Fish and Wildlife Commission Presentation Summary Sheet

Meeting date:

TBD

Agenda item:

A petition to remove the rule in WAC 220-311-030 that prohibits use of barbed fish hooks in marine areas of Puget Sound and the Strait of Juan de Fuca.

Presenter(s):

Kyle Adicks and/or Kirt Hughes

Background summary:

On October 24, 2024, the Department received a petition seeking to change WAC 220-311-030(2) to allow the use of barbed hooks in Marine Areas 5-13, claiming that the rule is not needed because there is no scientific basis for the barbed hook prohibition. This claim was based on the results of a salmon hooking mortality study conducted on the Cowlitz River, which the petitioner says showed little difference in mortality for lures with barbed versus barbless hooks. The petitioner also says that they were unable to find any studies for barbed versus barbless hooks in marine areas or for bottomfish.

Release mortality studies are extremely difficult to conduct, especially when trying to account for the multiple potential components to mortality after fish interact with fishing gear. For hook and line fisheries, those include drop off mortality (fish that come into physical contact with fishing gear but 'drop off' the hook before being brought to shore or boat), immediate mortality (fish that are landed but die immediately or shortly after release) and delayed mortality (fish that are alive upon release but die later due to injury or stress from being caught). Studies have shown that mortality rates for salmon vary widely depending on factors including the size of the fish, size and type of hooks, location of hook penetration, how the fish is handled before release, stage of maturation, environmental cofactors, etc. Small sample sizes and the inability to have a true scientific control group are consistent issues across release mortality studies, contributing to uncertainty in estimated mortality rates.

There have been numerous salmon hooking mortality studies conducted up and down the West Coast over the past 60 years, and there have been several literature reviews and summaries that attempted to incorporate all of the available information and make recommendations for release mortality rate assumptions for fishery planning and assessment (Cox-Rogers et al., 1999, PFMC, 2000, Chinook Technical Committee, 2022). Many of these studies and reviews did not identify a difference in mortality rates for barbed and barbless hooks, although some did. Gjernes et al. (1993) showed that hooking mortality rates for small Chinook were much lower for barbless hooks versus barbed hooks using recreational gear (20% barbless, 38% barbed). Butler and Loeffel (1972) found that mortality rates were 15% lower for Chinook caught with barbless hooks using commercial troll gear.

Recreational salmon fisheries in Puget Sound and Washington waters of the Strait of Juan de Fuca have required barbless hooks since 1982. There were studies conducted in the Strait of Juan de Fuca in 1989 and Puget Sound in 1992 and 1993 to evaluate release mortality rates for recreational fisheries. Those studies used gear that was legal for Washington recreational fisheries, so only barbless hooks were used. While those studies did not provide any insight into potential difference in mortality for barbless and barbed hooks, they did provide an important foundation for future assumptions on mortality rates for Puget Sound marine salmon fisheries. In 1993 the Washington Department of Fisheries and the Puget Sound Treaty Tribes reviewed past studies and agreed to release mortality rates for Chinook and coho in Puget Sound fisheries. Those rates have been used for pre-season planning and post-season evaluation in the decades since and have been referenced in co-manager Endangered Species Act resource management plans, including the 2022 Puget Sound Chinook Resource Management Plan (PSIT & WDFW, 2022).

While the impacts of hook type have not been specifically studied for bottomfish in Puget Sound, research does show that using barbed hooks significantly increases handling time for other marine fish (Schaeffer and Hoffman 2002), which is a concern for certain species. In particular, increased handling time has been clearly demonstrated to increase mortality for rockfish species (Jarvis and Lowe 2008). Rockfish are highly susceptible to barotrauma when caught, exhibit relatively high discard mortality, and can be negatively impacted for over 30 days post-release (Wegner et al 2021). Rockfish retention is prohibited in Puget Sound for conservation reasons and although the use of barbless hooks was not originally conceived as a bottomfish conservation measure, reducing handling stress of caught and released fish has long since been an integral part of state and federal rockfish recovery efforts.

Removing barbless hook requirements for fisheries would require re-evaluation of mortality rate assumptions, and possibly lead to increases in assumed mortality rates for fisheries in the future. There is evidence that barbless hooks ease the release of fish and reduce their handling mortality. Barbless hook requirements were established as a conservative measure decades ago, even before ESA-listing of Puget Sound salmon and rockfish stocks. Reversing this requirement today would be a step back from past conservation measures and does not seem prudent.

Staff recommendation:

Department staff recommend denying the petition to repeal the rule prohibiting use of barbed hooks in Puget Sound marine recreational fisheries.

Policy issue(s) and expected outcome:

Options available pursuant to RCW 34.05.330:

Option A: Deny the petition in writing for the reasons described above, which specifically address the concerns raised by the petitioner.

Option B: Initiate rulemaking for the proposal to repeal WAC 220-311-030 (2). Repealing this rule would allow the use of barbed hooks in all Puget Sound marine recreational fisheries.

Fiscal impacts of agency implementation:

No fiscal impact to the agency to deny

Public involvement process used and what you learned:

None

Action requested and/or proposed next steps:

Department staff recommend denying the petition to repeal the rule prohibiting use of barbed hooks in Puget Sound marine recreational fisheries.

Draft motion language:

N/A

Post decision communications plan:

Post decision to website and notify petitioner in writing.

Form revised 8-4-20

References:

Butler, J.A and R.E. Loeffel. 1972. Experimental use of barbless hooks in Oregon's troll salmon fishery. Pac. Mar. Fish. Comm. Bull. 8:23-30.

Chinook Technical Committee. 2002. Review of the Uncertainty and Variance in Catch and Release Estimates of Chinook Salmon Fisheries. Pacific Salmon Commission, Vancouver, British Columbia.

Cox-Rogers,S., Gjernes, T. and E. Fast. 1999. A Review of Hooking Mortality Rates for Marine Recreational Coho and Chinook salmon fisheries in British Columbia. Canadian Stock Assessment Secretariat Research Document.

Gjernes, T., A.R. Kronlund, and T.J. Mulligan. 1993. Mortality of chinook and coho salmon in their first year of ocean life following catch and release by anglers. North American Journal of Fisheries Management 13:524-539.

Jarvis, E.T. and C.G. Lowe. 2008. Canadian Journal of Fisheries and Aquatic Sciences. 65: 1286-1296.

Pacific Fishery Management Council (PFMC). 2000. Salmon Technical Team recommendations for hooking mortality rates in 2000 recreational ocean Chinook and coho fisheries. STT Report B.2, 18 p. Pacific Fishery Management Council, Portland, OR.

Puget Sound Indian Tribes and Washington Department of Fish and Wildlife. 2022. Comprehensive Management Plan for Puget Sound Chinook: Harvest Management Component. 391 pages.

Schaeffer, J.S., and Hoffman, E.M. 2002. Performance of Barbed and Barbless Hooks in a Marine Recreational Fishery. North American Journal of Fisheries Management. 22:229-235.

Wegner, N. C., Portner, E. J., Nguyen, D. T., Bellquist, L., Nosal, A. P., Pribyl, A. L., Stierhoff, K. L., Fischer, P., Franke, K., Vetter, R. D., Hastings, P. A., Semmens, B. X., and Hyde, J. R. 2021. Post-release survival and prolonged sublethal effects of capture and barotrauma on deep-dwelling rockfishes (genus Sebastes): implications for fish management and conservation. – ICES Journal of Marine Science.