



## **Hook Regulations for Columbia River Salmon and Steelhead Fisheries**

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In February 2025, the Commission directed staff to provide an informational briefing on the pros and cons of barbless vs barbed hooks in mainstem Columbia River salmon and steelhead fisheries.

### **BACKGROUND**

Fishing hooks used for angling have typically been equipped with a small “barb” to help prevent the fish from shaking loose during the fight. This reverse-facing small metal projection near the hook point helps prevent the hook from backing out readily. Barbed hooks are generally viewed as superior for landing fish, especially for novice anglers who may lack the experience needed to keep the line tight during the fight and landing.

The regulations related to the use of barbless hooks have varied over time in the Columbia River. The current regulations require use of barbless hooks in all mainstem Columbia River fisheries for salmon and steelhead. The barbless hook requirement was part of a suite of recommendations for reform of Columbia River fisheries developed in 2012 by the Columbia River Fishery Management Workgroup

The Workgroup was formed to advise changes to Columbia River fisheries consistent with an interest in developing alternative non-treaty commercial gear types, prioritizing recreational fisheries through a shift of ESA impact rate allocations, and expanding mark-selective fisheries in the Columbia River (collectively referred to as “Harvest Reform”). The barbless hook recommendation was based on the expectation that recreational allocations of ESA impacts would increase due to policy/rule changes that would result in more wild fish being handled and released in recreational fisheries.

In December 2012, the Oregon Fish and Wildlife Commission (OFWC) adopted a broad range of rules implementing several recommendations of the Workgroup which included the required use of barbless hooks when angling for salmon, steelhead, and trout in the mainstem Columbia River, lower Willamette River, and Select Area fisheries. In January 2013, the Washington Fish and Wildlife Commission (WFWC) also adopted policy (C-3620; superseded by C-3630 in 2020) consistent with Workgroup recommendations, including the required use of barbless hooks beginning in 2013. In February 2017, the OFWC rescinded the barbless hook requirement in the lower Willamette River and Oregon Select Areas based on a staff recommendation that the regulation was unnecessary given the lower frequency of wild salmon in these areas as compared to the mainstem Columbia River.

In February 2019, the Joint-State Columbia River Salmon Fishery Policy Review Committee (PRC) voted in favor of shifting from mandatory to voluntary use of barbless hooks in mainstem Columbia River fisheries as soon as practical, but no later than June 1, 2019. The PRC, which consisted of multiple Oregon and Washington Fish & Wildlife Commissioners, was formed to review and reform policies related to Columbia River fisheries. In support of this proposal, the WFWC approved the use of barbed hooks in the mainstem Columbia River effective June 1, 2019. The Oregon Commission approved a temporary rule to eliminate the barbless hook requirement but ultimately voted against a proposal in 2020 to permanently eliminate the barbless hook requirement for the Columbia River Zone. Following expiration of the Oregon temporary rule, joint Director discussions resulted in alignment of rules requiring the use of barbless hooks in the Columbia River when angling for salmon and steelhead which has since been maintained in both states.

## CONSIDERATIONS

The following discussion summarizes a few considerations with respect to changing the barbless hook rule:

### Impact to release mortality:

A substantial number of wild salmon and steelhead are released in spring, summer, and fall seasons due to implementation of mark-selective fisheries intended to target unlisted stocks while protecting weak stocks. From 2018-2025, approximately 44,500 (range 20,900–67,400) adult salmonids were released annually in Columbia River recreational fisheries. If barbless hooks were not required, these fish would be likely to encounter a barbed hook.

Few studies have directly examined the effect of barbed versus barbless hooks on post-release mortality of adult anadromous salmonids encountered in recreational fisheries. Most studies of this type have been on resident salmonids (i.e., trout) or non-salmonid species but some studies do provide relevant information. For instance, Courter et al. (2023)<sup>1</sup> found an association between barbless hooks and higher post-release survival compared to barbed hooks for both Chinook and coho caught and released in the Cowlitz River (WA), although differences were small for Chinook and negligible for coho. On British Columbia's Keogh River, Hooten (1987)<sup>2</sup> found that adult winter steelhead caught with recreational fishing gear experienced a higher release mortality rate when caught with barbed hooks (7.3%) as compared to barbless hooks (2.9%) regardless of whether bait or artificial lure was employed.

One local study often referenced in discussions of post-release survival (Lindsey et al. 2004)<sup>3</sup> evaluated the post-release mortality rate for spring Chinook in the lower Willamette River recreational fishery; however, the focus of the study was anatomical hooking location rather than hook type (*only barbed hooks were used*). Most studies have shown that anatomical hooking location (jaw, mouth, tongue, eye), fish handling (handling time, exposure to air), fish condition (bleeding, bruising, scale loss), and water temperature are the most important factors in the survival of released fish. Some researchers have suggested that the use of barbed hooks increases handling time and stress on hooked fish and therefore leads to higher post-release mortality (Wydoski 1977)<sup>4</sup>.

### Impact to fishery opportunity:

Removing the barbless hook requirement would likely have a negative impact on the number of fishing days in the Columbia River for two reasons:

1. The incidental mortality rate used to estimate wild fish impacts during all mainstem fall coho and Chinook fisheries would increase.

Post-release mortality rates for salmon and steelhead encountered in mainstem Columbia River recreational and commercial fisheries vary by species, season, and gear type. These rates have been established using the best available information obtained through a mix of empirical studies and collaborative professional judgement. For Columbia River recreational salmonid fisheries, release mortality rates currently range from 10–19 percent. Prior to the barbless hook requirement in 2013, the high end of this range was 21 percent - the rate applied to Chinook and coho released in fall fisheries when barbed hooks were allowed. If the barbless hook requirement was rescinded for mainstem Columbia River recreational fisheries, the assigned mortality rate for Chinook and coho released in fall fisheries would revert back to 21 percent, resulting in a 10.5 percent increase in modelled release mortalities. Release mortality rates for other species and fisheries were not adjusted when barbless hooks were required in 2013 so those rates should remain the same if barbed hooks were again allowed.

2. Total allowable impacts for some fisheries may be reached at a faster rate.

Current catch projection and harvest models across seasons and species rely on data from recent-year fisheries when barbless hooks were required. Therefore, if barbed hooks result in higher landing rates (in addition to the higher post-release mortality rates for fall Chinook and coho), actual fishery results may exceed modelled harvest projections for some number of years until the models can incorporate new data and be recalibrated. If the improvement in landing rates is significant, a reduction in season length may be needed for some fisheries to remain within management constraint.

### Compliance:

Data from Oregon State Police do not indicate there is an issue with compliance. Current regulations in Oregon and Washington define a barbless hook as a hook manufactured without a barb, a hook with the pointed barb removed (filed off), or a hook with the barb bent down to the hook shank. Given the different hook configurations that meet the barbless requirement, enforcement of the regulation is not always clearcut. However, recent angler compliance with the barbless hook regulation in the mainstem Columbia River has been high. Based on 12,500 angler contacts with Columbia River salmon and steelhead anglers from 2022 through 2024, the Oregon State Police (OSP) has issued 636 warnings or citations for non-compliance with the barbless hook regulation (95 percent compliance rate). This same compliance rate (95 percent; 239 warnings/citations for 4,655 angler contacts) was observed by OSP in ocean salmon fisheries off Oregon during the same years.

### Angler experience:

Rescinding the barbless hook requirement in Columbia River recreational salmon and steelhead fisheries could lead to improved angler satisfaction due to fewer lost fish, especially for less experienced anglers, and the ability to use the same gear in mainstem and tributary fisheries, which reduces angler cost. Conversely, anglers may be less satisfied if the

number of fishing days is restricted because of higher incidental mortality and higher catch rates.

Consideration of the barbless rule in isolation from other 2012 reform measures:

As described above, the required use of barbless hooks in Columbia River recreational fisheries was originally implemented alongside a comprehensive Columbia River salmon management review process (i.e., Harvest Reform). The staff workload during those review periods (2012–2013 and 2016–2017) was substantial. While rescinding the barbless hook requirement may not automatically trigger another full review of Columbia River fisheries management, initiating a rulemaking on this issue could reopen complex policy discussions.

Non-treaty fisheries and associated regulations in the shared waters of the Columbia River are managed cooperatively by Oregon and Washington. These fisheries must meet a variety of conservation objectives and legal requirements, and be consistent with fishery sharing agreements and policies, including but not limited to the U.S. v. Oregon Management Agreement, Endangered Species Act (ESA), and Fish and Wildlife Commission policies.

Maintaining consistent and concurrent policies between Oregon and Washington is one of the guiding principles of Columbia River fisheries management identified in OAR 635-500-6705, and beyond that, is desired to facilitate this joint management structure. Non-concurrency in hook regulations would create a situation where enforcement would be challenging since regulations would differ on either side of the state-line running the length of the Columbia River between the states of Oregon and Washington. It is unclear at this time whether WA would be interested in revisiting the barbless rule in isolation from other reform measures.

Given current staff commitments to U.S. v. Oregon, the Pacific Salmon Treaty, and hydropower-related obligations/litigation, taking on a rulemaking for barbless hooks at this time would significantly strain available resources and present a considerable workload challenge.

References cited above and available in Attachment 1:

<sup>1</sup> Courter, I. I., T. Buehrens, M. Roes, T. E. Blackman, B. Briscoe, and S. Gibbs. 2023. Influence of angling methods and terminal tackle on survival of salmon and steelhead caught and released in the Cowlitz River, Washington. *Fisheries Research* 268 (2023) 106848.

<sup>2</sup> Hooton, R. S. 1987. Catch and release as a management strategy for steelhead in British Columbia. In R. Barnhart and T. Roelofs, editors, *Proceedings of: Catch and Release Fishing – A Decade of Experience*. Sept 30 – Oct 1, 1987. Humboldt State University, Arcata, California.

<sup>3</sup> Lindsay, R. B., R. K. Schroeder, K. R. Kenaston, R. N. Toman, and M. A. Buckman. 2004. Hooking mortality by anatomical location and its use in estimating mortality of spring Chinook salmon caught and released in a river sport fishery. *North American Journal of Fisheries Management*, 24:367–378.

<sup>4</sup> Wydoski, R. S. 1977. Relation of hooking mortality and sublethal hooking stress to quality fishery management. Pages 43-87 in R. A. Barnhart and T. D. Roelofs, editors. *Catch and-release fishing as a management tool*. Humboldt State University, Arcata, California.