

Joint-State Columbia River Fishery Policy Review Committee

BARBLESS HOOK INFORMATION SUMMARY

November 18, 2019

Information on the Question of a Mandatory or Voluntary Barbless Hook Requirement in Mainstem Columbia River Salmon Fisheries

Following are responses to the assignment from the Joint-State Columbia River Fishery Policy Review Committee (PRC) on October 1. The assignment provides information considered by the PRC prior to the February 26, 2019 meeting where a recommendation passed to change from a mandatory barbless hook requirement to a voluntary rule for Columbia River salmon and steelhead fisheries, and information on the handle rate of wild B run steelhead caught and released in mainstem recreational fisheries.

Further, the staff has included additional information the PRC may wish to discuss on this question.

Information presented to and discussed by the PRC prior to the February 26, 2019 decision

Scientific studies

There have been many studies on hook and release mortality on various species of fish in different fisheries. A review of studies that included comparisons of hooks with and without barbs was presented to the Oregon Fish and Wildlife Commission (OFWC) in the mid 1990's. In general, the most important factor in fish mortality was the anatomical location of the hooking event rather than if the hook was barbed or barbless.

U.S. v Oregon Technical Advisory Committee (TAC) review of a credit for a conservation benefit of requiring barbless hooks

TAC reviewed recreational fishery mortality rates in 2012 due to increasing implementation of mark-selective fisheries. No adjustments were considered for spring and summer salmon (Chinook and sockeye) and steelhead seasons. The fall Chinook and coho mortality rates for mainstem fisheries were aligned with the Pacific Fishery Management Council (PFMC) ocean (including Buoy 10) release mortality rates. The PFMC-adopted mortality rates include a difference of 2% mortality between barbed and barbless hooks for fall Chinook and coho, and were adjusted accordingly to mainstem release mortality rates.

Origin of mandatory barbless hook requirement

A barbless hook rule for the Columbia River upstream to McNary Dam was considered and approved by the Washington Fish and Wildlife Commission (WFWC) in February 2010 after substantial public comment and discussion. The WFWC directed that implementation be contingent upon the adoption of a similar rule by the OFWC; however, the OFWC declined to support the barbless hook rule, and Washington did not implement the rule.

The issue of mandatory barbless hooks arose again in late 2012 during the process of developing the new Columbia River salmon fishery policy by the Columbia River Fishery Management Workgroup (Workgroup). The commercial fishing advisors made the following recommendations on October 10, 2012:

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1. Implement in 2013 the use of barbless hooks in all mainstem Columbia River and tributary fisheries for salmon and steelhead.
2. Consider requiring the use of rubber landing nets (or their equivalent) in all mainstem Columbia River fisheries for salmon, steelhead, and sturgeon.
3. Consider making it unlawful when angling from any vessel to totally remove from the water any salmon or steelhead required to be released unless a recovery box is present and in use on the vessel.
4. Evaluate the feasibility of creating restricted recreational-fishing zones within and immediately adjacent to current or new off-channel areas. These zones would be designed to reduce the interceptions of fish intended for commercial harvest within the off-channel areas until economic benefits from commercial fisheries are verified.
5. Consider a 5-fish seasonal limit for spring Chinook caught in the mainstem Columbia River from January 1 through June 15.

At the October 18, 2012 Workgroup meeting, Washington panel members provided a recommendation to require the use of barbless hooks in future Columbia River recreational fisheries. The Workgroup eventually recommended implementing barbless hooks in 2013 for salmon and steelhead fisheries. The WFWC approved that recommendation and included the following general provision in final policy language: "Implement in 2013 the use of barbless hooks in all mainstem Columbia River and tributary fisheries for salmon and steelhead." The OFWC approved the recommendation in rule, which was applicable to the mainstem Columbia River, the lower Willamette River, and Select Area fisheries.

Staff did not present any information on the scientific basis of a significant difference in mortality due to the use of barbed vs. barbless hooks during consideration of the Policy.

Barbless hook regulation status in Oregon and Washington freshwater salmon fisheries

Oregon: Effective February 1, 2017, barbed hooks were allowed in the lower Willamette River (including Multnomah Channel, the Gilbert River, and the lower Clackamas River) and Oregon Select Area fisheries. Currently, a temporary rule (adopted June 1, 2019) allows the use of barbed hooks when angling for salmon, steelhead, or trout in the mainstem Columbia River from Buoy 10 upstream to the Oregon-Washington border through November 28, 2019.

Barbless hooks are still required in ocean salmon fisheries, and in specific sections of some river systems including the Rogue, Metolius, Snake, and Umpqua (not all of these are salmon-directed fisheries).

Washington: Effective December 31, 2017, barbed hooks were allowed in five Washington Columbia River tributary areas (Deep River, Drano Lake, Klickitat River, Mayfield Lake, and Wind River) where fisheries are focused on hatchery salmon. Effective June 1, 2019, barbed hooks were allowed in the Columbia River mainstem upstream of the OR-WA state line (upstream of McNary Dam) to Chief Joseph Dam. This change also applied to the Columbia River tributaries from Buoy 10 upstream to McNary Dam; tributaries upstream of McNary Dam, including the

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Snake River continue to require the use of barbless hooks. Barbless hooks are required in Puget Sound and coastal freshwater fisheries with a few exceptions, such as Moclips, Copalis, and Samish rivers.

Retention Rates in Columbia River fisheries

This table shows the percent of salmon, steelhead, and sturgeon which are caught and then released in mainstem Columbia River recreational fisheries downstream of Bonneville Dam.

Year	Spring Chinook	Summer Chinook	Fall Chinook	Coho	Sockeye	Summer Steelhead	White Sturgeon
2010	15%	34%	9%	27%	82%	39%	88%
2011	21%	35%	15%	53%	21%	39%	89%
2012	21%	47%	24%	54%	22%	42%	90%
2013	28%	45%	32%	44%	25%	50%	89%
2014	30%	58%	30%	40%	30%	44%	100%
2015	21%	20%	27%	39%	34%	38%	100%
2016	23%	58%	19%	34%	15%	29%	100%
2017	9%	39%	14%	39%	22%	54%	89%
Average ¹	21%	42%	21%	41%	31%	42%	89%

Note: Retention of sturgeon was prohibited in 2014-2016; white sturgeon values include the lower Willamette River and reflect release of all non-retained fish (whether by closure or size restriction, e.g. sub- and over-legal). Salmon are adults only, and includes mark-selective, non-mark selective, and non-retention fisheries.

1 Average for white sturgeon does not include 2014-2016.

Wild B-index Steelhead Impact Rate Information

This additional analysis provides the average annual handle, impact rate, and mortalities of wild B-index steelhead within fall recreational fisheries (mainstem Columbia and tributary dip-ins) upstream to Hwy 395 at Pasco, WA. Wild B-index steelhead are included in the ESA-listed steelhead population and can be a constraint to providing full fall recreational seasons (i.e., 2017 and 2019). The 2013-2018 average wild B-index run size from was 2,764 (range 751-5,409) with an average recreational handle of 354 and 35.4 mortalities (1.34% impact rate). Area-specific handle, mortalities, and impacts are provided below:

- Below Bonneville Dam – 52 handle, 5.2 mortalities (0.19% impact rate)
- Bonneville Dam-Hwy 395 (includes tributary dip-ins) – 302 handle, 30.2 mortalities (1.15% impact rate)

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Additional Information

Perspective of barb vs. barbless

WDFW provided cursory information to the PRC on February 26, 2019 primarily from lower Columbia River Washington field staff, enforcement and customer service. Most anglers use barbless hooks to comply with the law and were not in favor of barbless hook requirements.

Literature Reviews

There is a wide range of published reports on the effect of barbed vs. barbless hooks and other factors (hook location, water temperature, air exposure, etc.) on survival rates within recreational fisheries. Below are several published literature reviews which include discussion of this subject.

- Bartholomew, A. and J.A. Bohnsack. 2005. A review of catch-and-release angling mortality with implications for no-take reserves. *Reviews in Fish Biology and Fisheries* 15: 129-154.
- Muoneke, M.I. and W.M. Childress. 1994. Hooking mortality: A review for recreational fisheries. *Review in Fisheries Science*, 2(2): 123-156.
- NOAA Fisheries. 2008. Barbed and barbless hooks and bait impacts on salmon and steelhead. Consultation on the 2008-2017 *U.S. v Oregon* Management Agreement: 8.27-8.29.
- Pacific Fishery Management Council's Salmon Technical Team. 2000. STT Recommendations for hooking mortality rates in 2000 recreational ocean Chinook and coho fisheries. STT Report B.2.
- Pelletier, C., K.C. Hanson, and S.J. Cooke. 2007. Do catch-and-release guidelines from state and provincial fisheries agencies in North America conform to scientifically based best practices? *Environ Manage* 39: 760-773.