Northwest Power and Conservation Council

December 2, 2010

MEMORANDUM

TO: Fish and Wildlife Committee members

FROM: Jim Ruff -- Manager, Mainstem Passage and River Operations JR

SUBJECT: Update on predation on salmonids in general; including an update on NOAA's Pinniped-Fishery Interaction Task Force meetings

Predation on Salmonids

Predation is part of the cycle of nature. However, several species, taking advantage of human changes to the environment, have become successful in preying on Columbia River salmon and steelhead stocks. Migrating juvenile and adult salmon and steelhead, both listed and non-listed under ESA, fall prey to a number of predators. Such predators include native and non-native fish, avian, and marine mammals. At the Fish and Wildlife Committee meeting, I have arranged a panel discussion of experts who will summarize the predation effects on juvenile or adult salmonids in the Columbia River Basin by each of these three major groups of predators.

The presenters will identify some of the research and programs the federal action agencies are undertaking to reduce the impact of key predators on salmonids in the Columbia and Snake rivers. These efforts are part of the action agencies' responsibility to mitigate impacts on fish and wildlife due to the construction and operation of the FCRPS projects under the Council's Fish and Wildlife Program, as well as actions called for under the NOAA Fisheries 2008 FCRPS Biological Opinion.

Northern Pikeminnow Sport Reward Fishery Program

First, Russell Porter, who is a Senior Program Manager with the Pacific States Marine Fisheries Commission, and John Skidmore, a Biologist at the Bonneville Power Administration, will discuss the Northern Pikeminnow Sport Reward Fishery Program and its estimated effects on salmon survival. Northern pikeminnow are the primary native fish predator in the Columbia River Basin. These fish consume millions of juvenile salmon and steelhead each year in the Columbia and Snake rivers. The

851 S.W. Sixth Avenue, Suite 1100
Portland, Oregon 97204-1348
www.nwcouncil.org

Steve Crow
Executive Director

503-222-5161
800-452-5161
Fax: 503-820-2370

goal of the Northern Pikeminnow Sport Reward Fishery Program, which is funded by Bonneville under the Council's Fish and Wildlife Program, is not to eliminate northern pikeminnow, but rather to reduce the size and curtail the number of larger, older fish. Reducing these predators in the mainstem can help improve the numbers of salmon and steelhead juveniles making it safely out to sea. Attachment 1 provides a summary of the Northern Pikeminnow Sport Reward Fishery Program.

Avian Predation

Daniel Roby from Oregon State University will be the next presenter. Dr. Roby is a Professor of Wildlife Ecology in the Department of Fisheries and Wildlife at Oregon State. He is one of the principal investigators for the Corps-funded studies on avian predation in the Columbia and Snake rivers. He will address bird predation effects on juvenile salmon and steelhead in the lower Columbia River and estuary, as well as in the mid-Columbia plateau region. Attachment 2 summarizes the latest avian predation information that Dr. Roby will present to the Fish and Wildlife Committee.

Pinniped Predation

Based on information provided to me by Robert Stansell of the Fisheries Field Unit of the Portland District, Corps of Engineers, I will present the latest results of the Corps-funded evaluation of pinniped predation on adult salmonids and other fish in the Bonneville Dam tailrace during 2008-2010. Attachment 3 provides additional background information on pinniped predation.

NOAA Fisheries Pilot Study of Adult Salmon Survival in the Lower Columbia River

Michelle Rub from the Fish Ecology Division of NOAA's Northwest Fisheries Science Center will present information on a pilot study that NOAA Fisheries has begun to try to estimate adult salmon survival from the mouth of the Columbia River to Bonneville Dam. Dr. Rub is stationed at NOAA's Pt. Adams Research Station in Hammond, Oregon.

In the spring of 2010, NOAA Fisheries conducted a pilot study to lay the groundwork for future studies that will be aimed at identifying adult salmon survival through the estuary and lower Columbia River. The overall objective of this pilot study was to evaluate sampling and tagging methods for adult Chinook salmon. To accomplish this objective, NOAA sampled adult spring Chinook salmon using commercial tangle net methods near Rice Island (Rkm 34) in the lower Columbia River. A total of 233 fish were tagged with PIT tags, and an additional 100 fish were marked with both PIT tags and acoustic pingers (50 fish using gastric and 50 fish with surgical methods), before they were released to resume their migration. In addition, tissue samples were collected from all study fish for genetic analyses to provide information on stock-specific movement and survival. Acoustic-tagged fish were tracked through a collaborative array of acoustic receivers that were deployed and maintained by USGS, CRITFC, and NOAA Fisheries researchers. Survival for tagged fish to Bonneville Dam (Rkm 234) was estimated based on PIT tag detections at this site.

Update on NOAA's Pinniped-Fishery Interaction Task Force meetings

On September 3, 2011, NOAA Fisheries sent a letter (Attachment 4) to the 18 members of the task force charged with advising the agency on interactions between California sea lions and salmon at Bonneville Dam, asking the group to reconvene.

The group, known formally as the Pinniped-Fishery Interaction Task Force, first met in 2007 and produced a report recommending that NOAA Fisheries take actions to reduce California sea lion predation on salmon, including capturing and killing specific animals, below Bonneville Dam.

In early 2008, NOAA Fisheries gave permission to Oregon, Washington and Idaho to permanently remove certain California sea lions from below Bonneville Dam. That permission remains in effect until June 30, 2012.

Earlier this fall, NOAA reconvened the Pinniped-Fishery Interaction Task Force and asked it to evaluate how effective these removal actions have been so far and to provide recommendations for different or additional actions, if necessary. Accordingly, the task force met twice, first on October 25-26 and again on November 9-10 in Portland.

After the task force has completed its deliberations and submitted its recommendations, NOAA Fisheries will determine a course of action informed by the task force recommendations. NOAA's decisions could include no modifications to the currently approved sea lion protocols, modification of the intentional removal authority through altered terms and conditions in the letter of authorization, modifications to the non-lethal deterrence measures, or a determination that the permitted lethal removals have been effective.

At the December 14 Fish and Wildlife Committee meeting Garth Griffin, a biologist for NOAA Fisheries in the Protected Resources Division, will brief the Committee on the deliberations of the Pinniped-Fishery Interaction Task Force at its most recent meetings and any recommendations that the task force developed.

A week ago the Ninth Circuit Court of Appeals in San Francisco ruled that NOAA Fisheries, in its March 2008 decision, failed to adequately explain how the lethal removal of California sea lions that prey on salmon below Bonneville Dam is consistent with the Marine Mammal Protection Act. The Ninth Circuit opinion ordered that the lawsuit brought by the Humane Society and the Wild Fish Conservancy be remanded to the district court "with instructions to vacate the decision of NMFS and remand to NMFS." Accordingly, Council members may want to ask Mr. Griffin how the agency plans to respond to this recent opinion by the Ninth Circuit.

Attachments(4)

Northern Pikeminnow Management Program Summary

Duration: The Sport Reward Fishery began in 1991 and has run continually since that time. The season has settled into the May-September timeframe each year.

Program Design & Goal: The program goal is to remove 10-20% of the predatory size pikeminnow (9 inches or greater) per year for a potential reduction in salmonid predation of up to 50%. This design was developed from field studies that modeled the population in John Day reservoir prior to implementation of the program.

Evolution of the Sport Reward Fishery: Initial rewards of $3 per fish were gradually increased and then a three tier reward structure was implemented about 10 years ago to increase effort and catch by the avid experienced pikeminnow angler. Tagged fish are paid an increased reward that started at $50 and over the past several years has been set at $500. Tag recoveries are critical to our assessment of the exploitation rate and population studies. Increased tag rewards provide the added benefit of promoting additional fishing effort and directing the effort to the program area because of the potential high reward. It also reduces fish caught elsewhere from being submitted for rewards. The average tag recoveries each year number about 170.

Exploitation Rate History: Exploitation rates have been in the 10-20% range for 16 of the 20 years of the program. The first three years were in the 6-9% range and it dropped to 9% again in 1997. The last 7 years the exploitation rate has been in the 17-19% range, except for 2009. Average pikeminnow length has been reduced as has the population. It is estimated after last season that pikeminnow predation has been reduced 40% over pre-program levels. This saves approximately 5 million smolts per year.

Dam Angling: In the first years of the program dam angling was conducted by a number of the Columbia River tribes. Catches were good the first few years, but gradually dropped off. This program was cut back to only the Yakama tribe and then terminated a number of years ago. Dam angling was again tested starting three years ago at Bonneville, The Dalles and John Day dams under contract to the USDA. This activity was taken over by the program and implemented by WDFW in 2010. Catches average about 4,000 fish for the four month season from fishing at two dams.

Past Program Activities: Over the life of the program, a number of removal techniques have been tested and implemented for a period of time. These include fyke traps, gillnets, and other commercial net techniques. These have all been abandoned in favor of sport anglers that deploy the maximum amount of fishing effort at no cost until pikeminnow are actually removed. It also allows for continual effort throughout the Columbia and Snake River portions of the program for the entire five month fishing season.

Scientific Review: A number of scientific papers and presentations have been completed and published during the program. These are all listed in the annual pikeminnow reports available through BPA or on the Pikeminnow Website (www.pikeminnow.org).

ATTACHMENT 1

AVIAN PREDATION ON JUVENILE SALMONIDS IN THE LOWER COLUMBIA RIVER: SUMMARY OF A BRIEFING FOR THE FISH COMMITTEE OF THE NORTHWEST POWER & CONSERVATION COUNCIL

D.D. Roby[1*], K. Collis[2], D.E. Lyons[1], A. Evans[2], Y. Suzuki[1], J.Y. Adkins[1], P.J. Loschl[1], D.S. Battaglia[1]

[1]USGS-Oregon Cooperative Fish & Wildlife Research Unit, 104 Nash Hall, Oregon State University, Corvallis, OR 97331-3803 * daniel.roby@oregonstate.edu
[2]Real Time Research, Inc., 52 SW Roosevelt Ave., Bend, OR 97702

EXECUTIVE SUMMARY

Our group, Bird Research Northwest <www.birdresearchnw.org>, continued field studies in 2010 to (1) assess the impact of avian predation on survival of juvenile salmonids in the lower Columbia River and (2) monitor the efficacy of on-going Caspian tern management designed to reduce their impact on smolt survival in the Columbia River estuary. This RM&E was funded by the Portland and Walla Walla districts of the Corps of Engineers and the Bonneville Power Administration.

The Caspian tern colony on East Sand Island, the largest in the world and situated near the mouth of the Columbia River, consisted of about 8,300 breeding pairs in 2010, a significant decline from 2009 (ca. 9,850 breeding pairs). The number of juvenile salmonids consumed by Caspian terns nesting on East Sand Island during 2010 was about 5.3 million, similar to average annual smolt consumption by this colony over the past 10 years. Caspian tern management in the estuary continued in 2010, with the USACE further reducing the area of suitable tern nesting habitat on East Sand Island to 3.1 acres, a 38% reduction from its former area. However, the decline in the number of terns nesting at the East Sand Island colony was not as great as the reduction in nesting habitat because of increased tern nesting density. In 2011 the USACE plans to provide 2 acres of suitable tern nesting habitat on East Sand Island.

East Sand Island is also home to the largest known double-crested cormorant colony. In 2010, the colony consisted of about 13,600 breeding pairs, somewhat larger than in 2009 (ca. 12,100 breeding pairs). Our preliminary estimate of the number of juvenile salmonids consumed by double-crested cormorants nesting at the East Sand Island colony in 2010 was 18.6 million smolts (95% CI: 13.9 – 23.2 million smolts). This estimate of consumption is significantly greater than in 2009, when about 11.1 million smolts were consumed by cormorants nesting at this colony. In 2010, cormorant smolt consumption far exceeded smolt consumption by Caspian terns. Combined consumption by the Caspian terns and double-crested cormorants nesting on East Sand Island was about 23.9 million smolts (95% CI: 19.1 million – 28.9 million smolts). Unlike the Caspian tern colony, the double-crested cormorant colony at East Sand Island is not currently being managed to reduce its impact on smolt survival in the estuary. Resource managers have initiated planning efforts to reduce the size of the East Sand Island double-crested cormorant colony as one approach to increasing smolt survival in the Columbia River estuary.

Further up-river on the Columbia Plateau, Caspian terns and double-crested cormorants are also responsible for most of the smolt losses to avian predators. Management options to reduce the impacts of these two avian predators on smolt survival along the mid-Columbia and lower Snake rivers are currently being considered by resource managers. In 2010, the largest breeding colonies of Caspian terns on the Columbia Plateau were on Crescent Island (in McNary Pool) and Goose Island (Potholes Reservoir, WA), where 375 and 416 pairs nested, respectively. In 2010, salmonid smolts represented 69% of tern prey items at the Crescent Island colony and 23% of tern prey items at the Goose Island colony, and estimated smolt consumption was 420,000 and 122,000 smolts, respectively. The largest colony of double-crested cormorants on the mid-Columbia River was on Foundation Island (Rkm 518 in McNary Pool), where 308 pairs nested in 2010. Sampling during 2005-2010 indicated that ca. 50% (by mass) of the Foundation Island cormorant diet was juvenile salmonids during May (the peak of smolt out-migration), while less than 10% of the diet was salmonids in early April, June, and July.

In total, 38,913 PIT tags from 2010 migration year smolts were deposited on bird colonies in the Columbia Plateau. PIT tag recoveries indicated that smolt losses in 2010 were similar for Foundation

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Island cormorants (8,481 tags) and Crescent Island terns (8,255 tags). Substantial numbers of smolt PIT tags were also detected on the Caspian tern colony on Goose Island in Potholes Reservoir (8,512 tags) and on a mixed California and ring-billed gull colony on Miller Rocks (Rkm 333 in The Dalles Pool; 5,045 tags). PIT tags recovered from the Caspian tern colony in Potholes Reservoir were almost exclusively from upper Columbia River salmonid ESUs, while PIT tags recovered on other bird colonies in the Plateau consisted of smolts from the upper Columbia, Snake, and middle Columbia ESUs. Preliminary results indicate that Caspian terns from the Goose Island colony in Potholes Reservoir consumed 10.3% (95% C.I. = 8.9 to 12.1%) of the juvenile steelhead PIT-tagged and released at Rock Island Dam in 2010.

Evaluation of Pinniped Predation on Adult Salmonids and Other Fish in the Bonneville Dam Tailrace, 2008-2010

Robert J. Stansell[1], Sean C. Tackley[2], Karrie M. Gibbons[1]

Abstract

Background

The USACE conducted surface observations to evaluate the seasonal presence, abundance, and predation activities of pinnipeds, including California sea lions (CSL) Zalophus californianus, Steller's sea lions (SSL)Eumetopias jubatus, and harbor seals Phoca vitulina in the Bonneville Dam tailrace each year since 2002.

Methods

Observers stationed at each of the three major tailrace areas of the dam (Powerhouse 1, Powerhouse 2, and the spillway) recorded pinniped presence, recorded and identified fish catches, and identified individual CSL when possible. Predation estimates were expanded for time not observed. Individual identification was used to generate abundance estimates and to track individual predation and use patterns, both within and among years. Observations generally began in early January and continued through the last week of May.

Results

An estimated 4,466 adult Chinook salmon (Oncorhynchus tshawytscha) and steelhead (O. mykiss) (2.9% of the run) were consumed by pinnipeds in the tailrace of Bonneville Dam during the 2008 1 January to 31 May period. An estimated 4,489 adult salmonids (2.4% of the run) were consumed in 2009, and an estimated 6,081 adult salmonids (2.2% of the run) were consumed in 2010. Pacific lamprey (Lampetra tridentata) comprised 1.4% of the total observed catch from 2008 to 2010, although lamprey catch is probably underestimated. SSL predation on White sturgeon (Acipenser transmontanus), has increased every year since 2006, averaging 2.5% of observed catch before 2008 and 16.0% the last three years. The estimated sturgeon catch increased each year from 315 in 2006 to 1,879 in 2010, so there is growing concern about the potential impacts of SSL on sturgeon at Bonneville Dam. SSL have also increased their consumption of salmonids. They averaged an estimated 19.7 salmonids per year between 2002 and 2007, but averaged an estimated 545.7 salmonids per year between 2008 and 2010.

The number of individual sea lions observed at Bonneville Dam has increased from an average of 83.0 per year between 2002 and 2007 to 123.7 per year for the last three years. This is primarily due to an increase in the presence of SSL (averaging 5.0 per year before 2008 and 46.7 from 2008 to 2010). The number of CSL dropped from 82 in 2008 to 54 in 2009, and rose in 2010 to 89. Overall they averaged 76.2 per year before 2008 and 75.0 the last three years. The highest number of individual pinnipeds observed at the project on any one day increased every year except 2009, with a maximum daily count of 69 in 2010. However, the highest number of CSL seen dropped every year since the peak of 52 in 2007 to 26 the past two years.

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The Corps and other federal, state, and tribal agencies implemented a variety of sea lion deterrents at Bonneville Dam from 2008 to 2010. Sea lion exclusion devices (SLEDs) installed at all primary fishway entrances, and floating orifice gate (FOG) barriers continue to be effective in preventing sea lions from entering fishways. Harassment efforts continued each year both from land and boats and continue to show limited local, short term benefits in chasing some sea lions away from fishways and tailrace areas. Acoustic deterrents have shown no impact on the presence of sea lions near the fishway entrances. In 2008, ODFW and WDFW began to capture and permanently remove specific returning CSL at Bonneville Dam. Over the past three years 40 known Bonneville CSL were removed. This is likely the cause of the decline in CSL mean daily presence and maximum numbers seen on any given day, as most of the removed individuals had returned many years and remained at Bonneville Dam for long periods of time.

[1] US Army Corps of Engineers, Portland District, Fisheries Field Unit
[2] US Army Corps of Engineers, Portland District, Environmental Branch

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E. Bldg 1
Seattle. WA 98115

September 3, 2010

Dear Task Force Member:

Thank you for your continuing participation on the Pinniped-Fishery Interaction Task Force for the California sea lion/salmonid conflict at the Bonneville Dam. We look forward to seeing you again at our meetings in Portland on October 25-26 and November 9-10, 2010. We appreciate your thoughtful service and dedication to a productive dialogue on this difficult and emotional wildlife management matter.

The National Marine Fisheries Service (NMFS) is reconvening the Task Force following the third field season of sea lion removals as recommended in the 2007 Task Force report and in accordance with our March 17, 2008, Letter of Authorization to the States of Idaho, Oregon, and Washington, under Section 120(c)(5) of the Marine Mammal Protection Act (MMPA). The purpose of the Task Force, at this time, is to evaluate the effectiveness of the actions taken to reduce California sea lion impacts to listed salmonids and if necessary provide recommendations for different or additional actions. NMFS will consider the available data and any additional recommendations from the Task Force to determine how to proceed. Until or unless we make a change to the current program, the States' authorization remains valid until June 30, 2012.

As you know, we have again engaged DS Consulting (owner Donna Silverberg) to facilitate and manage the Task Force meetings. I understand that DS Consulting has contacted each of you to ask for your help in identifying what information you believe will be useful to the Task Force's evaluation. NMFS is compiling the available information in preparation for the Task Force discussions. Please contact DS Consulting or my project staff lead, Garth Griffin, if you have any further thoughts on information that will be of use to the Task Force.

Prior to the meetings in October, we will provide further instructions regarding your responsibilities for the evaluation process as outlined in Section 120(c)(5) of the MMPA. We will also ask you to consider several questions to help us with our review of the program to date and in weighing future recommendations of the Task Force. For example, your 2007 recommendations included adaptive management of non-lethal hazing efforts and an interim goal for removal activities to reduce California sea lion predation to a 3-year average of 1 percent (of adult salmonids) within 6 years. These recommendations were incorporated into the NMFS' decision to partially approve the States' application for lethal removal. We would appreciate a Task Force assessment of whether the interim goal appears to meet the expectations of the group as a measure of the removal efforts, based on the first three years of data.

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As mandated by Section 120 the upcoming Task Force meetings will be open to the public and notice of the meetings, with supplemental information, will be announced to the public on our Northwest Region website and through a media advisory. We intend to provide time at the beginning of the second day of the meetings to allow the public to provide or identify new or relevant information to the Task Force to aid its deliberations. The public will not be allowed to discuss or debate issues with the Task Force during working sessions.

Thank you again for your attentive and professional assistance. Your contribution to this effort has greatly improved NMFS' ability to manage a complex wildlife management program.

Sincerely,

William Stelle

William W. Stelle, Jr.
Regional Administrator

List of Task Force Members:

Daryl Boness (Marine Mammal Commission)

Bruce Buckmaster (Salmon for All)

Jody Calica (Warm Springs Tribes)

Joyce Casey (Corps of Engineers)

Bob Delong (National Marine Fisheries Service)

Patty Dornbusch (National Marine Fisheries Service)

Doug Hatch (Columbia River Inter-Tribal Fish Commission)

Tom Loughlin (Marine Mammal Scientist)

Deb Marriott (Lower Columbia River Estuary Partenership)

Barry McPherson (American Fisheries)

Guy Norman (Washington Department of Fish and Wildlife)

Joe Oatman (Nez Perce Tribes)

Dennis Richey (Oregon Anglers)

Carl Scheeler (Confederated Tribes of the Umatilla Indian Reservation)

David Shepherdson (Oregon Zoo)

Paul Ward (Yakama Tribes)

Steve Williams (Oregon Department of Fish and Wildlife)

Sharon Young (Humane Society)