

**A Path Forward for Mark-Selective Commercial Fishing and Concurrent State Fisheries
Management Policies in the Lower Columbia River Basin**



Wild Fish Conservancy

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Abstract

Hatcheries pose a risk to wild salmon populations through various genetic, ecological, fishery, and facility-related mechanisms. Genetic risks occur when hatchery-origin salmon escape harvest or capture, stray to the spawning grounds, and interbreed with locally adapted wild salmon populations. Despite efforts to control the straying of hatchery-origin salmon to the spawning grounds through the use of weirs in tributaries of the lower Columbia River Basin, state fisheries managers in Washington and Oregon have failed to meet critical biological thresholds and federal provisions of the Endangered Species Act for the proportion of hatchery-origin spawners. This failure to remove excess hatchery-origin salmon and/or sufficiently curtail hatchery production has potentially jeopardized the survival and recovery of threatened wild salmon population groups in tributaries of the lower Columbia River and highlighted a substantial need for additional reforms to hatchery and harvest management. In this white paper, we propose a path forward for mark-selective commercial harvesting in the lower Columbia River to reduce the proportion of hatchery-origin spawners, advance state and federal compliance with the Endangered Species Act, and achieve concurrent fisheries policies between the states of Washington and Oregon. Barriers to mark-selective commercial fishing are identified, including those related to allocation, permitting, and financial disincentives. A step-by-step plan is then provided to more effectively implement fisheries that focus on the harvest of abundant hatchery-origin salmon. First, an existing cap on mark-selective commercial fisheries must be lifted in Oregon through amendment of Fish & Wildlife Commission rules OAR 635-500-6730 and 635-500-6735. This action would enable the Washington Department of Fish & Wildlife to fully enact conservation provisions of the Washington State legislature's gillnet license buyback to transition non-tribal commercial fishing allocation away from gillnetting toward mark-selective commercial gear-types. Additional steps must then be taken to allow for the permitting of additional alternative fishing gear, among other steps that could streamline selective gear permitting processes and incentivize their use. Ultimately, actions that advance mark-selective harvesting in the Columbia River will help reduce the proportion of hatchery-origin spawners, improve bycatch survival, promote the conservation and recovery of wild fish, and provide certainty and other fishery-related benefits to coastal communities and economies.

Key Recommendations to Advance Mark-Selective Commercial Fishing

1. Amend OAR 635-500-6730 and 635-500-6735 to lift the cap on mark-selective commercial fishing allocation, via OR Fish & Wildlife Commission.
2. Fully implement conservation provisions of WA State's gillnet license buyback (ESSB 5693 Sec. 308 Sub. 65(b)) to increase allocation to mark-selective commercial fisheries, via WDFW.
3. Amend WDFW and ODFW's 2023 Memo re: Emerging Fishery Direction to allow for additional permitting of alternative mark-selective commercial fishing gear, via WDFW and ODFW.
4. Amend WAC 220-360-510 to allow for greater participation in mark-selective commercial fisheries, via WDFW.
5. Streamline local, state, and federal permitting processes, via WDFW and ODFW communications.
6. Use the latest available science to propose updated alternative gear mortality rates for US v. OR TAC review, via WDFW and ODFW TAC representatives.
7. Subsidize implementation of alternative mark-selective commercial gear, via WDFW and ODFW.
8. Work to secure sustainable market certifications, via WDFW and ODFW communications.

Introduction

Straying of hatchery-origin salmon to the spawning grounds and interbreeding with Endangered Species Act (ESA)-listed wild salmon populations is recognized as one of the primary limiting factors to the recovery of wild salmon in the Columbia River and elsewhere (NMFS 2013). Beyond the use of tributary weirs, selective harvesting in fisheries represents the only means available for fisheries managers to remove excess hatchery-origin salmon before they reach the spawning grounds (Anderson et al. 2020). Since the ESA-listing of wild salmonids in the Columbia River, selective harvesting of adipose fin-clipped salmon produced from hatcheries ('mark-selective harvesting') has been a primary recommendation of the congressionally-funded Hatchery Scientific Review Group (HSRG) to advance the recovery of ESA-listed wild salmon populations. By implementing low-impact alternatives to gillnetting that can be effectively utilized to focus on the harvest of abundant hatchery-origin salmon, fisheries managers may reduce the proportion of hatchery-origin spawners (pHOS), increase the survival and escapement of wild salmon, protect wild salmon genetic diversity from the effects of hatcheries, and improve sustainable fishing opportunities for coastal communities (HSRG 2009).

Numerous state policies (WFWC 2009, 2013, 2020; ODFW 2013) direct the Washington Department of Fish & Wildlife (WDFW) and Oregon Department of Fish & Wildlife (ODFW) to

follow the recommendations of the HSRG (2009) and implement alternative mark-selective fishing gear to maximize catch of hatchery-origin fish with minimal mortality to native salmon and steelhead bycatch. However, state fisheries managers failed to implement mark-selective commercial fisheries in the Columbia River and transition away from use of conventional gillnets (WDFW 2018). Given insufficient reductions in hatchery production and a faltering system of weirs within the lower Columbia River (LCR) tributaries (Wilson and Buehrens 2023), this failure to selectively harvest hatchery-origin fishes before they reach the spawning grounds has resulted in deleterious pHOS levels that significantly exceed biological thresholds set by both the HSRG (Paquet et al. 2011) and National Marine Fisheries Service (NMFS 2017a, 2021, 2024) (Table 1; StreamNet 2025).

As the survival and recovery of threatened and endangered salmonid population groups has been jeopardized by hatchery production and harmful pHOS levels in the LCR, non-profit conservation groups filed a complaint against Commerce, NMFS, WDFW, ODFW, and Clatsop County alleging violations of the ESA on 17 April, 2024 (i.e., WFC et al., v National Marine Fisheries Service et al.). After litigation was initiated, the conservation groups and WDFW entered settlement negotiations. On 10 October, 2024, the settling parties officially entered a consent decree. Among various settlement terms, the consent decree provided an opportunity for the conservation groups to prepare a white paper setting forth their position on the advancement of alternative commercial fishing gear and WDFW’s gillnet license buyback to increase mark-selective fishing solutions to help address the defendants’ pHOS violations.

Table 1. The most current available data for the proportion of hatchery-origin spawners in tributaries of the LCR where federal pHOS limits have been defined and evaluated for Chinook salmon and coho salmon (NMFS 2024; ODFW 2005, 2016; StreamNet 2025).

<i>Species</i>	<i>Population</i>	<i>pHOS limit</i>	<i>pHOS measured</i>	<i>pHOS Limit Exceeded?</i>	<i>Years</i>
Coho	Grays/Chinook Rivers	10%	49%	Yes	2022-2024
Coho	Elochoman/Skamokawa Rivers	30%	28%	No	2022-2024

Coho	Clatskanie River	10%	11%	Yes	2022-2024
Coho	Scappoose River	10%	2%	No	2022-2024
Coho	Lower Cowlitz River	30%	11%	No	2022-2024
Coho	Coweeman River	10%	18%	Yes	2022-2024
Coho	South Fork Toutle	10%	15%	Yes	2022-2024
Coho	North Fork Toutle	30%	21%	No	2022-2024
Coho	East Fork Lewis	10%	9%	No	2022-2024
Coho	Washougal River	30%	28%	No	2022-2024
Coho	Clackamas River	10%	3%	No	2022-2024
Chinook	Grays/Chinook Rivers	50%	79%	Yes	2021-2024
Chinook	Elochoman/Skamokawa Rivers	50%	56%	Yes	2021-2024
Chinook	Mill/Abernathy/Germany Creeks	50%	73%	Yes	2021-2024
Chinook	Coweeman River	10%	8%	No	2021-2024
Chinook	Lower Cowlitz River	30%	10%	No	2020-2023
Chinook	Toutle River	30%	24%	No	2021-2024
Chinook	Lewis River	10%	36%	Yes	2021-2024
Chinook	Washougal River	30%	18%	No	2021-2024
Chinook	Kalama River	10%	4%	No	2020-2023
Chinook	Clackamas River	10%	3%	No	2021-2024
Chinook	Youngs Bay	90%	82%	No	2016-2024
Chinook	Big Creek	90%	92%	Yes	2016-2024
Chinook	Clatskanie River	10%	94%	Yes	2012-2023

Goals and Objectives

In accordance with the consent decree, Wild Fish Conservancy (WFC) offers this proposal including our position on WDFW's gillnet license buyback and alternative fishing gear

permitting in the LCR. This white paper offers a sustainable path forward for mark-selective commercial salmon fishing that stands to benefit fisheries management, wild salmon recovery, and the long-term resilience of coastal fishing economies. Specifically, our objectives are to identify the barriers to mark-selective commercial fishing in the LCR and propose a step-by-step plan to advance concurrent state fisheries policy for mark-selective commercial fisheries, reduce pHOS toward levels that comply with provisions of the ESA, and minimize harvest impacts to ESA-listed wild salmon and steelhead.

Barriers to Mark-Selective Fishing in the LCR

Mark-selective fishing with alternative commercial fishing gears in the LCR is legal in the states of Washington and Oregon (WAC 220-360-500, 220-360-530; OAR 635-500-6705). Gear-types that have been developed, studied, and authorized for their potential to increase mark-selective harvesting while minimizing mortality of wild salmon and steelhead include beach seines, modified purse seines, and pound nets (WDFW 2022). The recent development and authorization of these alternative commercial fishing gears provides WDFW and ODFW the ability to implement mark-selective commercial fisheries to reduce pHOS, minimize bycatch mortality, and expand unique sustainable fishing opportunities. Nevertheless, significant barriers impede the broader implementation of alternative gears, participation in mark-selective commercial fisheries, and concurrent fisheries policy. These barriers can be broken down into three main categories: 1) allocation, 2) permitting, and 3) financial disincentives.

Allocation

Barrier — OR Fish & Wildlife Commission Cap on Use of Alternative Gear

The allocation of ESA-impacts for alternative gear commercial fisheries in the LCR determines the extent to which mark-selective commercial fisheries may be employed to help reduce pHOS, minimize harvest impacts to ESA-listed species, and expand unique sustainable fishing opportunities. At present, the greatest barriers to the broader-scale implementation of mark-selective commercial fisheries on both shores of the LCR are Oregon Fish & Wildlife Commission rules OAR 635-500-6730 and 635-500-6735 (ODFW 2017a, 2017b). These rules set a cap on the commercial allocation of ESA-impacts that may be provided to alternative commercial fishing gears, limiting mark-selective fishing with alternative gears to a maximum of

6.7% of the total commercial allocation of ESA-impacts (and guaranteeing a minimum of 93.3% of the commercial allocation to the non-tribal gillnetting).

Although Washington does not have a concurrent policy capping the allocation of ESA-impacts available for mark-selective alternative gear fishing, the presence of the Oregon Fish & Wildlife Commission's rules and the overarching requirement for concurrency with the state of Oregon in all shared boundary waters (RCW 77.75.010) holds WDFW and the co-managed LCR commercial fishery to the rules set forth by OAR 635-500-6730 and 635-500-6735 (WDFW 2022). As a result, no more than 6.7% of the commercial fishing allocation can be provided by WDFW and ODFW for mark-selective alternative gear fisheries. Ultimately, these rules impede the effective use of mark-selective gears to reduce pHOS, constrain sustainable fishing opportunities, and inhibit the development of economically viable alternative gear fisheries. They further constrain WDFW's ability to follow through with conservation provisions of the Washington State legislature's (2022) gillnet license buyback (ESSB 5693 Sec. 308 Sub. 65(b)) to reserve ESA-impacts associated with purchased gillnet licenses for mark-selective fisheries.

If WDFW and ODFW are to reduce pHOS through the expansion of mark-selective commercial fisheries, the Oregon Fish & Wildlife Commission must amend OAR 635-500-6730 and 635-500-6735 to remove or raise the allocation cap on mark-selective alternative fishing gear. This action has been strongly encouraged by Oregon Representative Ken Helm (chair of the House Committee on Agriculture, Land Use, Natural Resources, and Water) through communications and letters to the Oregon Fish & Wildlife Commission. Only by addressing the allocation cap on alternative commercial fishing gear can management meaningfully implement mark-selective fisheries to reduce pHOS. If OAR 635-500-6730 and 635-500-6735 are amended to this effect, WDFW and ODFW would also have the ability to reserve ESA-impacts associated with purchased gillnet licenses for mark-selective fisheries (as directed in ESSB 5693 Sec. 308 Sub. 65(b)). By following through with the conservation provisions of the Washington State legislature's gillnet license buyback, WDFW has a clear path forward to expand mark-selective fishing to help meet federal genetic protection requirements for wild salmon populations.

Barrier — TAC Approved Mortality Rates for Alternative Commercial Fishing Gears

In efforts to manage Columbia River fisheries to designated ESA-impact limits (NMFS 2018a), species-specific bycatch release mortality rates are set for each commercial gear-type by

the US v OR Management Agreement Technical Advisory Committee (TAC). These TAC-approved release mortality rates dictate how much fishing can occur with a gear-type given the quantity of bycatch encounters observed (or estimated) and the set allocation of ESA-impacts granted to the fishery. If approved mortality rates for a gear-type are biased low or reduced based upon the review of new scientific data, more fishing can be conducted given a set allocation of ESA-impacts; conversely, if mortality rates are biased high or increased from review of new scientific data, less fishing may be conducted given a set allocation of ESA-impacts.

Over the last decade, the parties to the US v OR Management Agreement have collected data on alternative commercial gear-types and proposed release mortality rates for TAC review and approval. This resulted in recent TAC approval of mortality rates for beach seines, modified purse seines, and pound nets in the LCR (TAC 2018, 2020). However, peer-reviewed science and data collected after 2017 were not considered in TAC’s review (Halowitz et al. 2019; Tuohy et al. 2020, 2022). Based upon the published information released since 2017, the data strongly suggest that the current TAC approved mortality rates for beach seines, purse seines, and pound nets are inflated and do not reflect the latest available science (as demonstrated in Table 2). Ultimately, inflated mortality rates constrain alternative gear use given a set commercial allocation of 6.7% (as dictated by OAR 635-500-6730 and 635-500-6735).

Table 2. Mortality rate information for mark-selective pound nets authorized in the LCR (Tuohy et al. 2019^a; Tuohy et al. 2020^b; Tuohy et al. 2022^c; Cox and Sippel, 2020^d).

Species	Mortality Rate (Peer-Reviewed Science or Agency Report)	Mortality Rate (Used by TAC)
Fall Chinook	0.5% ^a - 0.0% ^d	7.0%
Spring Chinook	5.3% ^c - 0.0% ^c	No TAC Approved Rate
Coho	3.6% ^c - 0.0% ^b	9.0%
Summer Steelhead	5.4% ^a - 0.0% ^d	6.0%

Although TAC's inflated mortality rates affect allocation and use of alternative gears to a far lesser extent than that of OAR 635-500-6730 and 635-500-6735, the existing discrepancy between TAC-approved mortality rates and the peer-reviewed science will always work to constrain mark-selective commercial fishing regardless of the allocation of ESA-impacts that are provided to the fishery. If fisheries managers intend to employ mark-selective commercial fisheries more effectively, WDFW and ODFW should submit an updated mortality rate proposal to US v OR TAC reflecting the best available data and peer-reviewed science. If TAC approves mortality rates for beach seines, purse seines, and pound nets that better align with the latest peer-reviewed science and agency reports, mark-selective fisheries will be expanded, enhancing economic opportunities for coastal communities and helping fisheries managers reduce pHOS.

Permitting

Barrier — WDFW and ODFW Memo re: Emerging Fishery Direction

If WDFW and ODFW intend to more meaningfully utilize mark-selective commercial gears to reduce pHOS, the agencies must allow more fishermen to permit alternative gear for implementation. Upon the authorization of alternative gears at the completion of rulemaking in 2023, commercial fishermen began permitting pound nets and securing funding for implementation. Nevertheless, by December 2023, WDFW and ODFW released a memo (re: Columbia River Emerging Commercial Fishery Direction) that capped the total allowable quantity of permits for pound nets at three (WDFW and ODFW 2023). This memo prevented fishermen from proceeding with the implementation of alternative gear, and continues to do so presently.

Upon any potential expansion of allocation to mark-selective alternative gear fisheries, WDFW and ODFW must retract or amend the December 2023 memo re: Columbia River Emerging Commercial Fishery Direction to allow for more alternative gear permits. Only by allowing for greater permitted use of alternative gear can WDFW and ODFW more meaningfully implement mark-selective fishing to reduce pHOS.

Barrier — Local, State, and Federal Permitting Processes

If WDFW and ODFW are to allow for additional alternative gears to be permitted (through amendment of the 2023 memo), there is a need for local, state, and federal permitting

agencies to coordinate with one another and streamline and/or subsidize the permitting process at all levels to relieve current barriers to fishing communities. At present, the permitting process for alternative commercial gears is substantially disjointed between the agencies, requiring duplicative fisher application and government review processes.

In Washington State, a fisher intending to operate a pound net must apply to at least eight separate government agencies, requiring separate application documents for each agency, CAD drawings, GIS mapping, biological consulting, unique insurance and bonding requirements, and consistent agency questioning and follow-up communications over a ~2-year timeframe. While this permitting process has been successfully overcome with grant assistance and help from non-profit organizations, the technical nature of the current permitting process and the time expense required is a considerable barrier to participation in the mark-selective fishery. Furthermore, application fees, insurance requirements, and bond requirements with the permitting agencies increase the upfront cost and financial risk of pursuing mark-selective alternative gears.

As mark-selective commercial fisheries are potentially expanded through an increase in allocation, WDFW and ODFW must first allow for additional permitting and use of alternative fishing gears. Secondly, WDFW and ODFW should coordinate with other local, state, and federal agencies to identify various means to streamline the existing permitting process and/or subsidize permitting to make it easier to apply for alternative gear use, hasten the process, reduce financial risk, and encourage participation in mark-selective commercial fisheries.

Barrier — Fishery Qualification Requirements

Of equal importance to streamlining alternative gear permitting processes, WDFW and ODFW should address inequity in existing fishery qualification rules that indirectly bar minorities and the young fishers from applying for alternative gear permits. At present, WAC 220-360-510 (executed by WDFW in 2023) requires that fishers applying for alternative gear permits possess an existing Columbia River gillnet permit and license. Furthermore, it requires that an applicant demonstrate salmon harvesting with a gillnet in the Columbia River in the most recent five calendar years. When considering the demographics of the small pool of individuals that meet these two criteria in Washington State, the majority of the individuals that are allowed to participate in the alternative gear fishery trend older, male, and white. This contrasts sharply with the list of experienced fishers expressing interest in operating pound nets, many of which

are younger individuals (Delaney et al. 2022). As a result of WDFW's fishery qualification rules via WAC 220-360-510, the vast majority of the fishers interested in using alternative gear are indirectly barred from receiving permits and participating in the mark-selective fishery.

If WDFW and ODFW intend to expand mark-selective fisheries to more effectively reduce pHOS, the agencies must allow individuals that wish to use alternative gear to apply for permits. Through amendment of WAC 220-360-510 (i.e., removal of the requirement for fishers to possess an existing Columbia River gillnet permit and demonstrate landings within the most recent five calendar years), the agencies can improve opportunities for minorities and the youth to permit and operate alternative gear, enabling those that wish to participate the most to do so. Upon the potential expansion of allocation to the alternative gear fishery, this amendment will help enhance the number of fishery participants to improve the effectiveness of mark-selective fishing for pHOS reduction.

Financial Disincentives

Given that most LCR commercial fishermen are currently invested in conventional fishing gear, the transition to alternative gear requires new investment and significant upfront capital costs for implementation. For modified purse seines, upfront capital costs are estimated to range from \$139,000 to \$463,000; for pound nets, costs may range from \$115,000 to \$253,000 (WDFW 2023). As previously discussed, permit application fees, insurance requirements, and bond requirements with the permitting agencies further increase the upfront cost and financial risk of pursuing mark-selective alternative gears. Together, these financial burdens pose yet another barrier to participating in mark-selective alternative gear fisheries.

If WDFW and ODFW intend to more meaningfully implement mark-selective fisheries via amendment to allocation and permitting policies, the agencies should further consider incentivizing alternative gear use through grant opportunities and other subsidies. By addressing capital cost barriers to the alternative gear transition, there will be improved participation in mark-selective fisheries and greater use of the alternative gear throughout the LCR to address pHOS concerns. Additionally, sustainable market certifications through Monterey Aquarium Seafood Watch could help differentiate selectively harvested products in the marketplace, providing fishers price advantages that incentivize transition to sustainable mark-selective fishing practices.

Proposal to Advance Mark-Selective Commercial Fisheries

In the previous section, we identified the primary barriers to mark-selective commercial fishing in the LCR, and offered general policy solutions to help address each barrier. In this section, we provide a comprehensive step-by-step plan to advance mark-selective commercial fishing and concurrent state fisheries policy. In summary, Washington and Oregon must first provide sufficient commercial allocation to effectively utilize mark-selective commercial fishing gears; then they must allow for more individuals to permit and use alternative fishing methods to remove hatchery-reared salmon while inflicting minimal mortality to wild fish. The steps necessary to advance mark-selective commercial fisheries in the LCR are listed in order of importance, beginning with the allocation and permitting essentials (steps 1-3), and ending with useful economic incentives (steps 7-8).

Solution, Step 1:

Amend OR Fish & Wildlife Commission Policies OAR 635-500-6730 and 635-500-6735 –

The Oregon Fish & Wildlife Commission has the authority to amend these Commission rules that were established in 2017 to cap alternative gear allocation to a maximum of 6.7% of the non-tribal commercial allocation. To make efforts in good-faith to comply with federal pHOS limits and to advance concurrency with the state of Washington, the Oregon Fish & Wildlife Commission should amend OAR 635-500-6730 and 635-500-6735, striking-out the following: “...Use up to 2% of commercial ESA impacts of the most constraining stock for use in lower river commercial fisheries using alternative gears.” Upon amendment of these two rules by the Oregon Fish & Wildlife Commission, ODFW and WDFW will have the ability to allocate more commercial ESA-impacts and fishing opportunities toward mark-selective gears as needed to meet federal genetic protection requirements for wild salmon populations. This will enable WDFW and ODFW to deploy mark-selective gears tactically in the times, places, and manners that are most appropriate to promote salmon conservation while also making the best use of harvestable salmon resources for the fishing industry and the public.

Solution, Step 2:

Fully Enact Conservation Provisions of the WA State Gillnet Buyback – After OAR 635-500-6730 and 635-500-6735 are amended to allow for more than 6.7% of the non-tribal commercial allocation to be granted to alternative gears, the Director of WDFW will have greater ability to follow-through with the conservation provisions of the Washington State Legislature’s (2022) LCR gillnet buyback to increase mark-selective fishing.

As directed in ESSB 5693 Sec. 308 Sub. 65(b), WDFW may work with ODFW to reserve impacts associated with purchased gillnet licenses “for conservation through increased...mark-selective fisheries capable of harvesting surplus hatchery-reared salmon.” If WDFW follows through with re-allocating the ESA-impacts associated with purchased gillnet licenses to mark-selective commercial fisheries, nearly 1/3rd of all LCR commercial ESA-impacts could be used in efforts to reduce pHOS and meet federal genetic protection requirements for wild salmon conservation. This would increase mark-selective commercial fishing by nearly a factor of five, providing opportunities for approximately 15 pound nets and 15 seines. Moving forward, the Washington Fish & Wildlife Commission could provide a directive to assist with WDFW’s implementation of the gillnet buyback’s conservation provisions through this means.

Solution, Step 3:

Amend WDFW and ODFW’s 2023 Memo re: Emerging Fishery Direction – After the barrier of allocation is addressed from Steps 1-2, the Directors of WDFW and ODFW must allow for more alternative gear permits by retracting or amending the 2023 memo re: Emerging Commercial Fishery Direction. Once this cap on alternative gear permits is lifted through a mutual agreement between the Directors of WDFW and ODFW, mark-selective commercial gears may be effectively deployed in the times, places, and manners that are most appropriate to reduce pHOS in the areas adjacent to the LCR tributaries.

Solution, Step 4:

Amend WDFW's WAC 220-360-510 – Once the most pressing barriers to allocation and permitting are addressed through Steps 1-3, additional measures could be taken to encourage greater participation in sustainable mark-selective fisheries for pHOS reduction. One important policy action is the amendment of WDFW's WAC 220-360-510 that currently functions to bar the majority of the individuals that wish to use alternative gear from permitting and participating in the mark-selective commercial fishery. WDFW was responsible for drafting and finalizing WAC 220-360-510. WDFW now has the authority to amend this rule and remove the alternative gear fishery qualification requirements to: "1) Possess a commercial gillnet salmon license/permit issued by Washington (WA) or Oregon (OR) for the Columbia River; and, a) Demonstrate by valid Washington or Oregon fish receiving tickets that salmon have been taken in the Columbia River or Columbia River select areas within the most recent five calendar years." As previously discussed, these fishery qualification rules function to indirectly bar minorities and the youth from pursuing alternative gears. As demonstrated through meetings with WDFW and letters to the agency (Delaney et al. 2022), most fishers that hope to use alternative gear do not want to gillnet, and therefore, they do not possess a gillnet license nor wish to harvest with a gillnet solely in efforts to meet WDFW's fishery qualification requirements to secure permits for alternative gear. Upon amendment of WAC 220-360-510, a larger pool of local fishers will be able to permit alternative gear and help the agencies comply with pHOS limits and important provisions of the ESA.

Solution, Step 5:

Streamline Local, State, and Federal Permitting Processes – After policy decisions are made to provide greater opportunities to a larger pool of fishers to participate in mark-selective commercial fisheries, WDFW and ODFW could help alleviate the existing burdens of local, state, and federal permitting for alternative gears. There are a wide range of potential actions that could be taken to this end. The most basic action would be for WDFW and ODFW to better communicate with local, state, and federal agencies regarding their intent to permit and allow for more alternative gears to advance wild salmon and steelhead conservation. This basic action

could take the form of meetings with the permitting agencies, or a simple memo. Going farther, WDFW and ODFW could lead discussions with the permitting agencies to identify means to develop one single application form, or a streamlined permitting process, to address the needs of all permitting agencies for review; Washington's streamlined permitting process for Fish Habitat Enhancement Projects (FHEP) could serve as a good model. If this path to streamlining permitting is not chosen, WDFW and ODFW could designate staff to assist fishers with permitting applications to the relevant local, state, and federal agencies. Alternatively, WDFW and ODFW could contract non-governmental organizations to help fishermen apply for permits and navigate review processes. Lastly, discussions could be held between WDFW, ODFW, and local, state, and federal permitting agencies to discuss the possibility of reducing permit application fees, land-use fees, and bond requirements. Any or all of these actions would reduce the burdens of the existing permitting process and encourage greater participation in sustainable mark-selective commercial fisheries for conservation purposes.

Solution, Step 6:

Propose Updated Alternative Gear Mortality Rates for TAC Review – If a meaningful allocation is not provided through the execution of Steps 1-2, proposal of updated alternative gear mortality rates for TAC review and approval will be absolutely necessary to increase mark-selective commercial fishing for pHOS reduction. If Steps 1-2 are fully executed as proposed, new mortality rates reflecting the latest science are less pressing, but will function to more accurately reflect best available science and further increase the ability of WDFW and ODFW to utilize mark-selective commercial fisheries to reduce pHOS. As previously discussed, a new alternative gear mortality rate proposal from WDFW and ODFW to US v OR TAC that considers the latest data and peer-reviewed science should result in approval of lower mortality rates for beach seines, purse seines, and pound nets. If a new set of TAC approved mortality rates reflects the latest science, fewer ESA-impacts would be incurred per alternative gear fishing effort, meaning that more mark-selective commercial fishing could be conducted for a set allocation of ESA-impacts. This would increase opportunities to utilize mark-selective commercial fishing gears and enhance potential to remove hatchery-reared salmon for pHOS reduction.

Solution, Step 7:

Subsidize Implementation of Alternative Gear – Once allocation and permitting barriers are addressed, Washington and Oregon should subsidize use of mark-selective commercial fishing gear to encourage participation in sustainable fisheries that help reduce pHOS and improve state compliance with federal provisions of the ESA. There are a wide range of potential actions that could be taken to this end. The most basic subsidy would be for WDFW and ODFW to help fishers cover permit application fees, fishing license fees, land-use fees, and bond requirements. State grant funds could further be dedicated to covering some or all of the capital costs associated with implementing alternative commercial fishing gears for the first time. Lastly, incentives could be provided to existing gillnetters to participate in additional buyout programs that transition their fishing operations to mark-selective alternative gear-types. These actions would most likely require WDFW and/or ODFW securing funding through federal grant processes or the state legislature.

Solution, Step 8:

Secure Sustainable Market Certifications for Mark-Selective Commercial Fisheries –

Market certifications function to differentiate products in the marketplace, provide fishers access to high-end markets, and help fishers secure higher prices for their harvested seafood products. WDFW and ODFW could coordinate with Monterey Bay Aquarium Seafood Watch to encourage a green-label rating for the LCR mark-selective commercial fishery. This action would provide greater price incentives for fishers to transition to mark-selective gears that could help WDFW and ODFW remove surplus hatchery-reared salmon, reduce pHOS, and promote the conservation of wild salmon and steelhead populations.

Conclusion

With this white paper, we have identified the key barriers to mark-selective commercial fishing in the LCR and proposed a step-by-step plan for WDFW, ODFW, and the Fish &

Wildlife Commissions of Washington and Oregon to advance concurrent state fisheries policy for increased mark-selective commercial fishing. Over the last two decades, the HSRG (2009) and the Fish & Wildlife Commissions of Washington and Oregon have recognized the considerable need for mark-selective harvesting to reduce pHOS and advance compliance with federal provisions of the ESA (NMFS 2017). Numerous policies were adopted by both states between 2009 and 2020 to advance the transition of commercial gillnet fisheries to mark-selective alternative gears (WFWC 2009, 2013, 2020; ODFW 2013). After decades of investment in alternative gear research (WDFW 2018) and multi-million-dollar gillnet buyback programs to compensate fishers throughout the transition process (ESSB 5693 Sec. 308), the severity of current pHOS compliance issues in the LCR tributaries (Table 1) highlights the considerable biological and legal need for WDFW and ODFW to follow scientific recommendations, state policies, and legislative directives that have long encouraged meaningful implementation of mark-selective fisheries.

By discussing and executing the recommendations of this step-by-step plan, WDFW, ODFW, and the Fish & Wildlife Commissions of Washington and Oregon can advance concurrent policies to reduce pHOS through increased mark-selective commercial harvesting. First, an existing cap on mark-selective commercial fisheries must be lifted in Oregon through amendment of Fish & Wildlife Commission rules OAR 635-500-6730 and 635-500-6735. This action would enable WDFW and the Washington Fish & Wildlife Commission to fully enact conservation provisions of the legislature's gillnet license buyback to transition non-tribal commercial fishing allocation away from gillnetting toward sustainable mark-selective commercial gear-types. Additional steps must then be taken to allow for the permitting of additional alternative fishing gear, among other steps that could streamline alternative gear permitting processes and incentivize their use. Ultimately, by targeting abundant hatchery-reared salmon for harvest in fisheries while releasing wild salmonids with minimal mortality, fisheries managers can make better progress toward reducing pHOS, increasing wild salmonid escapement, complying with provisions of the ESA, and promoting the recovery of wild salmon and steelhead.

References

- Anderson, J., Warheit, K.I., Craig, B.E., Seamons, T.R., Haukenes, A.H. 2020. A review of hatchery reform science in Washington State. Final report to the Washington Fish and Wildlife Commission. Washington Department of Fish and Wildlife, Olympia, WA.
- Cox, B., Wadsworth, T., and J. Holowatz. 2019. Short-term survival of fall Chinook and Coho salmon captured by purse seines in the lower Columbia River, 2017: a holding study. Washington Department of Fish and Wildlife. Olympia, WA.
- Cox, B., Sippel, T., 2020. Pound net and PD7 2017 survival analysis: recommended release mortality rates for pound net gear. Washington Department of Fish and Wildlife. Olympia, WA.
- Delaney, B., et al. 2022. Letter to Columbia River fisheries managers. Astoria, OR.
- Hatchery Scientific Review Group (HSRG), 2009. Columbia River hatchery reform system-wide report. HSRG, Seattle, WA. <https://www.streamnet.org/home/data-maps/hatchery-reform/hsrg-reports>.
- NMFS (National Marine Fisheries Service). 2013. ESA Recovery Plan for Lower Columbia River coho salmon, Lower Columbia River Chinook salmon, Columbia River chum salmon, and Lower Columbia River steelhead. Seattle, WA.
- NMFS. 2017. Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat (EFH) Consultation. NOAA's National Marine Fisheries Service's implementation of the Mitchell Act Final Environmental Impact Statement preferred alternative and administration of Mitchell Act hatchery funding. NMFS Consultation Number: NWR-2014-697. Seattle, WA.

- NMFS. 2018a. Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response. Consultation on effects of the 2018-2027 U.S. v. Oregon Management Agreement. NMFS Consultation Number: WCR-2017-7164. Seattle, WA.
- NMFS. 2018b. Memo from NMFS to the U.S. v. Oregon Technical Advisory Committee: Release Mortality rates for fall season non-treaty commercial gillnet and tangle net gear. July 30, 2018.
- NMFS. 2021. Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat (EFH) Consultation. Select Area Fisheries Enhancement (SAFE) Spring Chinook Salmon and Coho Salmon Programs. NMFS Consultation Number: WCRO-2020-02145. Seattle, WA.
- NMFS. 2024. Endangered Species Act Section 7(a)(2) Reinitiated Biological Opinion and Magnuson–Stevens Fishery Conservation and Management Act Essential Fish Habitat Response. NOAA’s National Marine Fisheries Service’s Continued Implementation of the Mitchell Act FEIS Preferred Alternative and Administration of the Mitchell Act hatchery funding. NMFS Consultation Number: WCRO-2024-03014. Seattle, WA.
- ODFW (Oregon Department of Fish and Wildlife). 2005. Hatchery and genetic management plan: SAB Fall Chinook. ODFW, Salem, OR.
- ODFW. 2010. Lower Columbia River Conservation and Recovery Plan for Oregon Populations of Salmon and Steelhead.
- ODFW. 2016. Hatchery and genetic management plan: Big Creek hatchery Tule Fall Chinook. ODFW, Salem, OR.

ODFW. 2013. Oregon Administrative Rule 635-500-6705: guiding principles for Columbia River fisheries management. ODFW, Portland.

ODFW. 2017a. Oregon Administrative Rule 635-500-6730: Tule Fall Chinook. ODFW, Portland. https://oregon.public.law/rules/oar_635-500-6730

ODFW. 2017b. Oregon Administrative Rule 635-500-6735: Upriver Bright Fall Chinook. ODFW, Portland. https://oregon.public.law/rules/oar_635-500-6735.

Paquet, P. J., Flagg, T., Appleby, A., Barr, J., Blankenship, L., Campton, D., Delarm, M., Evelyn, T., Fast, D., Gislason, J., Kline, P., Maynard, D., Mobrand, L., Nandor, G., Seidel, P., & Smith, S. (2011). Hatcheries, conservation, and sustainable fisheries-achieving multiple goals: Results of the Hatchery Science Review Group's Columbia River basin review. *Fisheries*, 36(11), 547–561. <https://doi.org/10.1080/03632415.2011.626661>

RCW 77.75.010 Columbia River Compact – provisions.
<https://app.leg.wa.gov/rcw/default.aspx?cite=77.75.010>

Streamnet. 2025. Pacific States Fisheries Marine Fisheries Commission.
<https://www.streamnet.org/data/hli/>

TAC (Technical Advisory Committee). 2018. Memo from U.S. v. Oregon Technical Advisory Committee to U.S. v. Oregon Policy Committee. Recommended Revisions to Release Mortality Rates Used for Fall Non-Treaty Commercial Fisheries. March 23, 2018.

TAC. 2020. Memorandum from Stuart Ellis (TAC Chair) to Jeromy Jording (NMFS): recommended release mortality rates for pound gear. U.S. vs. Oregon Technical Advisory Committee.

- Takata, H., and A. Johnson. 2018. Post-release mortality of Coho Salmon captured with tangle nets in the lower Columbia River. Oregon Department of Fish and Wildlife. Salem, OR.
- Tuohy, A. M. 2018. Post-release survival of Chinook Salmon and Steelhead Trout from an experimental commercial fish trap in the lower Columbia River, WA. Master's Thesis. University of Washington, Seattle.
- Tuohy, A. M., Skalski, J. R., and N. J. Gayeski. 2019. Survival of salmonids from an experimental commercial fish trap. *Fisheries* 44(6).
- Tuohy, A. M., J. R. Skalski, and A. T. Jorgenson. 2020. Modified commercial fish trap to help eliminate salmonid bycatch mortality. *North American Journal of Fisheries Management*, 40(5): 1239-1251. <https://doi.org/10.1002/nafm.10496>
- Tuohy, A. M., Jorgenson, A. T., and J. R. Skalski. 2022. Maximizing salmonid bycatch survival with passively operated commercial fish traps. *Fisheries Research*. DOI: doi.org/10.1016/j.fishres.2022.106495.
- US v. OR MA (U.S. v. Oregon Management Agreement), 2018. 2018–2027 U.S. v. Oregon Management Agreement. Available: <https://critfc.org/documents/us-v-oregon-agreement>.
- WA State Legislature. 2022. Engrossed substitute senate bill 5693. Chapter 297, Laws of 2022. 67th Legislature, 2022 Regular Session. Olympia, WA.
- WAC 220-360-500. Designation of an emerging commercial fishery in the Lower Columbia River. <https://app.leg.wa.gov/WAC/default.aspx?cite=220-360-500&pdf=true>
- WAC 220-360-510. Columbia River emerging commercial fishery -- Qualifications. <https://app.leg.wa.gov/wac/default.aspx?cite=220-360-510>

- WAC 220-360-530. Columbia River emerging commercial fishery – Season, area, and gear requirements. <https://app.leg.wa.gov/wac/default.aspx?cite=220-360-530>
- WDFW (Washington Department of Fish & Wildlife). 2018. Comprehensive evaluation of the Columbia River Basin salmon management policy C-3620, 2013-2017. Olympia, Washington.
- WDFW. 2022. Subsection C Report to Legislature. December 1, 2022. Olympia, WA. <https://wdfw.wa.gov/publications/02356>
- WDFW. 2023. Emerging Commercial Fishery Rule-making and associated small business economic impact statement (SBEIS). Olympia, WA.
- WDFW and ODFW. 2023. Memo: Columbia River Emerging Commercial Fishery Direction. December 22, 2023
- WFWC (Washington Fish and Wildlife Commission). 2009. Washington Fish and Wildlife Commission hatchery and fishery reform policy decision. WFWC, Policy C-3619, Olympia.
- WFWC. 2013. Columbia River basin salmon management policy decision. WFWC, Policy C-3620, Olympia.
- WFWC. 2020. Columbia River salmon fishery management policy decision. WFWC, Policy C-3630, Olympia.
- Wilson, J. and T. Buehrens. 2023. Weirs: An effective tool to reduce hatchery–wild interactions on the spawning grounds? North American Journal of Fisheries Management. 2024;44:21–38.