

DRAFT APPENDIX C TO THE PRELIMINARY DRAFT REBUILDING PLAN ANALYSIS  
FOR QUEETS RIVER NATURAL SPRING/SUMMER CHINOOK:

SOCIOECONOMIC IMPACTS OF MANAGEMENT STRATEGY ALTERNATIVES

Domestic ocean fisheries impacting Queets River natural spring/summer Chinook (Queets sp/su Chinook) included in the rebuilding plan analysis occur mainly off the coast of Washington state and in Oregon north of Cape Falcon. These fisheries analyzed include nontribal commercial and sport fisheries. The focus of this analysis is impacts on ocean fisheries and related economic activity. Therefore, the economic benchmark is impacts for port areas in Oregon and Washington north of Cape Falcon during 2004 to 2023. The year 2023 was selected as the last year of the period because it was the most recent year for which data were available when the analytical models were developed. A 20-year time span was used since the years within that timeframe include recent history and describe a range of harvest and escapement levels that could reasonably be expected to occur in future years, although due to ocean, climate, and other conditions, the actual distribution may tend more toward one end of this spectrum than the other or exhibit increased variability.

It is important to note that the units used to measure the value of the commercial fishery (ex-vessel value) are different from the units used to measure the value of the sport fishery (estimated angler expenditures) and therefore are not comparable to each other, nor additive to estimate the total value in dollars.

1.1 Economic Data

Estimates of total exvessel value during 2004-2023 in affected port areas north of Cape Falcon for the non-tribal commercial ocean troll salmon fishery averaged approximately \$2.9 million per year (in inflation-adjusted 2023 dollars), ranging from \$1.4 million to \$5.2 million. Estimates of total expenditures in the ocean recreational salmon fishery averaged \$17.4 million, ranging from \$6.6 million to \$27.9 million (Figures 1.1.a and 1.1.b).

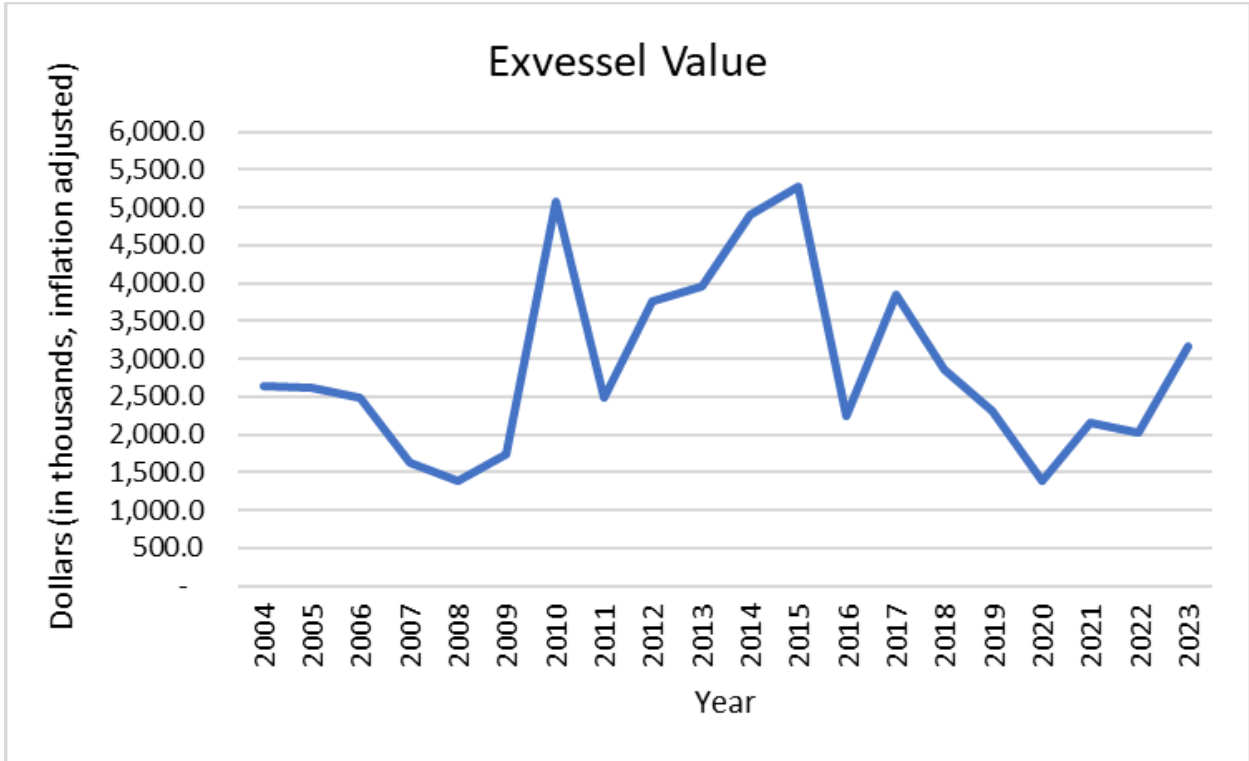


Figure 1.1.a. Ex-vessel Value of Chinook and Coho Commercial Troll Landings in Coastal Ports in Washington and Oregon North of Cape Falcon

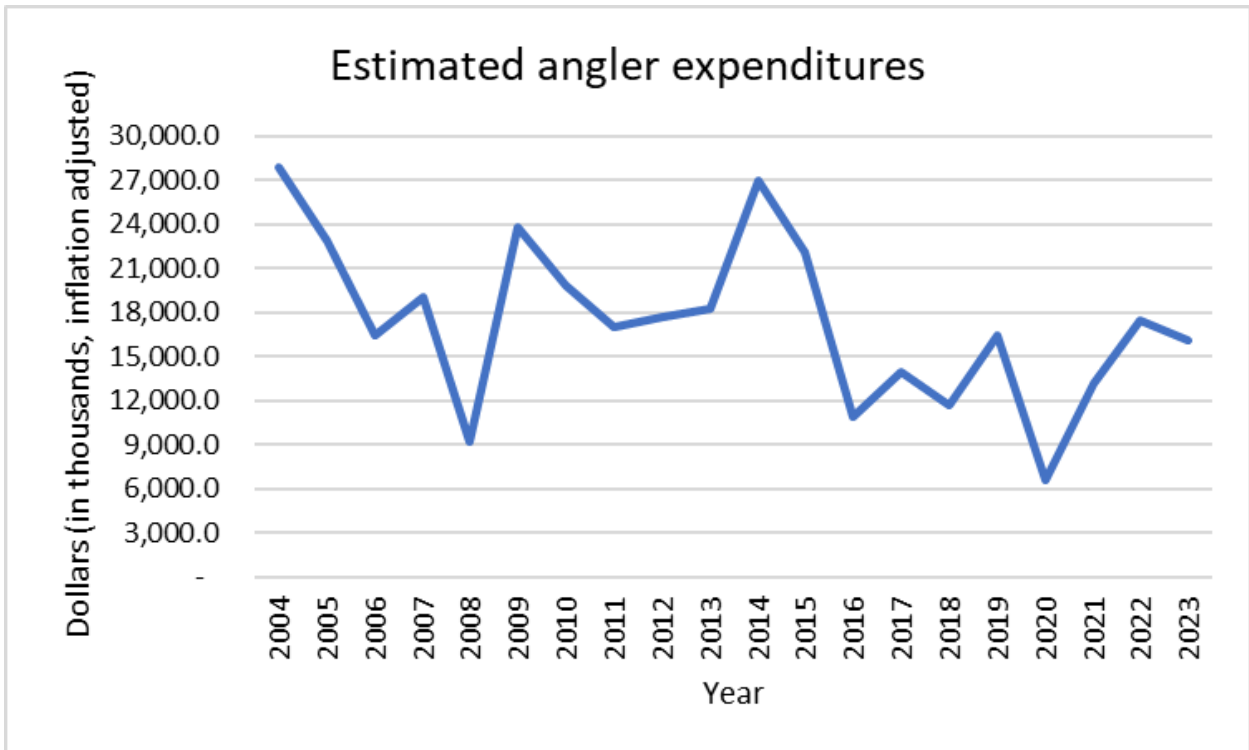


Figure 1.1.b. Estimated Expenditures by Sport Salmon Anglers in Marine Areas of Coastal Washington and Oregon North of Cape Falcon.

## 1.2 Management Strategy Alternatives

In the rebuilding plan analysis, two alternatives were provided for Pacific Fishery Management Council (Council or PFMC) consideration: status quo (no action) and closure of the non-tribal fisheries in Council-area ocean salmon fisheries north of Cape Falcon (NOF), OR (action).

A third scenario was analyzed to comply with the Magnuson-Stevens Fishery Conservation and Management Act (MSA) National Standard 1 (NS1) guideline regarding rebuilding plans, which requires an estimate of the rebuilding time in the absence of any fishing mortality. This ‘no mortality’ scenario is described as the  $T_{\min}$  scenario.

To estimate  $T_{\min}$ , an impact rate of zero is assumed, meaning all fisheries affecting the stock would cease until the stock was rebuilt. Because the Council does not have jurisdiction over tribal, in-river, and other fisheries that may impact the stock, a ‘no-fishing’ alternative is not a viable option for the Council to consider. Also, a ‘no-fishing’ alternative does not meet the purpose and need of the proposed action because it would restrict tribal fisheries in a manner that is inconsistent with their treaty right.

However, because  $T_{\min}$  does serve as a bookend in the analysis of rebuilding probabilities when assuming an exploitation rate of zero, this ‘ $T_{\min}$  scenario’ fulfills the requirement of National Standard 1 in calculating the minimum time ( $T_{\min}$ ) estimated to achieve rebuilt status. It is for this purpose only that the ‘ $T_{\min}$  scenario’ was included in the rebuilding analysis and because it does not meet the purpose and need of the proposed action, it is not included in the economic analysis provided below.

### Alternative I:

Status Quo. During the rebuilding period, continue to use the current management framework and reference points, as defined in the Pacific Salmon Fishery Management Plan (FMP) and the Pacific Salmon Treaty (PST), to develop annual fishery regulations. This is considered a ‘no-action’ alternative. Under this scenario, the results of the rebuilding time analysis suggest that the probability of achieving rebuilt status stabilizes at a maximum of approximately one percent in year-four. This is below the 50 percent threshold, suggesting rebuilt status may never be achieved under current conditions and that the rebuilding time,  $T_{\text{target}}$ , is projected to exceed the ideal  $T_{\text{max}}$  of 10 years. See Section 4.4 of the Rebuilding Plan analysis.

### Alternative II:

Suspend non-tribal NOF Council-area ocean salmon fisheries to minimize impacts within Council jurisdiction to the extent feasible on Queets sp/su Chinook until the stock meets the criteria for rebuilt status. Under this Alternative, the probabilities of achieving rebuilt status stabilize at a maximum of one percent for the low ER scenario and two percent for the high ER scenario. This is below the 50 percent threshold, suggesting that rebuilt status may never be achieved and that the rebuilding time,  $T_{\text{target}}$ , is projected to exceed the ideal  $T_{\text{max}}$  of 10 years. See Section 4.4 of the Rebuilding Plan analysis.

### 1.3 Economic Impacts

The data provided in the following section is specific to the non-tribal Council-area ocean salmon fisheries north of Cape Falcon and focuses on commercial (troll) and sport fisheries.

Exvessel values in Figure 1.1.a are based on reported annual harvest by catch area combined with that year's average Chinook and coho weights per fish caught. If the actual average weights per fish or exvessel prices diverge significantly from what was observed in recent years, then salmon exvessel revenues and resulting impacts projected in this document may prove to be correspondingly biased.

Estimated angler expenditures in Figure 1.1.b are based on angler trips (effort) and the estimated dollars spent on both charter and private trips. If the actual expenditures diverge significantly from what was observed in recent years, then salmon exvessel revenues and resulting impacts projected in this document may prove to be correspondingly biased.

Salmon that remain unharvested in the ocean do not necessarily represent a total economic loss, as they may augment inside harvest or provide additional spawning escapement that contributes to ocean abundance in subsequent years. Restricting ocean harvests may increase opportunities for inside harvesters (e.g., higher commercial revenue or more angler trips) or contribute to higher inside catch per unit effort (CPUE) representing lower costs for commercial harvesters and/or higher success rates for recreational fishers. Salmon that remain unharvested by both ocean fisheries and inside fisheries may impact future production, although the magnitude and direction of this effect varies depending on the biology of the affected stocks, habitat, and environmental factors.

Alternative I: Status quo management strategies would be employed consistent with the FMP, and regulations set annually resulting from the preseason salmon process. Over the past 20 years (2004-2023), the exvessel value of salmon from the troll fishery has averaged \$2.9 million, ranging from \$1.4 million to \$5.3 million. During the same period, the estimated angler expenditures averaged \$17.4 million, ranging from \$6.6 million to \$27.9 million. It seems reasonable to assume that the economic value of each of these fisheries would fall within the range observed within the past 20 years given the trends in salmon abundance and environmental conditions, although it is possible that values may fall outside the range.

During the rebuilding period, which is estimated to be at least ten-years, Alternative I would not result in an economic impact.

Alternative II: NOF non-tribal ocean fisheries would be suspended until the stock reached rebuilt status, which is projected to take longer than the ideal maximum rebuilding time ( $T_{max}$ ) of ten years. The impact of this alternative for the troll fishery is estimated at an annual loss, on average, of at least \$2.9 million. If the stock is rebuilt in ten years (which projections show is unlikely), then the sum of the economic impact during those ten years would be estimated at \$29.0 million. The impact of Alternative II on the sport fishery is estimated at an annual loss of \$17.4 million. If the stock is rebuilt in ten years (which projections show is unlikely), then the sum of the economic impact during those ten years would be estimated at \$174.0 million. Of course, these are estimates

that do not take into account how fishery participants may shift their effort or focus on other fisheries which could result in lowering the negative impact of a closure of the NOF ocean salmon fishery. Additionally, with a suspension of harvest, future broods of salmon may increase in abundance that may result in increased harvest opportunity that may cover some of the estimated economic loss.

During the rebuilding period, which is estimated to be more than ten years, this Alternative could result in an economic (negative) impact of \$2.9 million on the troll fishery annually and \$17.4 million on the sport fishery annually. Given the magnitude of the potential negative economic impact of Alternative II, it may not be a viable option when considering the impact to the communities as described under NS1 of the MSA.

#### 1.4 Social and Community Impacts

The effect of the Proposed Action on other indicators of community social welfare (e.g., poverty, divorce rates, graduation/dropout rates, incidents of domestic violence, etc.) cannot be directly measured. Change in personal income in communities may be used as a rough proxy for other socioeconomic effects. However, changes in the broader regional economy (“cumulative effects”) and long-term trends in fishery-related employment are more likely to drive these indicators of social wellbeing than the short-term economic effects of the Proposed Action.

To the extent practicable, social impacts are considered when tribal and non-tribal commercial and recreational salmon seasons are shaped. To minimize regulatory complexity in recreational fisheries, season dates and regulations are kept as consistent as possible within major management areas. Bag limits allow a greater number of fishers to participate in the fishery. Minimum size limits generally remain consistent throughout the season in most areas, which, in addition to biological benefits, tends to increase regulatory compliance. Where size limits do change in-season, the size limits decrease, such that anglers complying with earlier size limits will still be in compliance with the smaller size limits. Efforts are made to accommodate important cultural events such as Memorial Day, Independence Day, and Labor Day holidays as well as traditional fishing derby events. Commercial fisheries often include vessel limits per trip or per open period to stretch quota attainment over a longer period of time. Doing so can provide greater access for smaller vessels, increase safety at sea by limiting the incentive to fish in inclement weather, improve marketing opportunities, and extend the period during which consumers have access to fresh, wild caught salmon. Notification mechanisms by phone, text or email allow commercial vessels greater flexibility in choosing a port of landing to take advantage of better markets or to access better infrastructure. That being said, closure of all commercial and recreational salmon fisheries could be expected to have significantly adverse social impacts on fishing communities and economically linked businesses in those areas.

Salmon are an important part of tribal culture and have been since time immemorial. Salmon provide economic, cultural, ceremonial, and subsistence benefits to west coast tribal communities.

Alternative I: Under no-action, the salmon seasons would continue to be managed consistent with the FMP and other policy and regulatory guidelines. Social and community impacts from utilizing a status quo management strategy are expected to be within the range seen in previous years, which are typically based on salmon abundance and harvest opportunity. The estimated rebuild time of

at least ten years is not expected to result in a shift from the social and community impacts seen in previous years and analyzed in the annual ‘preseason reports’ compiled during the preseason salmon management process by the Council (PFMC 2024).

Alternative II: Suspending Council-area NOF non-tribal ocean salmon seasons until the stock is rebuilt would likely have pronounced impacts on salmon fishing communities in the NOF area. The NOF area includes port communities along the Washington coast and Astoria, Oregon with historical importance to salmon fishing. Reductions in salmon fishery opportunities in many of these ports could be financially detrimental and socially disruptive. Fishery participants could shift focus to other fishing opportunities or other income sources to maintain their livelihood, and it is uncertain if participants who leave the fishery would return once the stock is rebuilt. Small businesses directly or indirectly reliant on salmon fisheries may see reduced income as a result of the closure which could result in reduced employment opportunities and business growth potential.

## 1.5 Environmental Justice

*Environmental Justice (EJ) Populations*: Executive Order 12898 and the Council for Environmental Quality (CEQ) guidance on Environmental Justice under NEPA identifies Environmental Justice (EJ) populations as low income, minority, or those relying on subsistence fishing or farming including Indian tribes. National Oceanic and Atmospheric Administration (NOAA) Fisheries has recently published their West Coast Equity and Environmental Justice (EEJ) Implementation Plan, which identifies tribal communities and minority fishing communities as potentially underserved, although this list may be updated over time. Additionally, there may be communities that are limited by access to information, geographic isolation, or low income which could also be considered EJ communities. Based on this information there are likely EJ communities within the action area.

Alternative I: Under no-action, the salmon seasons would continue to be managed consistent with the FMP and other policy and regulatory guidelines, and therefore this Alternative would not have an effect on EJ communities.

Alternative II: Suspending Council-area NOF non-tribal ocean salmon seasons would likely have a negative impact on salmon fishing EJ communities in the NOF area. While Alternative II (action Alternative) could result in adverse economic effects through closure of the non-tribal ocean NOF salmon fisheries, the data cannot identify specific communities, by census block, which may be affected by reductions in commercial or recreational fishing. Commercial and recreational fishermen may capture fish, land fish, and reside in different geographic areas. In addition, based on available data, it is not possible to distinguish differences in impacts between EJ and reference populations. Economic models apply the overall harvest management framework to the overall area to determine effects of harvest reduction. Further dividing the projections to each county would result in a proportional distribution among the counties in that region. Therefore, if the study area includes EJ communities (based on low income or minority thresholds), it is not possible to determine whether the economic effects of this alternative result in a disproportionate effect on low-income or minority communities.