki Finn

4. Action Items

Howard Schaller reviewed what the CRFPO will do in terms of follow up: 1) work with Fred Paveglio and Forrest Cameron on CCP assistance; 2) work with NWRs to develop a list of demonstration projects; 3) work with NWRs to determine fisheries needs and see if funding is available to work on these needs immediately; and 4) jointly develop FONS/RONS to get funding in place.

III. Workshop Outcome

Four topics formed the focus of discussions during the workshop: 1) CCP support, 2) watershed demonstration projects, 3) immediate needs, and 4) anticipated role of regional programs and efforts. This section of the report describes how NWRs and the CRFPO intend to work together to address fisheries and aquatic resource issues and needs discussed at the workshop. Information provided during the workshop and subsequent conversations with attendees to further clarify issues contributed to this section.

A. CCP Support

Comprehensive Conservation Plans describe desired future conditions at NWRs and provide long-range management direction for achieving NWR purposes, contributing to the NWR System Mission, and fulfilling other NWR mandates. A number of NWRss are scheduled to begin work on preparing CCPs during the next two years. The NWRs scheduled to begin work on CCPs in FY06 include Julia Butler Hansen, Lewis and Clark, Ridgefield, Bandon Marsh, Siletz Bay, Nestucca Bay, and Sheldon; and Malheur NWR and the Willamette Valley NWR Complex are scheduled to begin work in FY07. These NWRs requested assistance from the CRFPO concerning aquatic resource issues for CCPs.

During the workshop and subsequent conservations between NWRs and the CRFPO, topics such as existing information concerning aquatic resources, it's sufficiency for CCP development, and management activities that may affect aquatic resources were discussed to gain a better understanding of the issues and needs affecting CCPs. Three overall issues for CCP development were apparent. The first overall issue was that most NWRs do not have personnel with fisheries expertise on staff to assist with the various activities involved with developing a CCP. The second overall issue was that insufficient information concerning aquatic species composition and distribution, and aquatic habitat conditions typically exists for NWRs about to begin work on CCPs. The third overall issue was that a better understanding of the effects of restoration actions implemented to

benefit fish and aquatic habitats would contribute to management direction contained in CCPs.

The CRFPO will work with NWRs to clarify and meet needs intended to address the three overall issues related to CCP development, including step-down management plans within CCPs. For the first issue concerning fisheries assistance and support of CCP preparation, the CRFPO will gain a better understanding of the existing and likely historic conditions of aquatic resources at a NWR, and the primary management issues and actions relative to aquatic resources. Gaining a better understanding includes assessing the types and quantity of existing information available, as well as developing familiarity with the purposes and other management priorities of a NWR. Once familiar with a NWR, the CRFPO will determine whether assisting in CCP preparation contributes to it's mission, i.e., will providing assistance contribute to the recovery of listed or imperiled fish stocks or aquatic organisms, and prevent the need for future listings. If so, the CRFPO will then assess availability of personnel to participate in the most appropriate capacity desired by a NWR (e.g., membership on extended or core teams, etc.). The primary focus of CRFPO personnel will be to provide a technically sound and objective view of aquatic resource issues, especially as they relate to the recovery of listed and imperiled stocks of fish and other aquatic organisms. It is anticipated that taking such a view will entail consideration of all aspects of management actions that may influence aquatic resources as well as other priorities of a refuge. The central objective is to identify what can be done to benefit the long-term sustainability of native fish. Because situations at each NWR and associated aquatic resources are presumed to vary considerably, it is expected that CRFPO personnel may be assisting in a range of planning activities for CCPs (e.g., identifying key information needs, crafting management goals and objectives, and assessing likely effects of various management scenarios on aquatic resources).

The situation may develop that the need for CCP support exceeds availability of CRFPO personnel to provide assistance. If this becomes the case, the CRFPO and NWRs will determine what resources would be necessary to fully meet the need, and work together on securing them. The NWRs additionally would prioritize elements of CCP support (e.g., based on meeting the needs of an individual NWR, or various aspects of CCPs among NWRs) that would guide the CRFPO in focusing on elements considered high priority.

The second and third overall issues for CCP development, i.e., insufficient information concerning species and aquatic habitats at NWRs and effects of restoration actions, are information needs specific to individual NWRs. Although these needs are supportive of CCPs, they are addressed later under "Immediate Needs" of NWRs.

B. Watershed demonstration projects

Watersheds are natural units on which to focus restoration efforts intended to benefit the long-term health of native fish populations and other aquatic organisms. Natural processes that form and maintain high quality fish habitat (e.g., flow regimes, sediment transport dynamics, and riparian vegetation inputs) function at the watershed scale within

geomorphic and climatic settings. The disruption of these processes has resulted in habitat degradation and contributed to the decline of species, which may ultimately warrant listing under the ESA. The importance of the watershed as a natural unit for restoration is why the emerging National Fish Habitat Initiative will likely address restoration efforts at multiple scales, and also why a watershed perspective is essential for the CRFPO in achieving its mission and NWRs to address mandates concerning such issues as biological diversity.

Nisqually NWR and habitat restoration activities occurring throughout the basin has been suggested as a model of how the Service could approach watershed demonstration projects involving a NWR. The NWR is working closely with the Nisqually Tribe and others on restoring habitats, primarily in the Nisqually River delta, and conducting pre- and post-construction monitoring to evaluate effects of habitat restoration projects. A primary factor influencing the high level of restoration activity is the Nisqually River Council, which is a coordination, advocacy, and educational organization composed of several local, state, and federal governmental agencies, Nisqually Tribe, and other non-governmental interests. The Nisqually River Council has a relatively long history, and the Nisqually Tribe is often a primary lead for efforts in the watershed. There is an existing management plan for the watershed with short- and long-term goals guiding habitat management and restoration efforts. Large portions of the watershed are in federal ownership by multiple agencies (i.e., Service, National Park Service, U.S. Forest Service, and Department of Defense).

Several watershed attributes, falling into two broad categories (biological/physical attributes, administrative/situational attributes), appear appropriate for characterizing watersheds for consideration as candidates for developing and implementing a watershed demonstration project (Table 1). The CRFPO and NWRs will work together to refine these watershed attributes so that candidate watersheds will be characterized in a consistent manner. It is anticipated that the attributes will form the basis of actual criteria that will be used to select a watershed for a demonstration project.

Table 1. Attributes to characterize candidates for watershed demonstration projects.

Biological/physical attributes	**Adminstrative/situational attributes**
Watershed and stream size	Existing watershed plan and assessment
Historic conditions and fish resources	Existing watershed council or other group
Present habitat conditions and fish resources	Land ownership in the watershed
Feasibility of restoring or mimicking historic conditions or processes	Efforts likely to be supported by landowners and other groups
Foreseeable future threats to conditions	Over-allocation of water supply
Ability of fish to access habitats	Recovery plan or conservation agreement for the watershed
Listed, proposed, trust, or special status species present	NWR managed for educational opportunities
	Potential for strong leadership and support

C. Immediate needs

Time limited detailed discussion of specific needs of NWRs during the workshop. The immediacy of needs identified in the templates was briefly discussed and the CRFPO committed to contacting NWRs individually to develop a better idea of their immediate needs. Several of the immediate needs are intended to provide information that will be useful in the development of upcoming CCPs (i.e., addresses the second and third overall issues noted earlier under "CCP Support"—the need for information concerning aquatic species and habitats, and a better understanding of the effects of restoration actions) or step-down management plans stipulated in CCPs (indicated with "*" and "**", respectively).

1. Willapa NWR

- Review report on survey of fish barriers and determine how to address sites found to be problems.
- Assess conditions (species and habitat) in streams in which restoration actions have been implemented.

2. Julia Butler Hansen NWR

- Assess habitat conditions and species composition in sloughs to evaluate strategies for modifying existing tidegates and opportunities to create sites for fish passage.*
- Support Columbia River Land Trust in acquiring land adjacent to NWR.

3. Lewis and Clark NWR

- Support for establishing regional reference sites for monitoring species composition and habitats in sloughs not directly affected by dikes and tidegates.*
- Assess potential effects of dredge spoils and bird predation on juvenile salmonids and their habitat.*

4. Ridgefield NWR

- Conduct species surveys and habitat assessments in areas open to the Columbia River (Gee Creek, Campbell Lake and Slough, Post Office Lake).*
- Assess fish passage at the mouth of Gee Creek.*

5. Steigerwald NWR

- CRFPO participation in floodplain restoration planning.
- Technical assistance and review in writing fish management plan.**

6. Franz Lake NWR

- Technical assistance and review in writing fish management plan.**

7. Pierce NWR

- Continue monitoring chum salmon and assess habitat restoration opportunities.
- Technical assistance and review in writing fish management plan.**

8. Umatilla NWR

- Conduct species surveys and habitat assessments in all backwater areas, especially at the mouth of McCormack Slough if any action to open slough is taken.
- Assess potential effects of predation by terns on juvenile salmonids at the Blalock Complex and Long Lock Island. (Riparian habitat work currently being conducted may attract birds.)

9. Bandon Marsh NWR

- Conduct comprehensive pre-construction monitoring (species composition and distribution, habitat assessment) for 430-acre restoration project planned for 2007.*
- Baseline information for aquatic species occurrence and habitat assessment throughout NWR.*

10. Siletz Bay NWR

- Provide technical assistance for data analysis and reporting for previous restoration projects (e.g., Millport Slough--100 acres restored in 2003).*
- Baseline information for aquatic species occurrence and habitat assessment throughout NWR.*

11. Nestucca Bay NWR

- Conduct pre-construction monitoring (species composition and distribution, habitat assessment) for 88-acre restoration project planned for 2006.*
- Baseline information for aquatic species occurrence and habitat assessment throughout NWR.*

12. Tualatin NWR

- Technical assistance in analyzing effects of raising Scoggins Dam.
- Information on salmonid presence, life stages, life histories, age structure, and use of NWR waters.
- Water temperature information for wetland management.
- Monitoring program to assess functioning of water control structures relative to juvenile salmonid movement.
- Fish passage information for culverts.
- Testing of shallow wells for water supply.

13. Willamette Valley NWRs

- Information on Oregon chub population genetics.*
- Technical assistance for water quality monitoring.*

14. Malheur NWR

- Technical assistance in designing and implementing a study to develop approaches to control carp in the basin that benfits redband trout and other native species.*

- Funding for fish screens, and continued screening of carp in Blitzen Valley and Double O.
- Carp control in Malheur Lake when it dries (i.e., remove carp and screen off Silvies River drainage).
- Restore Blitzen River habitat.
- Obtain spring water rights in Double O.
- Conduct biological inventory and review existing data in preparation for working on the CCP.*
- Technical information regarding Krumbo Reservoir stocking rainbow trout by the state and its effects on redband trout.*

15. Sheldon/Hart Mountain NWR

- Information on present status of species and habitats.*
- Assessment of introduced species.*
- Assessment of effects of horses and management programs on fish.*

The CRFPO will assist NWRs in meeting their immediate needs by first assessing the nature of the specific need and likely actions necessary to address it. This assessment is intended to determine whether it is appropriate for the CRFPO to assist, which will be based largely on the relevance of the need and likely actions to the mission of the CRFPO. In addition, the assessment will consider whether adequate expertise exists in the office or an alternative source might be more appropriate. Next, resources likely necessary to meet needs will be estimated for those falling within the purview of the CRFPO. If adequate resources are available, the CRFPO will work with the NWR on a mutually agreed upon plan to address the need. For needs that current resources are not adequate to address, the CRFPO will work with NWRs to pursue funding. This will entail a joint plan wherein responsibilities between the CRFPO, NWR, and perhaps the RO, for such actions as proposal development, project implementation, and anticipated funding sources are agreed upon. Then, the NWR and CRFPO would carry out their respective responsibilities with the goal of securing resources to meet the identified need.

Preliminary review of immediate needs indicated that some were likely beyond the CRFPO's purview (Appendix G). These addressed land and water rights acquisition, testing wells, and providing funding for screens. The remaining needs were then assigned to one of three categories, general survey and assessment, general technical assistance, and NWR-specific survey and assessment. The general survey and assessment category included species inventory and habitat assessment needs that could be met with relatively short-term field activities. The general technical assistance category included various needs that could largely be met with little or no field crew activities. The NWR-specific survey and habitat assessment category included needs of sufficient scope to require either long-term or extensive field activities. Due to year-end submittal dates, the CRFPO developed and submitted FONS proposals for funding before this report was completed and prior to extensively engaging NWRs. The FONS proposals addressed the first two categories (general survey and habitat assessment needs, and general technical assistance need) intended to address needs at multiple NWRs. An

additional six proposals were submitted to address NWR-specific needs, as well as one for assessing fish passage barriers on Service lands (Appendix G).

The CRFPO is working with NWRs to address individual needs within all three categories to the extent possible with existing resources. However, available resources will be insufficient to meet all needs. The CRFPO and NWRs will work on prioritizing individual needs to guide allocation of effort.

D. Anticipated role of regional programs and efforts

During the workshop, Vicki Finn volunteered as the point of contact for fisheries in the regional office concerning fisheries assistance to NWRs. An anticipated role of the regional office contact is taking a proactive role in facilitating opportunities for fisheries to assist NWRs. A primary element of this role is to be an active participant with fisheries and NWR personnel working to address NWR needs for which available resources are inadequate. Potential activities in this role may include identifying internal and external funding sources to address needs, compiling materials and submitting proposals to funding sources, and cultivating opportunities for developing partnerships that contribute meeting NWR needs.

IV. APPENDICES