

Agenda Item Summary

BACKGROUND

Over the past 25 years the Oregon Department of Fish and Wildlife (Department) and its cooperators (Washington Department of Fish and Wildlife, U.S. Geological Survey, Columbia River Inter-tribal Fish Commission, and the National Oceanic and Atmospheric Administration) have monitored the status of and conducted research to determine factors affecting the productivity of white sturgeon in the lower and mid Columbia and lower Snake rivers. Based on this work, staff has determined that the lower Columbia River population segment is not at a conservation risk, although it is currently less abundant than it has been over the last 10-15 years, and as such can not currently support the levels of commercial and recreational harvest that have occurred in the past.

The recent trend in the abundance of white sturgeon in the lower Columbia River has raised concerns about the long-term health of the population segment. Threats to white sturgeon populations in the Columbia Basin are numerous and include sea lion predation, altered seasonal river discharge and thermal regimes, loss of suitable habitat for spawning and rearing, habitat fragmentation, restricted passage at dams, and contaminants. These factors combined with the species longevity and delayed maturation (up to 25 years) make white sturgeon slow to recover from low population abundances and vulnerable to reduced recruitment and over-harvest.

Because white sturgeon is an iconic species in the Pacific Northwest and its population segment in the lower Columbia River has historically supported important and high-profile commercial and recreational fisheries, it is a conservation priority for the State of Oregon.

Department staff has been working with the Washington Department of Fish and Wildlife, regional white sturgeon experts, stakeholders and the public to develop a conservation plan under the Native Fish Conservation Policy. A draft of the plan for the population segment downstream from Bonneville Dam is complete and is currently under review by the Independent Multidisciplinary Science Team. The plan provides a framework to manage and conserve the species ensuring a healthy, viable and productive population into the future while providing sustainable harvest opportunities and other ecological and societal benefits. It synthesizes pertinent white sturgeon information from current monitoring efforts and available scientific literature. It is also consistent with the Oregon Plan for Salmon and Watersheds, and the Lower Columbia River Conservation and Recovery Plan. The major elements of the plan are described below in the form of six

key questions under the “Issue” section.

**PUBLIC
INVOLVEMENT**

- Nine meetings of the White Sturgeon Technical Advisory Committee: November 24, 2008 to April 8, 2010.
- Four meetings of the Columbia River Recreational Fisheries Advisory Group: June 9, October 26, and December 16, 2010 and January 11, 2011.
- Meeting with the Washington Department of Fish and Wildlife and Washington charter boat fishers: September 21, 2010.
- Four meetings with the Columbia River Commercial Fisheries Advisory Group: October 26 and December 16, 2010 and January 11 and May 3, 2011.
- Five meetings with the Columbia River White Sturgeon Conservation Plan Stakeholder Group: December 1 and December 14, 2010 and January 4, January 24, and February 22, 2011.
- Four public meetings: December 6, 7, 8 and 9, 2010.
- Meeting with Salmon for All: December 14, 2010.
- Meeting with the Northwest Sportfishing Industry Association: December 15, 2010.
- Meeting with the Northwest Guides: January 20, 2011.

ISSUE

Provide Direction on the *Lower Columbia River White Sturgeon Conservation Plan – Public Review Draft*

ANALYSIS

The *Lower Columbia River White Sturgeon Conservation Plan* is intended to attain a healthy and harvestable state and avoid serious depletion of the population segment by establishing benchmarks for measurable biological attributes that correspond to a desired status and a conservation status. These attributes are defined for various life stages of white sturgeon.

The primary biological attributes are:

1. Abundance: number of individuals at each life stage.
2. Distribution: where and when individuals at various life stages are found throughout their historic range.
3. Diversity: the level of genetic variation within the population segment and how that variation is expressed throughout the life history.

4. Productivity: how well the population segment is able to sustain and/or increase its abundance over time.
5. Habitat: the quantity, quality and distribution of habitat types important to various life stages.
6. Persistence: the likelihood that the population segment will maintain its existence and remain viable over time.

In addition, the plan establishes benchmarks for a set of secondary biological attributes; growth, condition, and survival. While desired status will not be fully attained until all attributes meet or exceed the benchmarks, assessments of the status of the population segment at any given time will rely heavily on measures of abundance at various life-stages.

The plan addresses six key questions:

1. What do we consider to be a healthy and harvestable population (**Desired Status**)?
2. What do we consider thresholds at or below which the population is at some risk of extinction (**Conservation Status**)?
3. What is the current status relative to the conservation thresholds (**Current Status**)?
4. What are the key factors influencing the current population status (**Limiting Factors, Threats, and Constraints**)?
5. What can we do to address these factors in the near-term and in the long-term (**Recommended Management Actions**)?
6. How will we know whether we are making progress toward the desired status (**Action Effectiveness Standards and Research, Monitoring and Evaluation**)?

What follows is a brief summary of how the plan addresses each of these questions.

Desired Status

The plan describes “desired status” benchmarks for all the primary and secondary biological attributes. As described above measures of abundance at various life-stages will be the primary metric used to assess the status of the population segment at any given time. Therefore, the plan establishes benchmarks for the

abundance of adult and sub-adult white sturgeon and for the proportion of the population that is adult, sub-adult and juvenile. For adult and sub-adult white sturgeon, the plan establishes near- and long-term benchmarks. The benchmarks for adults are 9,250 in 3 years and 16,250 in 500 years. For sub-adults, the benchmarks are 257,000 in 3 years and 368,000 in 500 years. With respect to the proportion of the population that is adult, sub-adult and juvenile, the benchmarks are $\leq 1\%$ adults, $\sim 4\%$ sub-adults and $\geq 95\%$ juveniles.

Conservation Status

The abundance-based benchmarks for conservation status represent the abundance levels above which the risk of extinction for the population segment is $< 5\%$. Although total recruitment failures over a full sturgeon generation (25 years) are necessary to pose a significant risk of extinction, the benchmarks in the plan are more conservative and define significant risk as recruitment failure over a 5-year time frame. This approach assures adequate time for a management response.

The “conservation status” abundance benchmark for adults is 3,900. For sub-adults, the benchmark is 31,000. If the three-year running average for abundance of adults and sub-adults is equal to or less than these levels, the risk of extinction is $\geq 5\%$ and conservation actions are warranted to reverse the declining trend. With respect to the proportion of the population that is adult, sub-adult and juvenile, the plan establishes a “conservation status” benchmark only for juveniles because that most reliably indicates a conservation crisis. The benchmark for conservation purposes is $\leq 60\%$ juveniles, which indicates a population with productivity issues.

Current Status

The current abundance of adult and sub-adult white sturgeon in the Columbia River population segment downstream from Bonneville Dam is 11,000 adults and 89,000 sub-adults. The current abundance of adults exceeds the 3-year “desired status” benchmark of 9,250, but not the 500-year benchmark of 16,250. It is almost three times higher than the “conservation status” benchmark of 3,900.

In contrast to the adults, the current abundance of sub-adults is just over one-third of the 3-year “desired status” benchmark of 257,000 and about one-quarter of the 500-year benchmark of 368,000. However, it is almost three times greater than the “conservation status” benchmark of 31,000.

With respect to the proportion of the population that is adult, sub-adult and juvenile, the current population is comprised of approximately 91% juveniles, 8% sub-adults, and 1% adults, similar to the “desired status” benchmarks and well above the

“conservation status” benchmark.

Limiting Factors, Threats, and Constraints

Although the lower Columbia River white sturgeon population segment is healthy and not at risk, its primary biological attributes are less than the “desired status” thresholds. This indicates that critical constraints, limiting factors and threats exist that could compromise its long-term health and the level of harvest it can sustainably support.

Although the plan identifies a number of factors, threats and constraints that are influencing the status of this population segment, several are of particular concern. These include:

1. Pinniped predation. Between January of 2006 and May of 2010, Steller and California sea lion predation on white sturgeon in the vicinity of Bonneville Dam has increased from 442 in 2006 to 2,172 in 2010. Correspondingly, the average size of white sturgeon eaten by pinnipeds has declined, raising concerns about the status of larger, and more reproductively significant, size classes in the population. Predation may be reducing the productivity of the population segment by reducing the number of spawning fish and increasing the level of natural mortality.
2. Changes in the Columbia River hydrograph associated with the construction and operation of the Federal Columbia River Power System (FCRPS). The FCRPS has reduced spring freshets by more than 50% and increased winter flows by 30%. Large daily and hourly fluctuations in flows in the Bonneville Dam tailrace repeatedly dewater shallow-water habitats used by sturgeon to incubate their eggs and rear their young. These changes may be reducing the productivity of the population segment by reducing the amount of spawning and rearing habitat and, ultimately the annual recruitment of young.
3. Overharvest. Current assessments indicate that this population segment cannot persist if, over an extended period of time, the annual exploitation rate exceeds 29%. Since 1996, commercial and recreational fisheries have been managed to an annual exploitation rate of 22.5%, which was designed to allow the population to grow. However, increases in sea lion predation since 2000 have increased the natural mortality affecting the population segment. As a result, assessments indicate that to grow the population, the annual exploitation rate should be no more than 16%. Under the current joint state accord for managing this population segment, the exploitation rate in 2011 is expected to be around 22%, but is expected to drop

to about 16% in 2012 and 13% in 2013, as the number of sub-adult fish increase over the next couple of years.

Recommended Management Actions

The plan identifies a number of management actions that address key limiting factors and may significantly improve population status, including:

1. Pinniped management. Remove problem animals, disperse congregations in and near spawning areas and discourage predation throughout the lower Columbia and Willamette rivers.
2. Federal Columbia River Power System. Optimize the configuration and operations to best mimic a natural hydrograph and normative river conditions.
3. Harvest management. Monitor population status annually and adjust harvest guidelines as necessary to maintain exploitation rates at sustainable levels that permit population growth.
4. Water quality. Ensure that total dissolved gas, water temperature and other water quality parameters remain within tolerable levels for various life stages of sturgeon.
5. Law enforcement. Enhance and improve programs to increase compliance, reduce illegal take of sturgeon and protect habitat.
6. Habitat protection. Reduce the impacts of dredging and other in-water work on aquatic habitat and land-use practices on riparian habitat.

In addition, the plan identifies hatchery supplementation as a potential management action if the preponderance of evidence indicates that a persistent declining trend in recruitment exists and it is either causing serious depletion of the population segment or is preventing attainment of the desired status.

Action Effectiveness Standards and Research, Monitoring and Evaluation

Adaptive Management. Because of uncertainty in how various life stages of white sturgeon will respond to the management actions in the plan, an adaptive management framework and process that revisits current status when new information becomes available is essential. The plan describes a “feedback loop” in which managers (1) develop a course of action, (2) implement the course of action, (3) assess the course of action relative to the “desired” and “conservation” status benchmarks, (4) react, modify,

and re-implement the course of action using information gathered, and (5) re-assess adapted course of action. Assessments will determine whether the population segment (1) is on track to reach desired status, (2) is not changing from the current status and therefore is neither fully harvestable nor at the conservation level, or (3) is trending below a healthy level or toward conservation status. This process will be implemented by a Lower Columbia River White Sturgeon Technical Management Team, made up of fisheries managers and sturgeon experts.

Research Monitoring and Evaluation. The plan describes a full suite of monitoring and research needs to assess metrics associated with each biological attribute. Key programs include:

1. Fisheries monitoring. Monitoring commercial and recreational fisheries enables managers to estimate harvest levels and catch rates as well as collect biological data from catches that aid in population assessments.
2. Population assessments: The Department annually samples various life stages of sturgeon using a variety of gear-types to assess population structure (adult, sub-adult and juvenile fish abundance), status and trends.
3. Pinniped predation monitoring. The plan calls for an expansion of pinniped predation monitoring because pinniped predation is known to occur prior to and after the periods currently monitored and in areas other than the vicinity of Bonneville Dam, where current monitoring programs occur. An expanded program would also include investigating feeding ecology and modeling the impact of pinniped predation and pinniped removals on lower Columbia River white sturgeon population dynamics.

OPTIONS

Provide comments and/or guidance to staff about the *Lower Columbia River White Sturgeon Conservation Plan*.

**STAFF
RECOMMENDATION**

N/A