

## CONSERVATION AND SCIENCE REPORT

Issue 1, 2016

By Bill Bakke

Native Fish Society

Founder & Director of Science and Conservation

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### Feared Atlantic Farm Salmon Virus Identified in British Columbia

Jan 7th, 2016

**(BRITISH COLUMBIA, January 7, 2016)** A scientific paper released on January 6, provides the first published evidence that a European variant of infectious salmon anaemia virus (ISAV) is present in British Columbia, Canada. The study, [Discovery of variant infectious salmon anaemia virus \(ISAV\) of European genotype in British Columbia, Canada](#), tested over 1,000 farmed and wild fish. European ISAV is the most feared salmon virus in the salmon farming industry.

When ISAV spread to Chile in Atlantic salmon eggs, there was no response to contain it. In 2007, it spread rapidly, causing \$2 billion in damages and outbreaks continue.

Unlike Chile, BC has wild salmon that contribute billions of dollars to the economy through tourism, commercial and sports fishing. The risk of an outbreak has the potential for severe consequences in BC, the Northwestern United States and Alaska.

"I have been following this work for many years. ISA virus is a serious matter," says Dr. Daniel Pauly, one of the world's leading fisheries scientists, based at the University of British Columbia (UBC). "A member of the influenza family in open ocean feedlots is a risk Canada should not be taking on the west coast."

The researchers were not allowed access to Atlantic salmon from farms for testing and so all farmed salmon samples came from markets in British Columbia. Detection of the ISA virus was three-fold greater in farmed than wild salmon, but European ISA virus genetic sequence was detected in 72% of the cutthroat trout that reside in **Cultus Lake**, home to Canada's most endangered Fraser River sockeye salmon population. Government attempts to restore Cultus Lake sockeye through fishing bans, enhancement and habitat restoration have been unsuccessful.

This raises the questions: Is ISA virus impacting Cultus sockeye and other BC wild salmon populations? And at what cost to Canadians?

"The potential that viruses such as ISAV are contributing to widespread decline in sockeye salmon populations cannot be taken lightly," states co-author Dr. Rick Routledge. "The findings in this paper should lead to development of more sensitive screening for this specific virus. This opportunity needs to be pursued with vigour."

The study also found evidence of ISA virus in sea lice.

"Finding ISA virus genetic material in a sea louse from a heavily salmon farmed region, the Discovery Islands, significantly elevates my concern that the pathogen release from the open net farming industry is far more serious than anyone knew," says Dr. Craig Orr, Conservation Advisor for Watershed Watch.

"This was a difficult strain of ISAV to detect, because of a small mutation," says co-author Alexandra Morton. "It is easy to see how it was missed, but we have cracked its code. It is critical that we learn from what happened to Chile. In my view, this work gives BC and our US neighbours the opportunity to avoid tragic consequences."

A lawsuit has been filed in the US against the US Environmental Protection Agency for allowing wild salmon to be put at risk from farmed salmon diseases.

The Virology Journal is a peer-reviewed scientific publication from BioMed Central, a leading academic open access publisher in the areas of biology, medicine and health. BioMed Central is part of global publishing house Springer Nature.



## **Wild Fish Conservancy files notice of intent to sue NMFS & DOC for ESA violations associated with Mitchell Act funded Columbia River hatcheries**

**Wednesday, January 13, 2016-** Today, Wild Fish Conservancy issued a 60-day Notice of Intent to sue the National Marine Fisheries Service (NMFS) and the United States Department of Commerce (DOC) for funding hatchery programs throughout the Columbia River Basin under the Mitchell Act without complying with section 7 of the Endangered Species Act (ESA). These programs adversely affect five distinct population segments (subspecies) of Chinook salmon and steelhead listed under the ESA, as well as threatened or endangered coho, chum, and sockeye salmon and bull trout, along with their critical habitat.

Federal agencies are obligated under section 7 of the ESA to “insure that any action authorized, funded, or carried out by such agency...is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of” habitat that has been designated as critical for such species.” In order to satisfy this requirement, federal agencies planning to fund or undertake an action that “may affect” ESA-listed species or their critical habitat are required to immediately consult with NMFS and/or the United States Fish and Wildlife Service (FWS) to quantify the effects of the proposed action and their likely adverse impact on the listed species and their critical habitat. Such consultation concludes with NMFS’ and/or FWS’ issuance of a biological opinion determining whether the action is likely to jeopardize ESA-protected species or result in adverse modification of critical habitat.

Congress enacted the Mitchell Act in 1938, in an effort to mitigate adverse effects to salmonids in the Columbia River Basin resulting from the construction of dams, water diversions, logging, and pollution. NMFS distributes funds appropriated under the Mitchell Act that Congress has allocated to hatchery programs. Mitchell Act funding of 62 hatchery programs in the Columbia River Basin ranged from \$12 to \$22 million per year between 2003 and 2012.

Since 1999, NMFS has failed to initiate or reinstate consultation for nearly all 62 programs. Consultations prior to 1999 are outdated, as several salmon and steelhead population units in the Columbia Basin have since been listed under the ESA and considerable new scientific information regarding the adverse effects of hatchery salmon on wild, ESA-listed, salmon has become available. Both new listings and new scientific information required that previous consultations be re-initiated immediately.

The hatchery programs funded by NMFS under the Mitchell Act adversely affect the ESA-listed species and their critical habitats through a variety of mechanisms, including facility effects, fish removal activities, genetic and ecological interactions, harvest, and monitoring and evaluation. DOC and NMFS are therefore required to consult with NMFS and the US Fish and Wildlife Service (FWS) on these effects under section 7(a)(2) of the ESA. DOC and NMFS have failed to initiate or reinstate consultation and are in direct violation of the ESA for failing to do so.

***“These programs discharge over sixty million hatchery fish into the Columbia River Basin every year, knowingly causing harm to threatened and endangered salmon, steelhead, and bull trout, “said Kurt Beardslee, executive director of Wild Fish Conservancy. “It’s ironic that NMFS is required by law to consult with themselves yet they continue to fund programs that they themselves have identified as contributing to the decline of the very same listed fish they’re charged with protecting. It’s been 17 years; NMFS needs to step up, initiate consultation, and put the needed solutions in place. We are investing millions of state and federal dollars every year on salmon recovery, and at the same time spending millions of public dollars on hatchery programs that are compromising that investment.”***

The groups are represented by Kampmeier & Knutsen, PLLC of Portland, OR and Seattle, WA, and the Law office of David H. Becker, LLC, of Portland, OR.



**Fish Commission of Oregon  
Research Briefs  
Number One, Volume One  
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**FOREWORD**

These short reports are intended to inform the public, industry, and other interested parties of the current studies of the Commission's staff and the basis for conservation measures. Reports will be published from time to time when studies are sufficiently complete to provide reliable biological evidence for conclusions upon which regulations are based. Research Briefs are free and may be obtained upon request from the Fish Commission office.

Arnie J. Suomela,  
Master Fish Warden

Fish Commission of Oregon  
John C. Veatch, Chairman  
Robert L. Jones  
Earl H. Hill

**Spring Chinook in Coastal Streams of Oregon**

Although spring chinook normally migrate into the snow-fed streams arising in the Cascades and Rockies, there to spend the summer in large deep pools before spawning, evidence is accumulating that there were substantial natural runs in virtually all of the streams rising in the rain-soaked coast range in earlier years. Vestiges of these runs are known to be still present in the Nehalem, Wilson, and Alsea Rivers, and they may exist in others. A number of these fine fish were actually checked on the spawning grounds by Messrs. Gharrett and Hodges in the late summer of **1947**. In order to protect and build up the runs the Oregon Game Commission and Fish Commission have sharply restricted the sport and commercial fisheries. It is hoped that the runs can be built up to the point where they can support a perpetual fishery.

**Large Chinooks Found in Nestucca River**

A few fish from what appears to be one of the largest races of chinook salmon found in Oregon have been examined on Nestucca River spawning grounds by biologists of the Coastal Stream Investigations. Eleven spent females found along one of the tributaries averaged **38** inches and six males averaged **43** inches length (from tip of nose to fork-of tall). The weights were not checked, but they would probably average about thirty pounds which is roughly twice as heavy as Willamette River spring Chinooks.

**SIZE OF THE WILLAMETTE RIVER SPRING CHINOOK SALMON RUN  
1947**

**Introduction**

Except for the spring runs, the populations of salmon that once frequented the Willamette River have largely been eliminated by pollution and only the spring chinook salmon and steelhead trout now exist in substantial numbers. Of the two species the spring chinook is by far the more important. It contributes to the ocean troll fishery and the Columbia River commercial fishery (to a small extent) and maintains the large Willamette sport fishery. In the last decade the numbers of this fine fish have diminished rapidly, and so the Oregon Fish Commission, which is responsible for the conservation of the salmon resources in Oregon, has initiated a study program designed to expose the causes of the decline with the purpose of improving conditions and increasing the runs. Ascertaining the size of the run is a part of that program.

Until 1946 the escapement of migrating salmon into the upper Willamette River was unknown. Counting of fish moving through the fishway at Oregon City Falls was possible, however, and so in that year the first of such counts was made. All

of the spring chinook salmon escaping into the Willamette's tributaries pass over Oregon City Falls except a small number that enter the Clackamas River, a lower tributary. Consequently the escapement over the falls is of great importance.

Oregon City Falls has always been a partial barrier to migrating salmon and is situated about twenty miles above the mouth of the Willamette River. With the industrial development of the Willamette Valley, paper mills were erected at the Falls and the level of the water above the falls was raised several feet to provide additional power. Consequently a fishway became necessary, and one was constructed some years ago.

### **Procedure**

Counting of migrating salmon was continued in 1947. Men were hired to count fish from 7:00 A.M., to 8:00 P.M., of each day. At the end of each twenty-five minute period, enumeration was suspended for five minutes in order for the checkers to rest their eyes and record the count. (Corrections for this gap in count were made by assuming the same rate of migration as for the previous counting period). Polaroid glasses were provided to increase accuracy, and small houses were erected to shelter the counters.

The fish were counted as they passed from one pool to the one above. Some chinooks apparently migrate over the falls before the river level drops enough to count fish. Consequently it has been necessary to partially estimate the total numbers of salmon moving over the ladder early in the season.

In 1947 chinooks were first seen and counted by means of a field glass on April 14, and it is thought that the run began shortly before that time. The run until April 24 is estimated on the basis of observations from vantage points on shore. Subsequently the fishway could be reached and direct counts were begun. Spot counts lasting from 15 minutes to two hours were made until May 3 when sustained counts from noon to 8 :00 P.M., were initiated. Five days later, morning counts were added. Day-long observations were continued until June 9 when high water interrupted operations. Some fish were seen on June 16, but none after that time.

Actual computations involved two steps when "spot" counts were made. These counts were first converted to an estimate of the migration during the regular counting hours (based on the day-long counts in May). Then the movement of fish during the night was estimated.

The night migration was particularly important, and, therefore, night- long counts were made on four different occasions. These revealed that following the afternoon peak the rate of migration fell off rather rapidly to a low level lasting throughout most of the night. It was likewise found that the magnitude of the migrations bore a fairly constant relationship to those of the previous afternoon. Furthermore the fish ladder was normally almost devoid of fish at dawn, indicating that the fish present the previous evening had provided the bulk of the night movement and few fish had entered the fishway during the hours of darkness. Consequently, night counts and those of the previous afternoon (12:00-8:00 P.M.) were related on a percentage basis.

### **Results**

The escapement over Oregon City Falls in 1947 was approximately 45,000 spring chinook salmon. The migration began about April 11 and continued through June 16. The peak of the movement occurred about May 3-4-5, and on May 25.

### **Discussion**

A study of the sport fishery in 1947 (unpublished MS. Oregon Fish Comm., Oregon Game Comm.) revealed that the peak catches of chinook salmon taken between Portland and Oregon City Falls were made about April 13-19, with but few fish taken after May 10. At the Falls, however, the peak movement was about May 4. This may mean that the salmon were delayed two or three weeks in passing the Falls.

The late peak in migration is also interesting. By late May the flow in the Willamette had decreased to such an extent that virtually all of the water in the river flowed through the mills and power plants. As a result an accumulation of salmon was apparent in the water emanating from these plants and few fish were finding the fishways. Consequently, on May 25 the use of water by the mills was suspended for several hours and a very heavy movement of salmon resulted on that and the succeeding day (Fig 1). Many of these fish had turned dark in color, and it is entirely possible that some of these fish had been delayed at the Falls at least a month. The smaller peaks of migration are also of interest. Examination of Figure 1, with regard to May migrations shows that except for May 4, which was overshadowed by the previous day, slight peaks of migration occurred on all Sundays. Other peaks also occurred, but the general increase on Sundays possibly means that the rate of migration is affected by slight fluctuations in industrial use of water.

The migration of 1946 has been variously estimated at from 50,000 to 55,000 spring chinook salmon. Use of correction factors for night migration obtained in 1947 indicates a run of about 53,000 fish. This is considerably larger than that of 1947 when the run was about 45,000 fish.

The sport catch in 1947 was about 12,000 fish and the run to the Clackamas River, which is the only major tributary entering the Willamette below Oregon City Falls, may be tentatively estimated at 2,000 fish. Thus about 12,000 of a run of 59,000 salmon or about one in five was taken by the sport fishery in the Willamette River below Oregon City Falls during the past season. In most areas an escapement of four fish in five is considered excellent or even excessive. However, Willamette fish are taken in the Columbia River, at sea and on the various spawning grounds, and the proportion escaping is somewhat less than four fish out of five. Where other factors in the rivers, such as pollution, diversions and artificial and natural barriers affect the survival of adult and young salmon, it may be necessary for a much larger escapement in order to preserve the runs.

Steps are being taken to improve conditions for salmon in the Willamette River, and it is essential to arrest the apparent recent decline in abundance. Industrial developments will continue to menace the salmon to a greater or less extent for some time. Therefore, although a catch of one fish in five (or even one in four) is usually believed to provide more than adequate escapement, the catch may actually be excessive on the Willamette River at the present time.

Donald R. Johnson  
Aquatic Biologist  
Fish Commission of Oregon

## **THE WINTER STEELHEAD RUN OF THE UMPQUA RIVER 1946-1947.**

### **Introduction**

In the fall of **1946** a cooperative investigation, encompassing all of the runs of fishes into the Umpqua River was inaugurated by the Fish Commission of Oregon and the Oregon Game Commission. This study was undertaken in order to determine the condition of each run and to determine what steps are necessary to obtain a maximum sustained yield of each species. The results of the study of the **1946-47** winter steelhead run are presented in this report.

The Umpqua River supports both a summer and a winter run of steelhead trout. For the purpose of this analysis October 1 has been somewhat arbitrarily selected as the end of the summer run and the beginning of the winter run. There is an apparent overlapping during the latter part of September and possibly the first part of October but, during that period, it is difficult to make exact distinction between the two races. However, the numbers of steelhead present in the river below the spawning grounds at that time are so few that any error resulting from the use of October 1 for the division of the two runs is negligible.

### **Commercial Catch**

Starting in **1937**, the date for that termination of the river gillnet fishery was set back to November 15 from December 5. This eliminated for all practical purposes the commercial fishery which had previously existed for winter steelhead. Since that time the commercial steelhead catch has consisted only of those fish caught incidentally in the silver salmon fishery. Table 1 shows the magnitude of the catch for **1937** and succeeding years. These catches include fish from the Umpqua River and from Smith River, a large tributary of the estuary of the Umpqua.

TABLE 1

## COMMERCIAL STEELHEAD CATCH IN POUNDS

Year	October	November	Total
1937	---	28	28
1938	1432	14464	15896
1939	138	774	912
1940	208	8891	9099
1941	9	-----	9
1942	-----	1574	1574
1943	272	381	653
1944	752	3077	3829
1945	498	3722	4220
1946	1012	10631	11643

**Winchester Dam Counts**

In 1945 the Oregon Game Commission installed a counting station at the fish ladder over Winchester Dam on the North Umpqua River. This dam is about 100 miles from the mouth of the Umpqua River. The counting station was put into operation on December 4. From then until the end of the 1945-46 steelhead run, a total of 6,128 fish were counted through the station. The run ended about May 20 1946. Very high water caused the suspension of counting operations for about two weeks during that period, and a few steelhead were observed passing over the dam without having been tallied during that time.

The total 1946-47 steelhead run into the North Umpqua was counted and found to consist of 11,211 fish. From December 4, 1946, to May 20, 1947, 10,802 fish crossed the counting board. This is 1.76 times as many as was tallied during the same period the previous year.

The passage of some fish over the Winchester Dam at the highwater period when counting was discontinued during the 1945-46 run would cause this ratio to be higher than that between the actual sizes of the two runs.

For these two years, it appears that complete counts at the counting station would have shown about the same ratio as that obtained by using the adjusted commercial steelhead landings from the Umpqua and Smith Rivers as measures of the relative abundance of the two runs.

**Sport Catch**

The sport fishery for steelheads in the Umpqua River extends from the head of tidewater to the upper reaches of the river. An intensive creel census was undertaken to determine the sport catch during the 1946-47 winter steelhead season. For geographical reasons the river was divided into two sections for this census. The town of Elkton, about fifty miles above the mouth of the river was selected as the dividing point. The catch and effort expended in the sport fishery was estimated as shown in Table 3.

**Number of fish: 4,100**

**Estimate of Run Size based on tagging**

The ratio of tagged to untagged fish observed at the counting station was 1 to 747. By applying this ratio to the 55 fish tagged, an estimated population of 41,000 fish, passing the tagging location on the lower river, is obtained. The error of this estimate based on this small number of tagged fish may be considerable. However, it is felt that it at least indicates the magnitude of the run. With a known 11,211 fish going up the North Umpqua, it is not improbable from observations made in other tributaries of the river that another 30,000 fish spawned in the three other large tributaries (the South Umpqua, Calapooya Creek, and Elk Creek) and in the innumerable smaller tributaries.

With a total commercial catch of 1,244 fish and an estimated sport catch of 4,100 fish, the escapement of the 1946-47 Umpqua River winter steelhead run was approximately 88 percent. Had there been as many boats gillnetting in 1946 as there were in 1938 the escapement would have been reduced to about 85 percent.

### **SMITH RIVER**

Smith River, a tributary flowing into the lower Umpqua River near Reedsport, supports a large run of winter steelhead. There were no counts or estimates made of the size of this population. The incidental commercial catch of steelhead from the 1946-47 run in this river was 66 fish. The sport fishery which operated from the head of Tidewater to Smith River Falls took an estimated 350 fish.

The biologists, after observing the previous year's run in Smith River, had recommended that further utilization be made of this steelhead population. Following these recommendations, the Game Commission, in order to increase the angling intensity, opened an additional five miles of the river to a point just below Smith River Falls to steelhead angling. Also, an egg taking station was established at the falls. These falls at present are practically an impassible barrier to migrating steelhead. All together 1,210 fish were handled during the egg-taking operations. Of these, about 315 were either released above the falls because they were too "green" for spawning operations -or escaped from the live boxes in which they were being held below the falls. Many steelhead in addition to the above 1,210 were observed congregated below the falls, but the total number could not be estimated. Apparently most of these dropped back downstream and went up Buck Creek, a tributary to Smith River about **300** yards below. Large numbers of steelhead also entered other tributaries of Smith River below the falls such as the North Fork, Wassen Creek and Spencer Creek.

The catch of the sport and commercial fisheries was only a small portion of the total run, and even with the additional removal of fish in the egg taking operations, the escapement of the **1946-47** steelhead run in Smith River was apparently very large.

### **Discussion**

The size of the winter steelhead runs, although fluctuating to a great extent in earlier years, appears to be increasing. This increase is especially noticeable in the last three years.

The measure of abundance used is only a rough one which may in part account for the apparent fluctuations. However, it no doubt reflects the trend in the size of the runs.

The escapement to the spawning grounds is large. In fact, many tributaries of the Umpqua and Smith River estuaries support relatively large populations of steelheads which are exposed only to the limited incidental commercial fishery and no sport fishery. These populations, and very likely the entire steelhead population of the Umpqua and Smith Rivers, can withstand a heavier fishing mortality.

John T. Gharrett  
Asst. Director Research  
Fish Commission of Oregon



## **Regional Decline in Pink and Chum Salmon**

**Malick, Michael J., Sean P. Cox. 2016. Regional-Scale Declines in Productivity of Pink and Chum Salmon Stocks in Western North America. PLOS ONE | DOI:10.1371/journal.pone.0146009**

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Sockeye salmon (*Oncorhynchus nerka*) stocks throughout the southern part of their North American range have experienced declines in productivity over the past two decades.

In this study, we tested the hypothesis that pink (*O. gorbuscha*) and chum (*O. keta*) salmon stocks have also experienced recent declines in productivity by investigating temporal and spatial trends in productivity of 99 wild North American pink and chum salmon stocks.

We used a combination of population dynamics and time series models to quantify individual stock trends as well as common temporal trends in pink and chum salmon productivity across local, regional, and continental spatial scales.

Our results indicated widespread declines in productivity of wild chum salmon stocks throughout Washington (WA) and British Columbia (BC) with 81% of stocks showing recent declines in productivity, although the exact form of the trends varied among regions.

For pink salmon, the majority of stocks in WA and BC (65%) did not have strong temporal trends in productivity; however, all stocks that did have trends in productivity showed declining productivity since at least brood year 1996. We found weaker evidence of widespread declines in productivity for Alaska pink and chum salmon, with some regions and stocks showing declines in productivity (e.g., Kodiak chum salmon stocks) and others showing increases (e.g., Alaska Peninsula pink salmon stocks). We also found strong positive covariation between stock productivity series at the regional spatial scale for both pink and chum salmon, along with evidence that this regional scale positive covariation has become stronger since the early 1990s in WA and BC.

In general, our results suggest that common processes operating at the regional or multi-regional spatial scales drive productivity of pink and chum salmon stocks in western North America and that the effects of these process on productivity may change over time.



## Molalla and Chetco Rivers Designated Scenic Rivers

January 27, 2016

Today Gov. Kate Brown signed an executive order declaring a stretch of the upper Molalla River an Oregon Scenic Waterway! This is a great accomplishment for everyone who participated in the long process leading up to the governor's action. Party planning begins at once!

Statement by John Atkins, President, Molalla River Alliance:

"We're delighted the governor has declared the upper Molalla River an Oregon Scenic Waterway. The Molalla River Alliance and its affiliates have been looking forward to this moment for more than a year. In our eyes, the process leading up to the governor's declaration could not have been more open and inclusive—from the careful research carried out by professional staff from the Oregon Parks and Recreation Department, to the extensive public outreach, to the involvement of a citizens advisory committee representing key stakeholders in developing a management plan for the Molalla Scenic waterway. It couldn't have gone any better. It's our hope that the work that went into achieving this declaration—the first such action in more than 25 years—will serve as a model for designating other deserving Oregon Rivers as official scenic waterways in the years to come."

### **Governor Brown Announces Two New State Scenic Waterways January 27, 2016**

*First designation of a State Scenic Waterway since 1988*

Salem, OR—Governor Kate Brown today announced the naming of two new State Scenic Waterways. Portions of the Chetco and Molalla Rivers were chosen as rivers that meet the Scenic Waterways Act criteria for outstanding scenic, fish, wildlife, geological, botanical, cultural, and outdoor recreation opportunities.

"Oregon is blessed with a diversity of river systems that richly contribute to our quality of life, and Oregonians value our rivers' importance to our economies, communities, and ecosystems," said Governor Brown. "Stewardship of our rivers is increasingly important as our population grows and our climate changes."

Oregonians voted to establish the Oregon Scenic Waterways Act in 1970 to protect the free-flowing character of designated rivers for fish, wildlife and recreation; protect and enhance scenic, cultural, and natural values; and establish a process and criteria for adding new rivers as scenic waterways. There are 1,150 miles of state scenic waterways on 19 rivers and Waldo Lake. No new scenic waterway has been designated since 1988.

The Oregon State Parks and Recreation Commission recommended the Governor's scenic waterways designation of



sections of the Chetco River and Molalla River, and adjacent land within a quarter mile of these river sections. The Oregon Water Resources Commission agreed, and approved scenic waterway flow levels in these river sections to protect recreation, fish and wildlife.

(Note: As John DeVoe, executive director for Water Watch said to Jim Myron: “There should be a damn parade for you Jim for the Chetco and Mollala scenic waterway designations. Thank you for your work on that issue over the years. Those designations would not have happened without you.”) I agree. BMB)



## Comments on Proposed Recovery Plan for Oregon Coast Coho Salmon

The Native Fish Society appreciates the opportunity to provide comments on the National Marine Fisheries Service’s Draft Endangered Species Act (ESA) Recovery Plan for Oregon Coast Coho Salmon.

Pacific salmonids, including the Oregon Coast coho salmon (*Oncorhynchus kisutch*) are composed of locally adapting populations to their natal rivers. In framing a Recovery Plan and future Management Plan, National Marine Fisheries Service (NMFS) should specifically address this fundamental organization of a biological species, such as the case with Oregon Coast coho salmon. A plan based on this foundation requires that each river and its native wild salmonid populations are managed as a distinct breeding and rearing environment and river specific management would replace aggregate harvest management while preventing the transfer of fish and eggs among rivers. To accomplish this, river specific management would be based on an estimate of productive capacity, egg deposition criteria, and nutrient enrichment targets from naturally spawning wild salmonids. Management success would rely on measurable quantitative criteria rather than vague qualitative goals.

This Draft Recovery Plan, however, does not manage for Oregon Coast coho salmon based on the fundamental needs of the species as locally adapted populations. The Native Fish Society is concerned that the current Draft Recovery Plan would likely not prevent the further depletion of the population, nor result in recovery of the species that could lead to a delisting status. At its core, this Draft Recovery Plan lacks objective quantitative and river specific management actions that can be used to inform fisheries, land and water managers on actions to be taken that will lead to the recovery of the Oregon Coast coho salmon.

Pacific salmonids are place-based wild animals. In order to reverse their decline, as evident in the Oregon Coast coho salmon’s current listing status as *threatened* under the ESA, there must be a change in the management structure. Sustaining the natural population must become the primary purpose, while harvest and artificial propagation should be defined by natural population management objectives. Habitat must be managed to provide the ecological requirements of the natural population so that their full life history diversity can be expressed. A departure from historic management priorities is necessary because the past management structure has failed to sustain natural production of locally adapting wild native salmonids. It is because of this management failure that wild coho salmon were provided protection under the Endangered Species Act in the first place.

Restoring the full life history diversity of Oregon Coast coho salmon, minimizing hatchery impacts and limiting harvest is absolutely critical to the long-term survival of the species. A final Recovery Plan that does not take these fundamental biological requirements into account could jeopardize the already imperiled species. We ask that you consider these recommendations and incorporate this information when finalizing the Recovery Plan for Oregon Coast coho salmon.

Finally, we would like to state for the record that in addition to the comments submitted below, we are also strongly in support of the comments submitted by Wayne Hoffman from the Mid Coast Watershed Council, and those submitted by Paul Kampmeier on behalf of the Center for Biological Diversity, Northwest Environmental Advocates, Oregon Wild, and WildEarth Guardians.

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