

Concise Explanatory Statement

Puget Sound Commercial Salmon Regulations for 2019

This Concise Explanatory Statement (CES) describes the Washington Department of Fish and Wildlife's (WDFW) reasons for adopting 2019 Puget Sound commercial salmon fishing rules and responds to public comments received on the proposed rules. The rules, once adopted, will be set forth in Washington Administrative Code (WAC) sections 220-354-080, -120, -160, -180, -210, -310, -320, -330, -340 and 220-301-030. The management period for each fishing season typically ends in April and begins anew each May.

Rule Development Process

North of Falcon/PFMC processes used to develop a proposed rule (the "Prenotice Inquiry" stage of rule-making)

Rule Development Process for the 2019 North of Falcon process, began in early January with a commercial industry meeting reviewing the 2018 salmon fisheries. WDFW presented, discussed outcomes of the 2018 fishing season, and began discussions on the upcoming 2019 fishing season.

Similar to previous years, the 2019-20 North of Falcon process consisted of several public meetings from February to April. Hosted by WDFW, the meetings allowed commercial constituents opportunities to discuss the following matters pertinent to establishing any new commercial fishing season: preseason forecast, implications of forecast, fishery structure, and season planning specific to commercial fisheries. In addition to input obtained during the public meetings, WDFW received comments by letter and electronic mail during the North of Falcon process described in more detail as follows.

State, federal, and tribal fishery managers, work collaboratively with recreational and commercial stakeholders during the North of Falcon and Pacific Fishery Management Council (PFMC) meetings, to develop fishing plans based on best available science regarding expected salmon returns, Endangered Species Act (ESA) limits, Treaty fishing rights of Northwest Treaty Indian Tribes, and policies of the agency and commission. The name "North of Falcon" (NOF) refers to Cape Falcon, Oregon, which is the southern border of active management for Washington salmon stocks. This process consists of a series of public meetings involving federal, state, tribal representatives, together with input from representatives and concerned citizens with an interest in recreational and commercial fishing activity.

The NOF planning process coincides with the March and April meetings of the PMFC, the federal authority responsible for setting ocean salmon seasons 3 to 200 miles off the Pacific coast. Work with federal fishery managers and fishing interest in offshore waters is essential to ensure coordinated state and federal fisheries on salmon stocks that migrate freely between state and federal waters.

In addition to the two PFMC meetings, the state of Washington and the Treaty Tribes sponsor additional meetings to discuss alternative fishing seasons that meet conservation and harvest sharing objectives. Additionally, WDFW solicits input from advisory groups whose representatives represent a diverse range of user group interests.

The development of salmon fishing seasons begins with completion of previous year's spawning grounds and hatchery escapement surveys and estimates by state and tribal biologists. Biologists apportion catch in each area to specific management groups and calculate a total run-size for each group. Biologists complete this analysis, also known as a run-reconstruction, each fall or early winter. Based on total run-size, and the associated survival rates, state and tribal biologists forecast the number of salmon and steelhead returning for the coming year. State and tribal biologists, in coordination with PFMC participants, typically complete the forecasts each year by late-February. From the run size forecasts, fisheries managers determine the amount available for directed or incidental harvest according to the management objectives. Once the forecasts and the number of fish available for harvest are determined, state and tribal fisheries managers can begin the process of developing specific annual fishing regulation proposals.

In connection with the 2019 North of Falcon season planning process, the tribal co-managers and WDFW conducted technical meetings and policy level discussions to develop agreement on conservation objectives, run-size forecasts, estimates of the allowable harvest, and tribal and non-tribal catch shares for the various salmon runs considered in defining fishing levels. WDFW and tribal co-managers also reached agreement on coordinated fishing schedules for tribal- and state-managed Puget Sound salmon fisheries. These schedules provide days of the week that are exclusively reserved for treaty fishing in areas where all-citizens fishing is also conducted. The Puget Sound commercial salmon fishing seasons proposed for adoption by WDFW in 2019 are the product of both the government-to-government, tribal-state negotiation component and the open public process component of the annual North of Falcon process.

CR 102 rule proposal phase with comment period and formal rule making hearings.

WDFW published the proposed 2019-20 Puget Sound commercial salmon season regulations in the Washington State Register (WSR) 19-11-126 on May 22nd, 2019. This filing included changes to WAC 220-354-080, -120, -160, -180, -210, -310, -320, -330, -340 and 220-301-030. Information regarding the proposed rule changes was mailed out to Puget Sound commercial salmon license holders, made available at subsequent meetings, and posted on WDFW's website. Subsequent to this filing, WDFW received input on the proposed rule package from two commenters.

Rationale for Adoption of Rules

Regulations for the 2019 Puget Sound commercial salmon fisheries were considered with respect to the following management objectives listed in order of priority. These objectives were shared

with industry representatives during the North of Falcon public process and have remained consistent over recent years:

- 1) Conserve the wildlife and food fish, game fish, and shellfish resources in a manner that does not impair the resource (RCW 77.04.012) by achieving conservation objectives for all species and stocks.
 - a) Ensure primary stocks meet escapement goals and/or management objectives
 - b) Manage fisheries to minimize mortalities on non-target species and stocks (including salmonids, non-salmonids, birds and marine mammals) consistent with Fish and Wildlife Commission Policy POL-C3608. This includes using management strategies to limit seabird mortalities consistent with the federal Migratory Bird Treaty Act
 - c) Monitor fisheries to ensure a & b are met
- 2) Harvest the all-citizens share of salmon
- 3) Maintain the economic well-being and stability of the fishing industry (RCW 77.04.012); allow a sustainable level of harvest sufficient to provide opportunity for each gear type (RCW 77.50.120)

When taking these objectives into account, WDFW conducted a thorough assessment of all technical and scientific information available to state and tribal co-managers. For example, the co-managers in 2019 analyzed pre-season forecast and stock identification data to determine agreed upon in-season harvest plans. Additionally, the WDFW reviewed all input from industry representatives and the general public regarding preferred fishing rules received during North of Falcon public meetings, in communication peripheral to scheduled public meetings, and that were received by the agency via electronic or mail portals provided for public commenting upon the proposed rules.

Important recent-year metrics of the Puget Sound commercial salmon fishery were considered including: licensed vessel to active vessel participant ratios, catch and by-catch compositions, predicted harvest under proposed rules, and the economics of these commercial fisheries. WDFW also considered the coordination of State and Tribal managed commercial fishing schedules. These elements were evaluated in accordance with the sub-proceedings of *United States v. Washington*, to attain an agreed-to fishery package receiving ESA authorization for 2019 all-citizens commercial salmon fisheries in Puget Sound.

Based upon all of this information gathered and reviewed by WDFW, the agency believes that adoption of the proposed 2019-20 Puget Sound commercial fishing regulations will be consistent with the identified management objectives based on the following rationale:

Objective 1a: Ensure primary stocks meet escapement goals and/or management objectives

The proposed rules and regulations for Puget Sound commercial salmon fisheries are constructed to ensure achievement of conservation objectives defined for each target species, stock, or management unit. The proposed rules define schedules with open fishing periods only for those fisheries that are directed at salmon stocks with harvestable abundance; all fisheries are monitored to ensure that catches do not exceed the number allowed for each species, stock, or management unit at which the fishery is directed. WDFW relied on pre-season forecasts of abundance to construct the fishing schedules. The agency will use in-season information, where available, to update preseason forecasts of stock abundance and to revise estimates of the allowable catches for each fishery.

Objective 1b: Manage fisheries to minimize mortalities on non-target species and stocks

Fish and Wildlife Commission Policy number C-3608, titled *2019-2023 North of Falcon* instructs the department to manage fisheries to minimize mortalities on non-target species and stocks. In structuring rules for the 2019 commercial salmon seasons, WDFW considered impacts of fisheries on non-target species; including Endangered Species Act (ESA) listed Puget Sound Chinook salmon, Hood Canal summer Chum salmon, Puget Sound steelhead, and two species of rockfish occurring in Puget Sound (yelloweye rockfish and Boccaccio), as well as other fish and wildlife species of concern. The proposed regulations are structured to ensure that incidental mortalities on non-target species are minimized by focusing fisheries at times and in areas of peak abundance for target salmon stocks, while avoiding times and areas with higher incidence of non-target species. For the proposed regulations that minimize bycatch, WDFW considered the best available scientific information concerning the potential impact of these fishing seasons on non-target species, often relying on joint recommendations of tribal and state technical staff.

Because bycatch mortalities vary by fishing method, the objective of minimizing bycatch requires WDFW to apply different rules to the different gear types. For example, salmon bycatch mortality associated with operation of reef net gear (used only in the Salmon Management and Catch Reporting Area 7/7A fisheries) is assumed by state and tribal fishery managers to be zero, because minimal contact with non-target salmon occurs with this gear during fishing operations and all prohibited bycatch is quickly released. For purse seine gear, state and tribal managers reviewed results of scientific studies on salmon bycatch mortality and concluded that the majority of Coho and Chinook salmon encountered by this gear will survive being sorted and returned to the water. Based on this scientific data, bycatch mortality of Chinook and Coho salmon in Puget Sound commercial purse seine fisheries targeting other salmon species can be minimized by requiring that these non-target species be released.

Scientific studies have been conducted on mortality rates for Coho and Chinook salmon encountered by gillnet gear largely conclude that release mortality rates are high. In accordance with the best available science, WDFW addresses the bycatch minimization objective for gillnet

gear differently than the approach used for purse seine gear. Relying on recommendations of the Joint Chinook Technical Committee of the Pacific Salmon Commission (Report TCCHINOOK (97)-1. PSC, 1997) that “CNR (Chinook non-retention) gillnet fisheries are unlikely to be implemented due to the high expected mortality rate of the fish released,” WDFW concludes that requiring release of Chinook and Coho salmon in Puget Sound gillnet fisheries generally will not result in the minimization of bycatch mortality. In the majority of Puget Sound gillnet fisheries WDFW does not require release of Chinook or Coho. Fishers are prohibited from discarding salmon that may be legally retained, except for fish that are made unmarketable due to marine mammal depredation. Because all retained salmon are required to be reported on commercial fish tickets, WDFW assumes that bycatch of these species is accounted for through on Commercial Fish Receiving Tickets. In recent years, WDFW has increased on-board monitoring of gillnet vessels, with the objective of comparing levels of bycatch estimated from direct observation of gillnet bycatch of Chinook and Coho to levels accounted for on Commercial Fish Receiving Tickets.

In the unique circumstances where WDFW has concluded that the bycatch minimization objective will be achieved by requiring release of certain salmon species from gillnets. Such circumstances include when regulations restrict the number of licenses participating such that all participants can be monitored, when regulations limit the size of fishing gear and length of net soak times (e.g., in the extreme terminal Area 12A Coho fishery with skiff gillnets), and when regulations require the use of recovery boxes.

The mortality rates applied to Chinook salmon encountered and released in Puget Sound purse seine fisheries, and the drop-out rates applied to gillnet fisheries, based on joint-tribal-state technical recommendations, are documented in the *2010 Comprehensive Management Plan for Puget Sound Chinook: Harvest Management Component*. This plan was approved by the National Marine Fisheries Service (NMFS), providing ESA coverage for Puget Sound Fisheries under Limit 6 of the ESA 4(d) rule. More recently, annual consultation with NMFS and the associated ESA coverage has come in the form of an annual take authorization under section 7 of the ESA with approval coming through the federal nexus of NMFS consultation with the Bureau of Indian Affairs.

In addition to measures described above, the department’s proposed regulations for Puget Sound commercial salmon fisheries incorporate gear, time, and area restrictions to minimize bycatch encounters. This is particularly the case for summer Chum originating from Hood Canal and the Eastern Strait of Juan de Fuca. In March of 1999, NMFS determined that the summer Chum originating from Hood Canal and the Strait of Juan de Fuca represented an Evolutionarily Significant Unit (ESU), and formally listed these fish under the Endangered Species Act (ESA) as a threatened species. In April 2000 the state and tribal co-managers published a summer Chum management plan, approved by NMFS (*Summer Chum Salmon Conservation Initiative - An Implementation Plan to Recover Summer Chum in the Hood Canal and Strait of Juan de Fuca*

Region), which contains base conservation regimes (BCR) for fisheries with specific guidelines by area, timing gear type, and summer Chum forecasts combined with in-season escapement numbers. For example in Area 12A, under the BCR guidelines, beach seine fisheries cannot begin prior to August 21st, while gillnet fisheries cannot begin prior to September 1st. Also the BCR guidelines stipulate that these fisheries cannot open until at least 1,500 Chum have been counted in the river, and can open one day per week if fewer than 2,500 Chum have been counted in river. Further, all citizens gillnets can only open if tribal fisheries are open, and gillnets must release Chum by cutting the mesh ensnaring the fish.

Conservation concerns over the non-salmon species encountered during Puget Sound commercial salmon fisheries are increasing. Fish species of concern in Puget Sound include ESA-listed Chinook salmon, summer Chum salmon, and steelhead, as well as ESA-listed Boccaccio and Yelloweye rockfish. Other wildlife species of concern in Puget Sound include federal ESA-listed Southern Resident killer whales and marbled murrelets; along with tufted puffins, a state listed Endangered Species. For these species, data collected from purse seine observations indicates a low encounter rate, but (as discussed below) there is minimal gillnet monitoring data from recent seasons. Extrapolation of purse seine data to the gillnet fishery in general may not be valid given known differences between the gear types and their impacts on various species.

Bycatch of seabirds entangled in gillnet gear is believed to pose the greatest risk of injuring or mortality of a commercial salmon net types. Encounters and mortalities of ESA-listed marbled murrelets are documented in the *USFWS Biological Opinion on the proposed 2017-2036 Puget Sound Salmon Fisheries and its effects on Marbled Murrelet*, 2017. This Biological Opinion (Bi-Op.) on Marbled Murrelets provides incidental take coverage for both WDFW and treaty Indian managed Puget Sound salmon fisheries through 2037 unless consultation by the USFWS is initiated prior to that time. In its Bi-Op., USFWS used all-citizens commercial effort data from 2000-2015 to extrapolate expected effort and impacts of the fishery to marbled murrelets during the proposed action. USFWS concluded that the proposed Puget Sound salmon fisheries are not likely to have an appreciable influence on the numbers of marbled murrelets when taking into account cumulative effects on the species. However, should any substantial increases in fishing effort occur WDFW is concerned that take limits could be exceeded and re-consultation on Puget Sound salmon fisheries would be triggered. Re-consultation of the current Biological Opinion for Marbled Murrelets could include further restrictions on Puget Sound commercial fisheries. Therefore, WDFW is particularly cautious about expanding fishing time.

The proposed regulations for the 2019 Puget Sound commercial salmon seasons include restrictions specific to purse seine and gillnet gears that are expected to reduce seabird mortalities. These restrictions are identical to those implemented since the mid-1990s on the basis of recommendations of scientists conducting seabird bycatch studies as well as input from both gillnet and purse seine fishers.

Marine mammal injuries and mortalities in Puget Sound net fisheries are another concern. The federal Marine Mammal Protection Act (MMPA) requires the NOAA Fisheries to address the impacts of all fisheries on individual marine mammal stocks and to classify fisheries into one of three categories based on their risk of “incidental take” of marine mammals. All fisheries are required to report marine mammal injuries or mortalities to the NOAA Fisheries within 48 hours of the event. Puget Sound purse seine fisheries are designated as a Category III fishery “with a remote likelihood or no known serious injuries or mortalities” to marine mammals and have no requirements beyond reporting any injuries or mortalities. Puget Sound gillnet fisheries are designated as a Category II fishery “with occasional serious injuries or mortalities” to marine mammals. Category II fisheries require fishers to obtain an annual Marine Mammal Take Authorization from NOAA Fisheries and carry it on board the vessel during any commercial fishing operations. Currently NOAA Fisheries cites incidental takes of harbor porpoises in this fishery as being the driver for the Category II designation of the gillnet fishery. NOAA Fisheries’ final rule, providing take authorization for the 2019 Puget Sound commercial salmon fisheries, was published in the Federal Register on May 6, 2019.

An additional concern with net fishing is lost and derelict gear because it can remain in the environment and entangle animals until it is located and removed. Efforts to locate and remove derelict gear have increased in recent years as have concerns over their impacts on ESA-listed rockfish species in Puget Sound. The Northwest Straits Foundation (NWSF) reported removing 5,797 pieces of derelict fishing nets, of which a large majority have been gillnets, from Puget Sound, the San Juan Islands, and the Strait of Juan de Fuca since 2002. The length of time the nets have been in the water is estimated based on biological growth on the net as well as the amount of sediment on the net. The majority of the nets identified and removed were gillnets, and based on interviews with fishers, data from enforcement agencies, and recent fishing effort, NWSF estimates that between 5 and 13 additional nets or portions of nets are lost each year by all citizens net fishermen in Puget Sound. In 2012 the state legislature passed a law (RCW 77.12.870) requiring commercial fishermen to report any gear they abandon to WDFW within 24 hours, so that the gear can be located and removed as soon as possible.

In summary, WDFW concludes that the proposed rules and regulations for the 2019 Puget Sound commercial salmon seasons are reasonably constructed to meet the objective to minimize bycatch overall. However, with respect to non-target salmon species and stocks, seabirds, and other non-salmon species, continued and in certain cases increased monitoring is needed to verify that bycatch is indeed minimized. As new scientifically reliable information becomes available in the future, WDFW will adjust the fisheries as necessary to continue to protect non-target species.

Objective 1c: Monitor fisheries to ensure a & b are met

Assessing non-target salmon bycatch is a matter of estimating both the number of fish encountered by the gear and the proportion of the fish released that will survive. WDFW relies on scientific

studies to determine the release survival rate. The most accurate estimates of numbers of fish or other species incidentally encountered in purse seine and gillnet fisheries come from direct, on-board sampling by trained technical staff. The data collection is focused on non-target salmon species, although data on ESA-listed species and other species of concern are collected when possible. However, this on-board sampling does not provide estimates for additional sources of fishing related-mortality, such as net dropout (fish that fall out of the net while it is being retrieved) or predation by marine mammals on fish captured in the net.

Sampling and monitoring programs implemented by WDFW have been focused on purse seine fisheries to obtain mortality estimates on non-target salmonids. In-season monitoring data are needed from purse seine vessels to estimate the number of Chinook and Coho salmon they encounter in a fishery when they are not allowed to retain those species. For gillnet fisheries WDFW relies on fish tickets for non-target salmon catch numbers as gillnets are required to retain Chinook and Coho. From 2011-2014, WDFW focused a portion of its commercial sampling efforts on gillnet vessels in an attempt collect data on bycatch of non-target salmon, non-salable fish, and other species. With the limited resources available for commercial monitoring, collecting data on gillnets required the department to reduce the sampling on purse seine vessels and rely on bycatch data and rates from past years with more robust sampling for projecting bycatch impacts for purse seines. Examination of gillnet observer data collected during this time has raised some questions about whether fish tickets can be used to accurately evaluate bycatch of non-target salmon species. For both Areas 10/11 and 12/12B, gillnet observer data show a higher rate of Chinook encounters than were reported on fish tickets for gillnet landings. WDFW currently does not have the resources to increase observer coverage in the gillnet fishery to determine the cause of discrepancies between fish tickets and observer data.

A number of species and stocks of conservation concern are encountered incidental to Puget Sound commercial salmon fisheries, including ESA-listed Chinook salmon, Puget Sound steelhead, and species of Puget Sound rockfish. Commercial fishers are prohibited from landing some of these species in any fishery (e.g. steelhead) and therefore, these fish are not reported on fish tickets. Consequently, WDFW has been unable to estimate bycatch in gillnets for some species. Unfortunately the sampling program is limited by its budget, meaning that comprehensive sampling of all fisheries to address bycatch concerns is not possible every year. WDFW will utilize available sampling information in a precautionary manner and may adjust fishing schedules if data indicate that non-target species bycatch levels for either gear type are greater than levels assumed in pre-season planning models and analyses.

Objective 2: Harvest the all citizens share of salmon

The proposed rules and regulations of these commercial fisheries are designed to ensure that the total allowable catches defined for each fishery are fully utilized. Season structures considered for 2019 reflect expected abundance of target salmon species and stocks, based on pre-season

forecasts. Abundances for some salmon stocks will be updated as the season progresses, based on scientific information collected from the fisheries and agreements reached by the state and tribal co-managers. The all-citizens total allowable catch will be adjusted accordingly and may result in increasing all citizens fishing opportunity. However, given the uncertainty associated with estimates of fishing effort, harvest rates, and the abundance of the target species or incidentally caught species, in-season adjustments to the fisheries may be necessary to meet conservation objectives. These adjustments could result in the harvest of less than the full all citizens allowable catch. WDFW will attempt to provide advanced notice to the commercial fishing fleet of any changes to schedules.

If tribal harvest allocations are not fully utilized, then WDFW may seek to maximize the state's commercial-fishing harvest opportunity by adjusting the all-citizens total allowable catch consistent with the state-tribal Puget Sound Salmon Management Plan and Washington Fish and Wildlife Commission's North of Falcon policy (C-3608). Policy C-3608 states in part: "The Department will seek non-treaty fishing access to unutilized portions of treaty harvest allocations through the implementation of pre-season agreements, taking into consideration changes in abundance, fishery conflicts, and factors that may influence attainment of spawning escapement objectives."

Objective 3: Maintain the economic well-being and stability of the fishing industry (RCW 77.04.012); allow a sustainable level of harvest sufficient to provide opportunity for each gear type (RCW 77.50.120)

The proposed rules and regulations for these commercial fisheries are designed to maintain the economic well-being and stability of the fishing industry, and to provide a sustainable level of harvest sufficient to provide opportunity for each gear type. This management objective is challenging to address, given the diversity of the Puget Sound commercial salmon fishing fleet in terms of gear types, and the number of discretely managed fisheries opened each year. In addition, the economic health and stability of these fisheries depends on many factors beyond WDFW's control, including the prices paid for salmon, the abundance of salmon, the relative size of the salmon, the proportion of vessels choosing to participate in a fishery, the catch rates of vessels that do participate, and other related factors.

Prices paid for salmon caught in these fisheries are influenced by international market conditions and other factors which WDFW cannot control. These include but are not limited to: abundance of salmon in the fishery, the amount of salmon available from fisheries in other areas such as Alaska, the amount of product stored from previous years, competition between buyers, quality of the fish, and prices of farmed salmon. WDFW also cannot control the effort of fishers who hold limited entry Puget Sound commercial salmon permits (189 gillnet, 75 purse seine, and 11 reef net). While WDFW can open areas to harvest of salmon for commercial license holders, the department cannot control the number of vessels that choose to participate in full-fleet openings.

Participation levels in a given opening are driven by many factors including the price of salmon, cost of fuel, weather and tidal conditions, and harvest opportunities on other species of fish and/or harvest opportunities in other Puget Sound salmon areas. Catch rates for a given gear type will vary between years and within a single year over individual openings due to changes in salmon abundance, salmon size, migration behavior, and many other operational decisions made by vessels participating in the fishery that are not listed here.

Finally, WDFW negotiates all-citizens commercial salmon fishing openings with tribal co-managers, consistent with the process developed under sub-proceedings of *United States v. Washington*. These negotiations as well as in-season coordination with and management with tribal co-managers have many different components that reach far beyond the scope of Puget Sound commercial salmon fisheries. This means that there may be instances where WDFW would prefer to maintain or increase fishing opportunity for all-citizens fishers, but the ability to do so is affected by the need to make compromises in order to achieve successful negotiations with tribal co-managers. ESA requirements for affected, listed species must also be factored into fishery impact modeling and state-tribal negotiations.

Given the many factors beyond WDFW's control, the department concludes that the most effective means of positively affecting the well-being and stability of the industry is by providing a predictable season structure designed to access the full allowable harvest. However, WDFW believes it is prudent to avoid annual or short-term adjustments to season schedules because there is significant inter-annual variation in fishery performance, and the outcome of a single year may not indicate that an adjustment is appropriate or necessary to achieve this management objective. In situations where the all citizens share is not being fully utilized, increased opportunity can promote the well-being of the industry, if that opportunity can be provided while meeting conservation objectives for target and non-target species and stocks. This management approach gives fishing businesses the ability to plan for upcoming opportunities and to make business-based decisions about when and where to fish.

The rationale for how the 2019 rules will promote the well-being and stability of the industry and allow a sustainable level of harvest is detailed by area and fishery below. Due to the potential destabilizing effect of changes, focus is placed on modifications to schedules from past years and ways the modifications will affect achievement of Objective 3. The rationale for incorporating or not incorporating industry input received during the North of Falcon process is also included here.

Area 6D (Coho) – The 2019 schedule is similar to last year. In recent years, the fishery has been open Monday through Friday of each week beginning on September 21st. During 2019 the calendar dates and management periods agreed to by WDFW and tribal co-managers in the Summer Chum Salmon Conservation Initiative (SCSCI) created a situation where the only possible opening during the management week containing September 21st is Saturday September 21st. In order for the all-citizen fishery to open on September 21st, WDFW reached agreement with

tribal co-managers to close the following Monday (September 23th) of the second week to maintain a two break in the all citizen fishery. No other changes were made.

Area 7/7A (Chum) – In 2014 through 2016, the U.S. has harvested its full share of Area 7/7A Chum available under the Pacific Salmon Treaty. These were the first years the US harvested its full share of Chum since the renegotiation of the Chum annex of the Pacific Salmon Treaty in 2008. In order to provide opportunity for the all citizens fleet to harvest its share, an agreement similar to recent years was negotiated with tribal co-managers to provide additional all citizens fishing opportunity early in the season, if only a small portion of the all citizens share has been harvested after the first three days of all citizens fishing. The all citizens fishery will be open October 11th, 12th, 14th and 15th and will reopen through the end of the season on either October 18th or 19th based on the all citizens catch in those first four days and co-manager agreement. The 2019 schedule provides the maximum amount of fishing time for all gear types, within the constraints of the Pacific Salmon Treaty and negotiated co-management agreements for the treaty Indian and all-citizens fleets.

Area 7B/7C (Chinook/Coho/Chum) – The fishing schedule for Areas 7B and 7C has been adjusted for calendar dates and management periods and is similar to recent years.

Area 8A (Coho) –The Area 8A Pink and Coho directed fisheries are closed for 2019. Both stocks are forecasted to not meet escapement goals in the Snohomish and Stillaguamish respectively. Additionally, the status of Snohomish wild Coho are currently considered “over fished” as described in the Pacific Fishery Management Council’s West Coast Salmon Management Plan thereby requiring fishery managers to implement measures which seek to rebuild this stock.

Area 8D (Coho and Chum) – The 2019 Area 8D Coho and Chum schedules are similar to schedules in 2018. Chum fishing continues to be restricted as local Chum stocks are not meeting escapement.

Area 9A (Coho) – The 2019 fishery is structured identical to recent years, with adjustments made for calendar dates, and will be open weekly Sunday through Saturday. The opening date of this fishery mirrors the Area 9A tribal fishery.

Area 12A (Coho) – The fishery is structured similar to recent years, with beach seines opening on Tuesday, August 20th, the earliest weekday date permitted under the SCSCI. Skiff gillnet openings may be scheduled later in the season pending summer Chum escapement numbers and discussions with tribal co-managers.

Area 12C (Chinook) – WDFW has implemented a beach seine fishery in the Hoodspout Hatchery Zone of Area 12C to target a portion of the non-treaty share of hatchery Chinook returning to Hood Canal. The fishery is limited to those who have obtained an Emerging Commercial Fishery license and have been issued a Puget Sound Beach Seine permit by WDFW.

Total landed catch for this fishery will not exceed 10,000 Chinook. The fishery is scheduled for two days per week (Tuesdays and Thursdays) from July 30th through September 5th. Per the SCSCI, all Chum salmon must be released.

Areas 10/11 and 12/12B/12C (Chum) – The 2019 fishing schedules for Chum fisheries in Area 10/11 and 12/12B are once again considered together and openings are similar to last year for both purse seines and gillnets. In Areas 10/11 the all citizens fishery has a reduced share to help conserve limiting stocks such as Puyallup winters and several, smaller deep south Puget Sound stocks of concern. To assess the short- and long-term stability and well-being of the industry as reflected in these two closely-linked fisheries (Areas 10/11 & 12/12B), WDFW assembled and analyzed catch data, economic information (ex-vessel landing value), and the number of licensed vessels, by gear type, for the Chum salmon fisheries operating in these two areas combined, for the period from 1973 through 2018. Ex-vessel landing value data were adjusted according to the Gross Domestic Product: Implicit Price Deflator (GDPDEF) to account for inflation and allow for comparability of the economic data between years. These data and summary statistics are presented in Table 1, including average values by each gear for the period 1973-2002 (the historical time period with consistent yearly fishing schedules providing equal fishing time to gillnet and purse seine gear), the period 2003-2018 (the time period when extra fishing time was provided for gillnet gear) and also for the period 2008-2018 (the most recent time period with relatively consistent yearly fishing schedules providing additional fishing time for gillnet gear).

For the period 1973-2002, gillnets landed an average of 32% of total catch in these two fisheries, while purse seines landed 68%. During that period, gillnets on average accounted for 78% of licenses eligible to participate in these fisheries, while purse seines accounted for 22%. The total number of participating licenses and the composition of the fleet by gear type have changed dramatically over time, due to changes in the salmon industry (such as a government-sponsored license buy-back program). Across the most recent time period, 2008-2018, the gillnet proportion of the fleet has been 72%, a 6% drop from historic levels, commensurately, the purse seine proportion increased from 22% to 28%. In order to calculate what the expected percentages of total catch would be given the change in fleet composition, WDFW calculated the mean percentage of total catch per mean percentage of licenses during the historic time period (1973-2002). These percentages were multiplied by the current percentages of licenses for each gear, and scaled to 100% to give the expected percentages of catch under the current fleet composition. Given the changes in fleet composition, the average catch share for gillnet would be expected to drop from a historical share of 32% to 26% and the average catch share for purse seine would be expected to proportionally increase from the historical share of 68% to 74%.

In 2003 the Hood Canal and south Sound Chum fishery schedules were significantly altered in response to multi-year signs of instability including low prices per pound for Chum salmon across gear-types and low participation and catches in these fisheries by the gillnet fleet. Prior to 2003, WDFW managed these fisheries by providing equal fishing opportunity for both gear-types (gillnet

and purse seine), in terms of days open. Beginning in 2003, WDFW provided significant additional fishing time for gillnets, to promote the economic well-being of that sector of the industry. Catch and ex-vessel values in these fisheries have rebounded in response to these changes. This suggests that the economic viability of the gillnet industry improved over time. In response WDFW adjusted fishing schedules to reduce the amount of extra time allocated to the gillnet fleet. Beginning in 2008, the annual fishing schedules included ‘market’ openings for gillnet vessels in south Puget Sound as gillnet fishers indicated this would enhance their ability to direct retail market their catch. These are 8-hour openings late in the week that are intended to promote efforts of gillnet fishers to supply fish to niche markets for the weekend, presumably with a larger economic benefit to the fisher than fish landed during normal openings early in the week. From 2008 to 2013, the fishing schedules for Chum fishing in south Puget Sound and Hood Canal provided consistent ratios of gillnet to purse seine fishing time, with small changes made annually to provide variation in first fishing opportunities within areas and weeks for each fishing group. In 2014, WDFW adjusted the fishing schedules relative to schedules from 2008-2013 by adding additional gillnet time to respond to further declines in gillnet industry landings.

In 2013, both gear groups caught significantly larger numbers of fish and had higher ex-vessel values than projected pre-season (primarily due to a substantially higher than forecasted return of Chum salmon in Hood Canal), and the proportions of catch were markedly different than projected, with 13% of the catch by gillnets and 87% by purse seines. WDFW questioned industry extensively for plausible explanations for the deviation in catch proportions in the sixth year of implementation of a consistent fishing schedule. The only explanation that was offered, and is supported by available data, is that gillnet effort decreased in 2013, in spite of consistent fishing opportunity. Although the decreased gillnet participation seen in 2013 was caused by factors beyond WDFW’s control, such as market conditions, the deviation from expectation and from historic ratios seen in 2013 was large enough to cause concerns with stability, similar to the concerns that originally led the department to provide additional gillnet opportunity in 2003. Gillnet industry representatives requested that WDFW provide additional gillnet opportunity to address that instability. In response, WDFW made changes to the 2014 schedule that included expanding “market nights” in Areas 10 and 11 to full nights, adding 33 hours to the fishery. The department projected that this fishing schedule would result in gillnets catching 25% and purse seines catching 75% during the 2014 season. Analysis of actual catch data in 2014 showed that catch proportions were very close to the predicted outcome, with 24% of the total catch by gillnets and 76% by purse seines.

Additional changes in fishing schedules occurred in 2014 in response to negotiations with tribal co-managers. Prior to 2014, the schedule provided two days for all-citizens purse seines and two days for all-citizens gillnets in both Hood Canal and south Puget Sound during week 44 and no fishing days in week 42. For the 2014, 2015, and 2017 fishing seasons, one day of purse seine fishing was moved from week 44 to week 42. For 2016 WDFW agreed to remove only one day of purse seine fishing in week 44 but did not add that day back into week 42 and did not schedule

any gillnet fishing days in week 42. In addition, for 2016, WDFW agreed to schedule only one purse seine day per week during weeks 45 and 46.

In 2014 and 2015, WDFW used estimates of Chum catch per hour by gear type to predict catch proportions of 25% for gillnets and 75% for purse seines for Hood Canal and south Puget Sound Chum fisheries combined. In 2014 the resulting actual catch proportions were very similar to projections, at 24% for gillnets and 76% for purse seines. However, in 2015 and 2016 a similar fishing schedule resulted in very different catch proportions of 31% and 32% gillnet and 69% and 68% purse seine, respectively. These deviations in catch proportions could have resulted from any number of factor related to the fishing schedule, performance of fisheries or even unrelated to -- fisheries. WDFW explored potential bias in in-season run-size update models but could not gain co-manager agreement on a run-size update. Without co-manager agreement on an increased runsize WDFW-managed fisheries had to be severely constrained during what is considered a peak week of the fishery. Inherent differences in how purse seines and gillnets operate may have contributed to the differences in percentages of catch between gear groups seen in 2015 and 2016 as a result of closing fishing in the peak week of the return. For example, purse seines tend to catch relatively large numbers of fish in the peak of the run, whereas gillnets are less efficient than seines in the presence of high abundance. . In planning 2018 fisheries, the department chose to address this by removing one day of gillnet fishing in the first week of the fishery and scheduling two days of purse seine fishing in week 45. The 2018 season resulted in catch proportions similar to those expected (28% gillnet; 72% purse seine).

Co-managers agreed to a pre-season plan for 2019 that is similar to last year for gillnets and purse seines in Weeks 42-45. This schedule will be adjusted according to in-season updates of Chum abundance.

In pre-season negotiations for 2019-20 Chum fisheries in south Puget Sound WDFW and tribal co-managers recognized a need for a conservative approach to management related to a very weak forecast of Puyallup and Nisqually late/winter Chum. WDFW and the Nisqually Tribe agreed to close fisheries in terminal areas during the management period of late/winter Chum. In addition to closure in the extreme terminal areas (portions of marine area 13 off the mouth of the Nisqually River and in river) during 2017 tribal co-managers were emphatic that no Chum fisheries occur in Areas 10 or 11 after week 45. In pre-season negotiations for 2019-20, tribal co-managers reiterated their concerns for conservation needs for late/winter Chum and required a thorough revision of Chum management throughout south Puget Sound. In these negotiations tribal co-managers again demanded that no Chum fisheries occur in Areas 10 or 11 after week 45. Ultimately WDFW and tribal co-managers agreed to schedule fisheries in south Puget Sound which are similar to those which occurred during 2017-18; specifically, no fishing in Areas 10 and 11 after week 45 as well as specific exclusionary zones in Areas 10 & 11 as outlined in **WAC 220-354-080**. As part of this agreement, WDFW and tribal co-managers in south Puget Sound initiated a thorough co-manager technical review of conservation and management needs for south Sound Chum.

In 2019, WDFW expects to manage the Chum fishery in-season to allow for the full harvest of the all-citizens “reduced” share in a manner that is most beneficial to full all-citizens commercial fleet. With similar schedules and the deviation from 2014 to 2015 and 2016, it is difficult to project what the catch will be based on the 2019 schedule, but WDFW provides an analysis below that can help inform such projections.

Based on 2019 Chum run-size forecasts for south Sound and Hood Canal, and preliminary calculations of expected harvestable numbers at those run-sizes, the total all-citizens share of Chum for those areas is estimated at 338,000 fish or approximately 3 million pounds (based on an average weight of 8.8 pounds per fish for 2011-2017). If the entire all citizens share, as projected pre-season is harvested, using the 2018 average price per pound would result in an estimated ex-vessel value of \$3.2 million for 2019. It is reasonable to expect that catch and ex-vessel value totals will be split between gears by proportions similar to those seen since 2008 with the exception of the additional gillnet fishing time with the change of market to full nights and the removal of one day of seining during the peak of the fishery that began in 2014. Using the calculations described below, WDFW anticipates gillnets will catch 27% of the Chum and purse seines will catch 73%. This anticipated outcome is very close to the historic averages of 26% and 74%, respectively (Table 1).

From the period of 2014 to 2018, the gillnet fleet in Hood Canal and south Puget Sound averaged 738 Chum per hour fished during openings with landings while the purse seine fleet averaged 3,808 Chum per hour fished during openings with landings. Using the catch per hour averages to account for the changes in fishing schedules that began in 2014, a catch of 110,862 for gillnets and an expected catch of 299,738 for purse seines. Using the 2011-2017 average landed Chum weight of 8.8 pounds, these catch estimates equate to an ex-vessel value of \$956,073 or \$5,059 per gillnet license, and an ex-vessel value of \$2,584,940 or \$34,466 per purse seine license (Figure 1 and Figure 2). These values compare to a GDPDEF-adjusted average of \$901 per gillnet license and \$6,073 per purse seine license for the period 1973-2002. These value-per-license calculations assume that all license holders participate in these fisheries. If not all license holders participate, the average amount per participant would be higher than these estimates at identical total ex-vessel values. The estimated 2019 ex-vessel values are within the range seen from 2008-2018 and thus the anticipated outcome is similar to recent years.

To conclude, season structures proposed for the 2019 Puget Sound commercial salmon rules and regulations will promote the economic well-being and stability of the commercial fishing industry while meeting the constraints imposed by conservation objectives. Catch and ex-vessel value outcomes have not been projected for all species in all fishery management areas, however, WDFW has estimated that the likely outcomes will be similar to the commercial salmon fisheries in south Puget Sound and Hood Canal for Chum salmon. WDFW has routinely stated that consistent annual fishing schedules contribute to industry stability, and that there are factors beyond WDFW’s control contributing to instability. For 2019 WDFW anticipates catch

proportions of total Chum for gillnets and purse seines will be similar to the 2008-2017 average, at 27% and 73%, respectively. This expected outcome is very close to the historic averages of 26% and 74% for gillnets and purse seines. WDFW concludes that the projected result of the 2019 season is consistent with promoting both short- and long-term stability of the fishing industry (as reflected by comparison to the historical record), is consistent with maintaining the economic well-being of the industry, and provides sustainable harvest levels by offering opportunity for each gear type within the constraints of run-size forecasts for 2019.

Response to General Input and Comment from Participants during Puget Sound Commercial Fishery Specific Meetings Hosted By WDFW Prior to the Conclusion of the April Pacific Council Meeting (The Prenotice Inquiry phase of rule-making)

This series of meetings occurred in-person on February 27, March 19 and 27, and with a phone in option for daily briefings during the April Pacific Council Meeting in Rohnert Park, CA. The in-person meetings were:

- February 27, 2019 associated with the Annual Forecast Kick-Off
- March 19, 2019 associated with first of two NOF Public Meetings
- March 27, 2019 associated with the second of two NOF Public Meetings

Issues identified, comments received, and staff response are summarized below:

Southern Resident Killer Whales (SRKW):

The majority of inquiries regarding SRKW's were raised by attendees who described themselves as representing SRKW's, thus not a part of the commercial industry. Questions sought to understand the potential impact on prey availability for and disturbance of SRKW resulting from the all-citizens commercial salmon fisheries. Staff responded that all-citizens commercial fisheries targeting Chinook occur area widely considered to be beyond that utilized for foraging by SRKW's; near the Hoodspout Hatchery in Hood Canal (MA 12C) and in Bellingham and Samish bays (MA 7B and 7C). Further, by-catch of Chinook in Fraser sockeye, pink, and chum directed fisheries around the San Juan Islands is very limited and fisheries are short in duration (generally 16 hours/day or less) with often fewer than a half dozen days during July – September and limited to seven to ten day in the latter portion of October.

Fraser sockeye and pink directed fisheries:

Questions were raised related Pacific Salmon Commission's Fraser River Panel function, cost for monitoring and assessment, regulatory authority, and the 2019 forecast abundance and anticipated U.S. total allowable catch (TAC). Staff described the role of the Fraser River Panel in management of Fraser sockeye and pink salmon fisheries, the uniqueness of the situation where and international management body assumes regulatory control for these fisheries occurring in both U.S. and Canadian transboundary waters, and the funding mechanism in place for managing these fisheries. With regard to the anticipated abundance of Fraser sockeye for 2019, the vast majority of the harvestable surplus is in a single management group, as a result fisheries will be constrained by anticipated low returns of the other three management groups making achievement of the full U.S. TAC difficult. Unfortunately, the pink salmon return is expected to be low with limited fisheries likely in September.

Gillnet Schedule for 8D:

Gillnet fishers in attendance during in-person Puget Sound commercial salmon fishery discussions requested that the all-citizens fishery in MA 8D open earlier to allow more access to hatchery coho. In articulating the rationale for the proposed 2019 season structure, staff explained that while harvest of coho in the MA 8D fishery is predominately hatchery-origin fish returning to the Tulalip Tribes Burnie Gobin Hatchery inside Tulalip Bay Snohomish River wild-origin coho are also harvested. Staff described the current conservation concerns related to Snohomish wild coho and voiced concern that adding time to the front end of the season would increase impact on that stock. Staff went on to describe the ongoing work to develop a rebuilding plan for this stock through the Pacific Fishery Management Council under its West Coast Salmon Management Plan which requires manager to take conservation actions and implement management measure intended to rebuild chronically under-escaped stock to healthy sustainable level.

Hale Pass closure needs to be removed:

Staff were questioned about the use of the Hale Passage closure (MA 7B) in previous years, with a request to keep Hale Passage open for 2019. The closure of fisheries in the Hale Passage area is intended to reduce impact on Coho originating from the Thompson River in British Columbia. This stock is protected under the Canadian federal process known as the Species At Risk Act; analogous to the U.S. ESA. This stock also has exploitation limit ceilings (not to exceed 10%) identified in the U.S. – Canada Pacific Salmon Treaty. Beginning in 2012 the Hale Passage closure has been used to create savings for Thompson Coho impacts. However, Hale Passage is favored by gill net fishers who fish 7B. For 2019, Hale Passage was modeled as open, and no area closure was put in place.

Beach Seine:

Questions relating to the Area 12C Chinook fishery were generally addressed with the members of the Beach Seine Advisory Board. Participants in this seine fishery expressed interest in utilizing a smaller gauge twine for the webbing of the net. Staff informed the beach seiners that state law requires mesh webbing to be constructed with a twine size no smaller than 210/30d nylon. As long as the mesh remains between 3”- 4”, any material with the required diameter is acceptable.

Additionally the Beach Seine schedule was adjusted from Monday/Wednesday to Tuesday/Thursday, in efforts to offer a first start to the co-managers. The beach seine fishers saw no need for this but were accepting of the idea.

Chum Management:

Staff describe to attendees the challenges associated with Chum management and pre-season planning which were consuming a large amount of the time during co-manager meetings.

The ultimate outcome from the 2019 NOF process is for co-managers to develop a comprehensive Chum Management Plan for Puget Sound over the next few years. It is anticipated that this plan will address conservation needs, allocation, accounting, and in-season management to aid in the long-term mutual success of co-managers in achieving self-sustaining chum fisheries throughout Puget Sound.

Response to Comments Received During Comment Period for WSR 19-11-126 (Rule making comments after filing of the CR 102)

As noted above, the CR102 for all-citizens commercial salmon fisheries in Puget Sound was filed on May 22nd, 2019. The comment period was scheduled to close on June 24th, 2019.

During the comment period commenters representing the Purse Seine Vessel Owners Association expressed an objection to the relaxation in the Hazel Point closure which was negotiated for gillnet fishers and not for purse seine gear. This issue was also discussed with industry representatives during the April 2019 Pacific Fishery Management Council as WDFW staff were seeking relief from closure in marine area 12 and 12B for both gear types. Unfortunately, staff were not able to gain agreement for further relaxation of this closure area and it was felt that backing away from the progress made for gillnet gear jeopardized future progress on relaxation of the closure for both gear types.

The second set of comments received expresses concern for the Hoodspout Hatchery area beach seine fishery moving from a Monday/Wednesday schedule to a Tuesday/Thursday schedule. As discussed with industry representatives during the April 2019 Pacific Council meeting the rationale for this was related to consideration of equity in “first starts” for treaty Indian and all-citizens fishers. For the three years WDFW has offered this fishery the all-citizen fishers have fished a Monday/Wednesday schedule while treaty Indian fishers have fished a Tuesday/Thursday schedule. Additionally, landing data suggest that harvest success for the all-citizen fleet is more related to the timing of fish returning to the hatchery which may be more associated with tidal cycles or weather conditions rather than who has the “first start” for the week. Staff articulated an interest in revisiting the schedule for this fishery and “first starts” in the 2020 North of Falcon process.

Corrections to original rules as noticed in the CR 102 filed for WSR 19-11-126

Several minor grammatical and administrative changes were made after the filing of the CR-102. Primarily, duplicative language was omitted when referencing another WAC, and the closure area boundary definitions for Marine Area 9A were rectified.

Conclusion

WDFW has considered all the facts and circumstances surrounding the 2019 Puget Sound Commercial salmon season schedule. The agency carefully reviewed all input from industry representatives during the North of Falcon public meetings and the state’s rule making process. The agency’s 2019 Puget Sound commercial salmon fishing regulations comply with its statutory mandate and are consistent with WDFW’s management objectives for these fisheries.

Year	GDPDEF Factor	Combined Gears Total Catch	Combined Gears Ex-vessel Value	Combined Gears Ex-vessel Value GDPDEF adjusted	GN Licenses	GN Catch	GN Proportion of catch	GN Ex-vessel Value	GN Ex-vessel Value GDPDEF Adjusted	GN Ex-vessel Value GDPDEF Adjusted Per License	Purse Seine Licenses	PS Catch	PS Proportion of Catch	PS Ex-Vessel Value	PS Ex-Vessel Value GDPDEF Adjusted	PS Ex-vessel Value GDPDEF Adjusted Per License
1973	1.189	93,264	\$734,961	\$873,734	1,303	59,793	0.64	\$472,419	\$561,619	\$431	320	33,471	0.36	\$262,542	\$312,114	\$975
1974	1.186	15,353	\$78,322	\$92,874	1,990	2,023	0.13	\$10,399	\$12,331	\$6	137	13,330	0.87	\$67,923	\$80,543	\$588
1975	1.184	6,534	\$49,699	\$58,827	1,659	3,017	0.46	\$20,410	\$24,159	\$15	385	3,517	0.54	\$29,289	\$34,668	\$90
1976	1.181	119,743	\$1,107,754	\$1,308,556	1,536	65,385	0.55	\$644,114	\$760,872	\$495	376	54,358	0.45	\$463,640	\$547,684	\$1,457
1977	1.178	146,509	\$1,471,793	\$1,734,418	1,517	114,444	0.78	\$1,189,141	\$1,401,329	\$924	393	32,065	0.22	\$282,653	\$333,089	\$848
1978	1.175	291,755	\$3,110,616	\$3,653,913	1,532	166,416	0.57	\$2,132,816	\$2,505,331	\$1,635	402	125,339	0.43	\$977,800	\$1,148,582	\$2,857
1979	1.169	13,063	\$87,840	\$102,706	1,501	6,901	0.53	\$54,040	\$63,185	\$42	402	6,162	0.47	\$33,800	\$39,521	\$98
1980	1.162	192,116	\$1,029,828	\$1,196,389	1,487	78,977	0.41	\$513,517	\$596,571	\$401	398	113,139	0.59	\$516,311	\$599,818	\$1,507
1981	1.153	123,688	\$1,113,134	\$1,283,188	1,450	63,428	0.51	\$587,612	\$677,381	\$467	396	60,260	0.49	\$525,522	\$605,806	\$1,530
1982	1.143	200,191	\$1,144,347	\$1,308,436	1,420	70,801	0.35	\$425,611	\$486,640	\$343	390	129,390	0.65	\$718,736	\$821,796	\$2,107
1983	1.133	128,969	\$1,039,556	\$1,177,319	1,374	46,097	0.36	\$376,604	\$426,512	\$310	383	82,872	0.64	\$662,953	\$750,808	\$1,960
1984	1.123	266,228	\$2,016,143	\$2,264,995	1,259	94,041	0.35	\$708,422	\$795,862	\$632	367	172,187	0.65	\$1,307,722	\$1,469,133	\$4,003
1985	1.113	184,764	\$935,630	\$1,041,664	1,196	53,811	0.29	\$335,146	\$373,129	\$312	349	130,953	0.71	\$600,483	\$668,536	\$1,916
1986	1.103	276,814	\$1,141,165	\$1,258,769	1,200	71,595	0.26	\$301,284	\$332,333	\$277	345	205,219	0.74	\$839,881	\$926,436	\$2,685
1987	1.095	466,208	\$6,608,284	\$7,233,802	1,148	105,651	0.23	\$1,760,755	\$1,927,422	\$1,679	341	360,557	0.77	\$4,847,529	\$5,306,380	\$15,561
1988	1.087	471,548	\$3,651,358	\$3,969,970	1,142	153,758	0.33	\$1,223,330	\$1,330,076	\$1,165	342	317,790	0.67	\$2,428,028	\$2,639,894	\$7,719
1989	1.081	274,858	\$2,430,410	\$2,626,434	1,152	95,913	0.35	\$828,325	\$895,133	\$777	341	178,945	0.65	\$1,602,086	\$1,731,301	\$5,077
1990	1.075	261,821	\$2,270,850	\$2,441,590	1,148	89,200	0.34	\$776,463	\$834,843	\$727	337	172,621	0.66	\$1,494,388	\$1,606,747	\$4,768
1991	1.070	307,908	\$1,481,976	\$1,585,282	1,132	77,835	0.25	\$423,123	\$452,618	\$400	330	230,073	0.75	\$1,058,853	\$1,132,664	\$3,432
1992	1.063	529,520	\$2,461,390	\$2,616,952	1,118	173,808	0.33	\$833,282	\$885,945	\$792	327	355,712	0.67	\$1,628,109	\$1,731,006	\$5,294
1993	1.059	402,089	\$2,316,092	\$2,452,624	1,083	125,238	0.31	\$757,658	\$802,322	\$741	318	276,851	0.69	\$1,558,434	\$1,650,302	\$5,190
1994	1.055	386,967	\$1,104,806	\$1,165,667	1,042	64,465	0.17	\$181,819	\$191,835	\$184	306	322,502	0.83	\$922,987	\$973,832	\$3,182
1995	1.052	288,538	\$809,434	\$851,375	966	55,178	0.19	\$150,667	\$158,474	\$164	297	233,360	0.81	\$658,767	\$692,901	\$2,333
1996	1.049	490,370	\$786,358	\$824,710	887	74,319	0.15	\$114,229	\$119,801	\$135	292	416,051	0.85	\$672,129	\$704,910	\$2,414
1997	1.045	209,837	\$856,313	\$895,091	872	19,488	0.09	\$74,057	\$77,411	\$89	290	190,349	0.91	\$782,255	\$817,680	\$2,820
1998	1.042	414,133	\$682,627	\$711,003	820	52,035	0.13	\$86,581	\$90,180	\$110	276	362,098	0.87	\$596,046	\$620,823	\$2,249
1999	1.038	90,471	\$317,261	\$329,304	682	18,782	0.21	\$63,843	\$66,267	\$97	262	71,689	0.79	\$253,418	\$263,037	\$1,004
2000	1.035	123,932	\$627,545	\$649,260	679	19,329	0.16	\$92,279	\$95,472	\$141	262	104,603	0.84	\$535,266	\$553,788	\$2,114
2001	1.032	679,244	\$1,490,595	\$1,537,925	359	48,505	0.07	\$100,715	\$103,913	\$289	122	630,739	0.93	\$1,389,880	\$1,434,011	\$11,754
2002	1.029	788,468	\$1,317,428	\$1,355,562	215	29,534	0.04	\$48,076	\$49,468	\$230	84	758,934	0.96	\$1,269,351	\$1,306,094	\$15,549
2003	1.026	713,597	\$1,339,056	\$1,374,386	208	59,043	0.08	\$104,987	\$107,757	\$518	83	654,554	0.92	\$1,234,068	\$1,266,628	\$15,261
2004	1.024	1,047,080	\$2,718,389	\$2,783,019	204	113,781	0.11	\$324,818	\$332,540	\$1,630	81	933,299	0.89	\$2,393,572	\$2,450,478	\$30,253
2005	1.020	318,802	\$1,327,792	\$1,354,888	202	94,944	0.30	\$386,887	\$394,782	\$1,954	81	223,858	0.70	\$940,905	\$960,106	\$11,853
2006	1.017	695,849	\$3,748,099	\$3,812,719	198	116,160	0.17	\$590,702	\$600,886	\$3,035	75	579,689	0.83	\$3,157,397	\$3,211,833	\$42,824
2007	1.014	598,376	\$4,719,458	\$4,786,471	198	169,933	0.28	\$1,324,268	\$1,343,071	\$6,783	75	428,443	0.72	\$3,395,191	\$3,443,400	\$45,912
2008	1.011	375,857	\$2,947,450	\$2,981,177	196	92,454	0.25	\$732,344	\$740,725	\$3,779	75	283,403	0.75	\$2,215,105	\$2,240,453	\$29,873
2009	1.009	278,064	\$1,891,232	\$1,908,024	195	78,693	0.28	\$531,471	\$536,190	\$2,750	75	199,371	0.72	\$1,359,761	\$1,371,835	\$18,291
2010	1.006	404,366	\$3,431,392	\$3,452,956	195	98,057	0.24	\$835,904	\$841,157	\$4,314	75	306,309	0.76	\$2,595,488	\$2,611,799	\$34,824
2011	1.004	431,128	\$4,421,962	\$4,439,176	195	88,405	0.21	\$951,290	\$954,993	\$4,897	75	342,723	0.79	\$3,470,672	\$3,484,183	\$46,456
2012	1.000	538,130	\$3,804,469	\$3,804,469	195	131,532	0.24	\$878,373	\$878,373	\$4,504	75	406,598	0.76	\$2,926,095	\$2,926,095	\$39,015
2013	0.996	874,442	\$5,113,149	\$5,094,872	195	115,008	0.13	\$639,352	\$637,067	\$3,267	75	759,434	0.87	\$4,473,797	\$4,457,806	\$59,437
2014	0.993	468,939	\$3,711,457	\$3,684,488	195	111,225	0.24	\$838,759	\$832,664	\$4,270	75	357,714	0.76	\$2,872,698	\$2,851,824	\$38,024
2015	0.988	481,038	\$2,608,822	\$2,578,563	195	148,114	0.31	\$742,932	\$734,315	\$3,766	75	332,924	0.69	\$1,865,890	\$1,844,249	\$24,590
2016	0.985	363,686	\$2,837,737	\$2,795,033	195	117,897	0.32	\$918,078	\$904,263	\$4,637	75	245,789	0.68	\$1,919,658	\$1,890,770	\$25,210
2017	0.981	649,177	\$6,287,663	\$6,168,512	195	148,899	0.23	\$1,430,999	\$1,403,882	\$7,199	75	500,278	0.77	\$4,856,664	\$4,764,630	\$63,528
2018	0.977	349,970	\$3,336,182	\$3,258,153	195	98,756	0.28	\$946,055	\$923,928	\$4,738	75	251,214	0.72	\$2,390,127	\$2,334,225	\$31,123
1973-2002 Avg.		274,830	\$1,475,784	\$1,620,078	1,162	69,992	0.32	\$509,558	\$569,948	\$467	319	204,838	0.68	\$966,226	\$1,050,130	\$3,769
2003-2018 Avg.		536,781	\$3,390,269	\$3,392,307	197	111,431	0.23	\$761,076	\$760,412	\$3,878	76	425,350	0.77	\$2,629,193	\$2,631,895	\$34,780
2008-2018 avg.		474,072	\$3,671,956	\$3,651,402	195	111,731	0.25	\$858,687	\$853,414	\$4,375	75	362,342	0.75	\$2,813,269	\$2,797,988	\$37,307

Table 1. Chum catch, licenses and economic values GDPDEF adjusted for gillnet and purse seine, in the combined south Puget Sound and Hood Canal fisheries, 1973-2018.

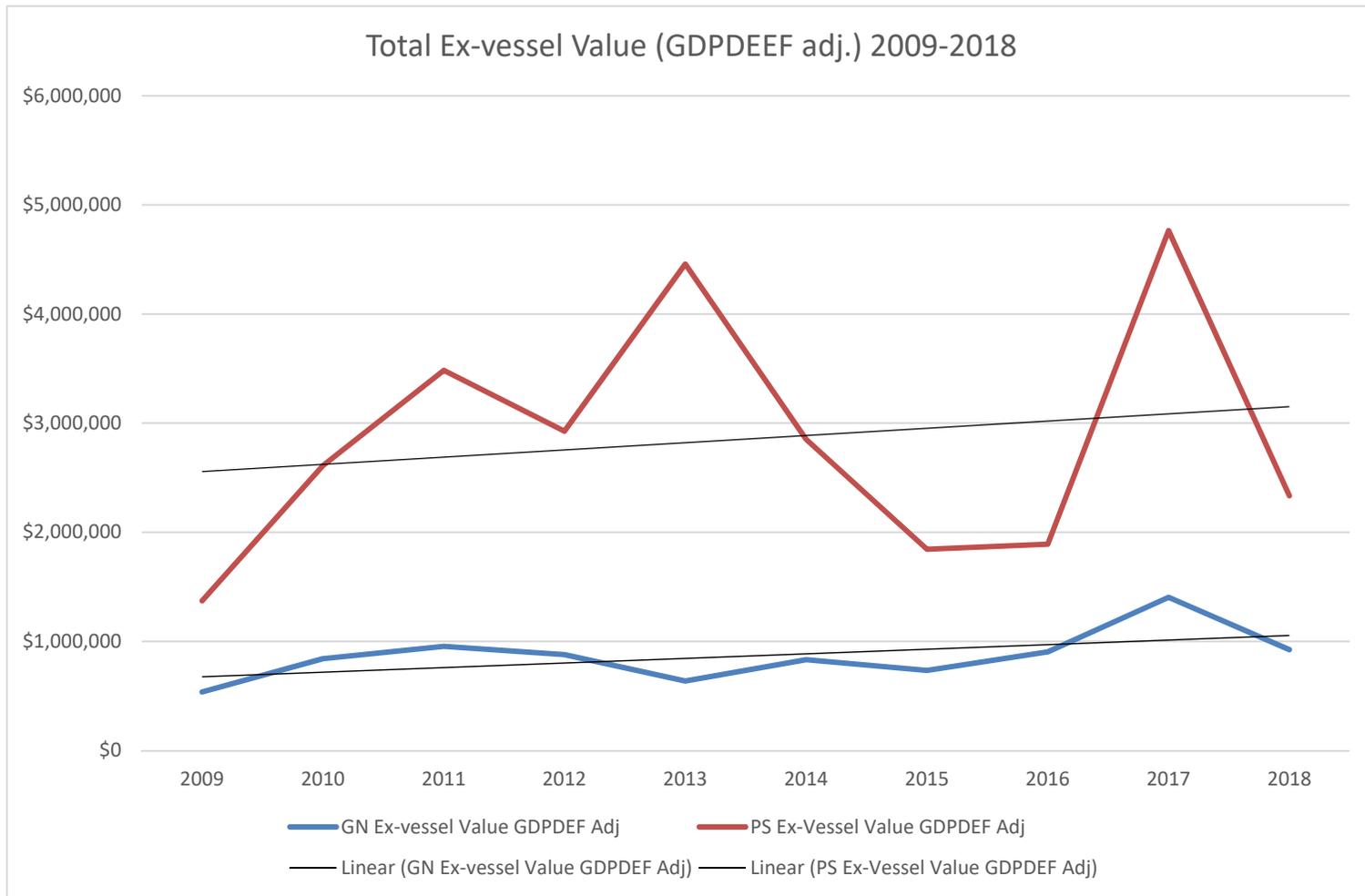


Figure 1. Trends in annual, GDPDEF-adjusted ex-vessel value of gillnet and purse seine Chum salmon landings for south Puget Sound (Areas 10 and 11) and Hood Canal (Areas 12, 12B and 12C), 2003 – 2017, and projected value for 2018.

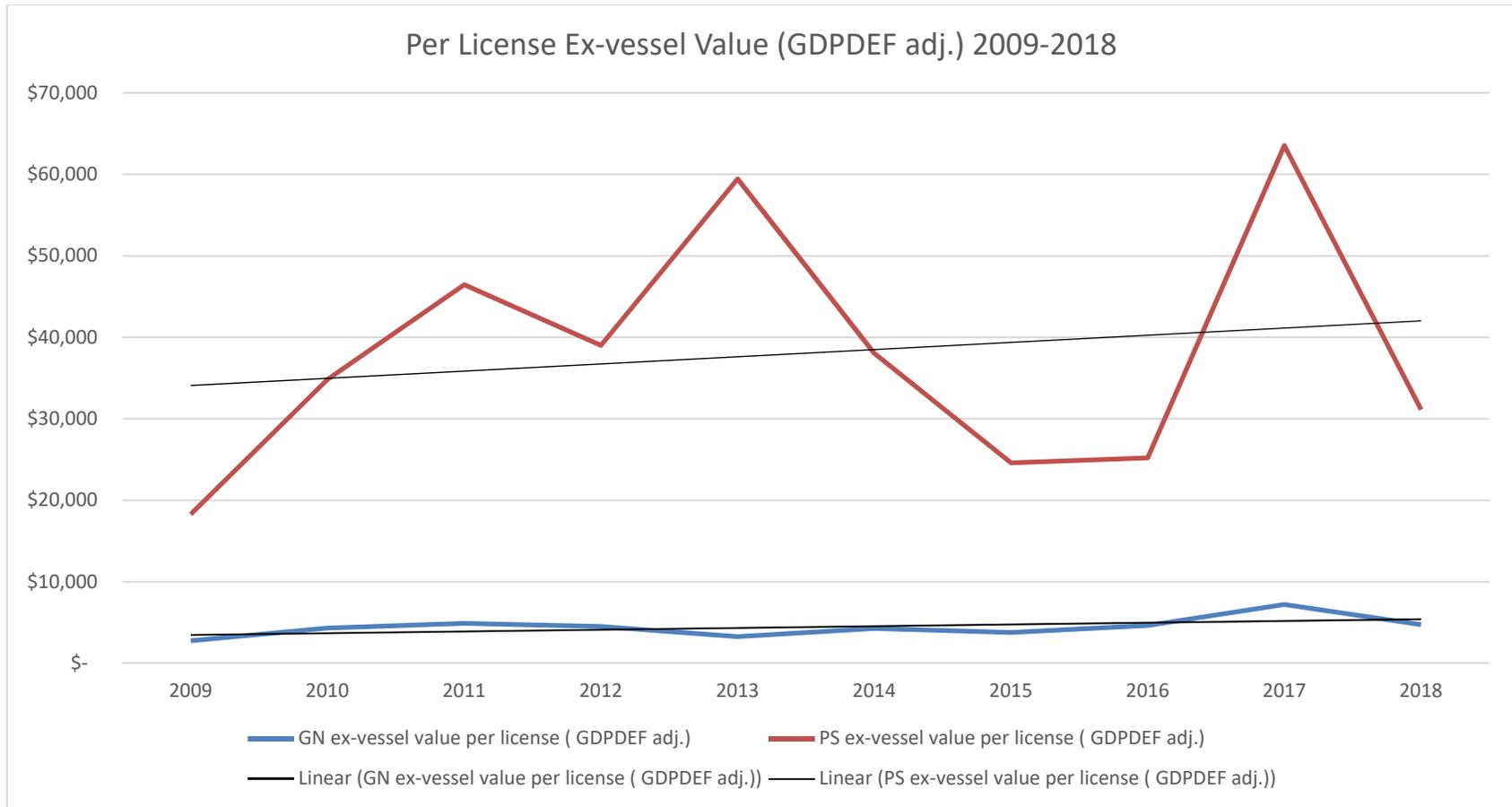


Figure 2. Trends in annual, GDPDEF-adjusted ex-vessel value per license for gillnet and purse seine Chum salmon landings for south Puget Sound (Areas 10 and 11) and Hood Canal (Areas 12, 12B, and 12C), 2003– 2018.

Table 2. Comparison of pre-season scheduled hours from 2013 - 2018 by gear type in Hood Canal and south Puget Sound Chum fisheries.

Year	Gillnet		Purse Seine	
	South Sound	Hood Canal	South Sound	Hood Canal
2019	111	123	53	73
2018	111	123	53	73
2017	175	157	73	83
2016	189	144	73	73
2015	221	170	83	83
2014	221	172	83	83
2013	165	148	83	83