



Washington
Department of
**FISH and
WILDLIFE**

DEPARTMENT OF FISH AND WILDLIFE
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**NORTHWEST INDIAN
FISHERIES COMMISSION**

NORTHWEST INDIAN FISHERIES COMMISSION
6730 Martin Way East

Olympia, Washington 98516-5540

June 4, 2013

Mr. Phil Anderson
Director
Washington Department of Fish and Wildlife
600 Capitol Way North
Olympia, Washington 98501-1091

Mr. Michael Grayum
Executive Director
Northwest Indian Fisheries Commission
6730 Martin Way East
Olympia, Washington 98516

Dear Mr. Anderson and Mr. Grayum:

Enclosed is the finalized summary fisheries document of the parties for 2013-14 management year that represents the results of negotiations between the Washington Department of Fish and Wildlife and the Northwest treaty tribes during the North of Falcon and Pacific Fisheries Management Council (PFMC) pre-season planning forums. This document contains summaries of agreed fishing arrangements for treaty and non-treaty salmon fisheries in the ocean north of Cape Falcon, Oregon and in Puget Sound. Further details, including stock-by-stock management objectives, may be found in the Puget Sound Chinook Harvest Management Plan approved by NMFS under the ESA, in the respective parties' regulation summaries, in Status Report documents (as required by the Puget Sound Salmon Management Plan), and other state-tribal understandings.

The fishing arrangements contained in this document are based on pre-season expectations of stock abundance and, in some instances, may be modified on the basis of information obtained in-season and by agreement between the parties. If any changes to the assumptions used to develop these fishing arrangements should occur that would significantly affect the achievement of the parties' agreed management objectives, the parties agree to meet to consider the need to make necessary changes to these fisheries. The agreed upon fisheries document includes non-treaty commercial and recreational fisheries, treaty commercial, and treaty ceremonial and subsistence fisheries. Bracketed and bolded language signifies areas where some unresolved issues with fisheries remain. Additional Co-manager discussions will occur prior to the fisheries to resolve these remaining issues. Individual treaty tribes may conduct additional ceremonial and subsistence fisheries not detailed in this agreement, consistent with provisions of the Puget Sound Salmon Management Plan. This document does not specifically address steelhead fishing plans.

Final FRAM model run summary tables appended to the agreed upon fisheries document provide our assessment of impacts on key natural coho and Chinook salmon populations.

WDFW/NWIFC letter

June 4, 2013

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Detailed descriptions of the management intent and descriptions of monitoring, sampling and enforcement activities for conducting Chinook mark selective sport fisheries in Puget Sound during the 2012-2013 management year are also included and are a part of this fisheries agreement.

Sincerely,



Gary Graves, Director
Fishery Services
Northwest Indian Fisheries Commission



Pat Pattillo
Special Assistant to the Director
Department of Fish and Wildlife

Enclosure

cc: Northwest Tribal Fisheries Managers and Biologists
Washington Fish and Wildlife Commissioners

2013-14 Co-Managers' List of Agreed Fisheries

(May 1, 2013 – April 30, 2014)

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(Bracketed and bolded language signifies areas where some unresolved issues remain. Additional Co-manager discussions will occur prior to the fisheries to resolve these remaining issues.)

Part I. Treaty/Non-Treaty OCEAN Fisheries (All fisheries modeled in FRAM #1213 (Chinook) & #1323 (Coho))

Treaty Troll Quota	52,500 Chinook; 47,500 coho
Non-treaty TAC	92,000 Chinook (non-mark selective equivalent of 88,000); 89,000 Coho.
NT Troll TAC	44,000 Chinook; Mark Selective Fishery impacts associated with a landed catch of 14,220 Coho
Recreational TAC	48,000 Chinook (includes non-selective quota of 40,000 and mark selective fishery impacts associated with a landed catch of 8,000 Chinook) and Mark Selective Fishery impacts associated with a landed catch of 74,760 Coho.

1.1 Treaty Troll: Areas 2, 3, 4 & 4B

5/1-6/30	Chinook directed fishery with sub quota of 26,250 Chinook. May 1 through June 30 or attainment of 26,250 Chinook sub-quota, whichever comes first. All salmon except coho. If the Chinook quota for the May-June fishery is not fully utilized, the excess fish can be transferred on an impact-neutral basis for limiting stocks into the later all-salmon season. If the Chinook quota is exceeded, the excess will be deducted from the later all-salmon season.
7/1-9/15	All salmon species with sub quota of 26,250 Chinook plus any portion of uncaught Chinook rolled over from the May 1 st through June 30 th time period on an impact neutral basis, <u>or</u> quota of 47,500 coho whichever comes first. Chum release 8/1-9/15.

1.2 Non-Treaty Troll: U.S./Canada border to Cape Falcon

5/1- thru earliest of 6/30 or pre-season Chinook sub-quota of 29,300 (includes Areas 3-4 subarea quota of 8,700)	All salmon except Coho with 29,300 Chinook quota; no more than 8,700 of which may be caught in the area between the U.S.-Canada border and the Queets River; Open May 1-June 30, 7 days per week. An in-season conference call will occur when it is projected that 75% of the overall Chinook quota or the Areas 3-4 subarea quota have been landed to consider modifying the open period and adding landing and possession limits. Mandatory Yelloweye Rockfish Conservation Area, Columbia and Cape Flattery Control Zones closed. Trip limits, gear restrictions, and guidelines may be implemented or adjusted in-season. Vessels must land their fish within 24 hours of any closure of this fishery; under state law, vessels must report their catch on a state fish receiving ticket. Vessels in possession of salmon north of the Queets River may not cross the Queets River line without first notifying WDFW with Area fished, total Chinook and halibut catch
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aboard, and destination. Vessels in possession of salmon south of the Queets River may not cross the Queets River line without first notifying WDFW with Area fished, total Chinook and halibut catch aboard, and destination. Vessels fishing, or in possession of salmon while fishing north of Leadbetter Point must land and deliver their fish within the area and north of Leadbetter Point. Vessels fishing, or in possession of salmon while fishing south of Leadbetter Point must land and deliver their fish within the area and south of Leadbetter Point, except that Oregon permitted vessels may also land their fish in Garibaldi.

7/1 thru earliest of 9/17 or pre-season Chinook sub-quota of 14,700 (includes Areas 3-4 subarea quota of 6,100) or Mark Selective Fishery quota of 14,220 Coho.	<p>Open July 1-9, then Friday through Tuesday July 12-August 27 with a landing and possession limit of 50 Chinook and 40 marked Coho per vessel per open period, then Friday through Tuesday August 30-September 17 with a landing and possession limit of 20 Chinook and 50 marked Coho per vessel per open period. No earlier than September 1, if at least 5,000 marked coho remain on the quota, in-season action may be considered to allow non-selective retention. All salmon, except no Chum retention north of Cape Alava, Washington in August and September (all retained Coho must have a healed adipose fin clip). Mandatory Yelloweye Rockfish Conservation Area, Cape Flattery and Columbia Control Zones closed. Grays Harbor Control Zone closed beginning August 9. Trip limits, gear restrictions, and guidelines may be implemented or adjusted in-season. Vessels must land their fish within 24 hours of any closure of this fishery. Under state law, vessels must report their catch on a state fish receiving ticket. Vessels in possession of salmon north of the Queets River may not cross the Queets River line without first notifying WDFW with Area fished, total Chinook and halibut catch aboard, and destination. Vessels in possession of salmon south of the Queets River may not cross the Queets River line without first notifying WDFW with Area fished, total Chinook and halibut catch aboard, and destination. Vessels fishing, or in possession of salmon while fishing north of Leadbetter Point must land and deliver their fish within the area and north of Leadbetter Point. Vessels fishing, or in possession of salmon while fishing south of Leadbetter Point must land and deliver their fish within the area and south of Leadbetter Point, except that Oregon permitted vessels may also land their fish in Garibaldi.</p>
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1.3 Non-Treaty Recreational

Area 1: Leadbetter Point to Cape Falcon (Oregon)	
6/8-6/21 (8,000 Coastwide Mark Selective Fishery Chinook guideline)	Open 7 days per week; 2 fish per day; all salmon except Coho. All retained Chinook must have a healed adipose fin clip; Chinook minimum size limit 24 inches. In-season management may be used to sustain season length and keep harvest within the overall Chinook recreational TAC for north of Cape Falcon.
6/22-9/30 (37,380 Mark Selective Fishery Coho sub quota)	Open 7 days per week; 2 fish per day, only one of which may be a Chinook; retained Coho must have a healed adipose fin clip; Chinook minimum size limit 24 inches and Coho minimum size 16"; Chinook guideline: 9,900; closed in Columbia Control Zone. In-season management may be used to sustain season length and keep harvest within the overall Chinook recreational TAC for north of Cape Falcon.
Buoy 10	
8/1-9/1	Open 7 days/week; 2 fish per day, only one of which may be a Chinook; Chinook minimum size 24 inches and Coho minimum size 16 inches; retained Coho must have a healed adipose fin clip. Release all salmon other than Chinook and hatchery Coho. Barbless hooks only.
9/2-9/30	Open 7 days/week; 2 fish per day. Release all salmon other than hatchery Coho. Coho minimum size 16 inches retained Coho must have a healed adipose fin clip. Barbless hooks only.
10/1-12/31	Open 7 days/week; 6 fish per day, 2 adults (minimum size 12 inches) may be retained, only 1 adult Chinook and retained Coho must have a healed adipose fin clip. Release all salmon other than Chinook and hatchery Coho. Barbless hooks only.
1/1-3/31	Open 7 days/week; 6 hatchery Chinook per day, 2 adults (minimum size 12 inches); retained Chinook must have a healed adipose fin clip; release sockeye, Chum, Coho and unmarked Chinook. Barbless hooks only.
North Jetty	Open 7 days per week when Area 1 or Buoy 10 area is open. When Buoy 10 area and Area 1 are open concurrently, the daily limit and minimum size restrictions follow the most liberal regulations of those areas. Barbless hooks only.
Area 2: Queets River to Leadbetter Point	
6/8-6/22 (8,000 Coastwide Mark Selective Fishery Chinook guideline)	Open 7 days per week; 2 fish per day; all salmon except Coho. All retained Chinook must have a healed adipose fin clip; Chinook minimum size limit 24 inches. In-season management may be used to sustain season length and keep harvest within the overall Chinook recreational TAC for north of Cape Falcon.

6/23-9/30 (27,660 Mark Selective Fishery Coho sub quota)	Open Sun-Thur; 2 fish per day, only one of which may be a Chinook; retained Coho must have a healed adipose fin clip; Chinook minimum size limit 24 inches and Coho minimum size 16 inches; Chinook guideline: 23,500. In-season management may be used to sustain season length and keep harvest within the overall Chinook recreational TAC for north of Cape Falcon.
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Area 2-1 (east of line from Leadbetter Point to Cape Shoalwater): Willapa Bay

6/8-7/31	Open concurrent with Area 2, when Area 2 is open for salmon. Area 2 rules apply.
8/1-1/31	6 fish limit, 3 adults, 12" min size limit. Release wild Chinook and Chum.

Area 2-2 (east of line between tips of exposed jetties): Grays Harbor

West of Buoy 13 line 6/8-8/10	Open concurrent with Area 2, when Area 2 is open for salmon. Area 2 rules apply.
East of Buoy 13 line, when open	All salmon required to be released may not be totally removed from the water, except anglers fishing from boats 30' or longer as listed on either their State or Coast Guard regulation are exempt. Single-point barbless hooks required.
East of Buoy 13 line 7/1-9/15	Closed for salmon through 9/15.
East of Buoy 13 line 9/16-9/22	3 fish limit, 3 adults, only 1 may be a Chinook. 12" min size limit.
East of Buoy 13 line 9/23-11/30	3 fish limit, 3 adults, Coho 12" min size limit. Release Chinook.

Westport Boat Basin and Ocean Shores Boat Basin

8/16-1/31	6 fish limit, 4 adults; 12" min size limit. Release wild Chinook.
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Areas 3-4: U.S./Canada border to Queets River

5/10-5/11, 5/17-5/18, 6/22-6/28 (8,000 Coastwide Mark Selective Fishery Chinook guideline)	Open 7 days per week; 2 fish per day; all salmon except Coho. All retained Chinook must have a healed adipose fin clip; Chinook minimum size limit 24 inches. Closed waters: east of a true north-south line running through Sail Rock. In-season management may be used to sustain season length and keep harvest within the overall Chinook recreational TAC for north of Cape Falcon.
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Area 3: Cape Alava to Queets River

6/29-9/22 (1940 Mark Selective Fishery Coho sub quota)	Open 7 days per week; 2 fish per day; plus 2 additional pink salmon; retained Coho must have a healed adipose fin clip; Chinook minimum size limit 24 inches, Coho minimum size 16 inches; Chinook guideline: 1,700. In-season management may be used to sustain season length and keep harvest within the overall Chinook recreational TAC for north of Cape Falcon.
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La Push Late Season Area 9/28-10/13	(50 Coho sub quota; 50 Chinook sub quota, included above) Fishery restricted to the area north of 47°50'00" N latitude and south of 48°00'00" N latitude. Open 7 days/wk. Other regulations as described above.
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Area 4: U.S./Canada border to Cape Alava and east to Sekiu River

6/29-9/22 (7,780 Mark Selective Fishery Coho sub quota)	Open 7 days per week; 2 fish per day plus 2 additional pink salmon; retained Coho must have a healed adipose fin clip. Chum non-retention during August and September. Chinook minimum size limit 24 inches and Coho minimum size 16 inches; Chinook guideline: 4,900; Chinook non-retention east of Bonilla-Tatoosh line beginning August 1. Closed waters: east of a true north-south line running through Sail Rock in July; Closed to salmon angling July 1-Sept. 30 inside the area bounded by a line from Kydaka Point to Shipwreck Point. In-season management may be used to sustain season length and keep harvest within the overall Chinook recreational TAC for north of Cape Falcon.
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Area 4A: Makah Bay Treaty Evaluation Marine Set Net Fishery

Chinook	Trty	Open 8/15 through 9/15 inside an area bounded by a line running from Strawberry Rock Point (48° 19' 07"N, 124° 40' 00"W) to the group of rocks (48° 19' 46"N, 124° 40' 35"W) which are located off Hobuck Beach and a line to the mouth of Hobuck Creek (48° 19' 54"N, 124° 39' 37"W), to be implemented per agreement by the Makah Tribe and WDFW.
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Part II. PUGET SOUND including STRAIT OF JUAN de FUCA and SAN JUAN ISLANDS fisheries (All fisheries modeled in FRAM #1213 (Chinook) & #1323 (Coho))

2.1 Strait of Juan de Fuca Pre-terminal Areas

Areas 5, 6, 6C Treaty Troll	
NOTE: Area 4B: 5/1-10/31 see Ocean Troll. For 11/1-12/31 & 1/1-4/15 see below	
5/1-6/15	Closed
6/16-9/30	The catch estimates for this fishery modeled in FRAM are statistically-derived predictions, and are the best available pre-season estimates of catch in this fishery. In order to have the actual catch reflect run strength, however, these estimates will not be treated as a ceiling when the managers make in-season fishery management decisions. Open for salmon, chum release; Freshwater Bay closed, south of Angeles Pt./ Observatory Pt. line; Pt. Angeles Harbor closed west of a line from tip of Ediz Hook to ITT Rayonier Dock; Hoko Bay closed inside the area bounded by a line from Kydaka Point to Shipwreck Point; Area 6 closed east of a line true north from Green Point; 1,000 foot closure around stream mouths.

10/1-10/31	Closed
11/1-4/15	In Areas 4B, 5, 6, 6C the treaty troll fishery will be open from November 1, 2013 through April 15, 2014, or when the catch reaches the harvest ceiling of 8,500 Chinook, whichever comes first. A lower number was modeled as per agreement among the Co-managers. The modeled number does not impose a management obligation on this fishery, nor does it establish a precedent or obligation for management of this fishery in future years. 1,000-foot closures around stream mouths. Hoko Bay closed, inside the area bounded by a line from Kydaka Point to Shipwreck Point for the month of November.
4/16-4/30	Closed
<p>Areas 4B, 5, & 6C Treaty Net (Ntrty net closed) The catch estimates for this fishery modeled in FRAM are statistically-derived predictions, and are the best available pre-season estimates of catch in this fishery. In order to have the actual catch reflect run strength, however, these estimates will not be treated as a ceiling when the managers make in-season fishery management decisions.</p>	
Chinook	Open for setnet gear only, 6/23 through 8/17; 7 days a week; Hoko Bay closed, inside the area bounded by a line from Kydaka Point to Shipwreck Point; Freshwater Bay closed, south of Angeles Pt./ Observatory Pt. line; 1,000-ft. closure around stream mouths.
Sockeye/Pink	Start to be determined by Fraser River Panel. The Co-managers have identified the following management actions to control by-catch of Chinook. Estimated by-catches are best estimates and are not quotas or ceilings. The priority for this fishery is to harvest the full Treaty share of sockeye and pink salmon, while managing the fishery so as to not greatly exceed the projected incidental harvest of Chinook salmon. All Chinook by-catch in this fishery will be promptly reported by each Tribe to the NWIFC TOCAS database and reported to the U.S. section of the Fraser Panel at least weekly, including take home and ceremonial and subsistence (C&S). If in-season the Chinook by-catch in this fishery exceeds 1,300, the Tribes will consider management actions to limit the Chinook by-catch, such as time or area restrictions, while continuing the priority objective of harvesting sockeye and pink salmon. If in-season the fishery is projected to result in a total Chinook by-catch exceeding 3,300 Chinook, the Tribes will, effective with that scheduled fishery opening, prohibit any commercial sales of Chinook salmon, and any Chinook salmon landed must be delivered to the fishers' respective Tribe.
Coho	Open for gillnets starting at 6 days per week with in-season adjustments based on cumulative catch. Fishery will target coho from the end of Fraser Panel control through 10/5; 1,000 ft. closure around stream mouths. Hoko Bay closed, inside the area bounded by a line from Kydaka Point to Shipwreck Point.

Chum	Open for gillnets, starting at 6 days per week (day may be added if effort is low), 10/6 through 11/9; 1,000-foot closure around stream mouths. Hoko Bay closed, inside the area bounded by a line from Kydaka Point to Shipwreck Point.
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Area 5 Recreational

5/1-6/30	Closed
7/1-8/15	2 fish limit, plus 2 additional pink salmon (Chinook 22" min size); release unmarked Chinook, unmarked Coho, and Chum. South of the Kydaka Pt./Shipwreck Pt. line – closed to salmon angling.
8/16-9/14	2 fish limit, plus 2 additional pink salmon; release Chinook, unmarked Coho, and Chum. South of the Kydaka Pt./Shipwreck Pt. line – closed to salmon angling.
9/15-9/30	2 fish limit; Release Chinook and chum. South of the Kydaka Pt./Shipwreck Pt. line – closed to salmon angling.
10/1-10/31	2 fish limit, 1 Chinook (Chinook 22" min size). South of the Kydaka Pt./Shipwreck Pt. line – closed to salmon angling.
11/1-2/15	Closed
2/16-4/10	1 fish limit (Chinook 22" min size).
4/11-4/30	Closed

Area 6 Recreational

5/1-6/30	Closed
7/1-8/15	2 fish limit, plus 2 additional pink salmon, release Chinook, unmarked Coho, and chum, except W. of true N/S line through "2" buoy near tip of Ediz Hook retention of marked Chinook allowed (Chinook 22" min size);. South of Angeles Pt./Observatory Pt. line – closed to angling. Pt. Angeles Hbr. W. of line from tip of Ediz Hook to ITT Rayonier Dock – closed to salmon angling. Dungeness Bay closed to salmon angling.
8/16-9/30	2 fish limit, plus 2 additional pink salmon; Release Chinook, unmarked Coho, and Chum. South of Angeles Pt./Observatory Point line - closed to angling. Pt. Angeles Hbr. W. of a line from the tip of Ediz Hook to ITT Rayonier Dock – closed to salmon angling. Dungeness Bay closed to salmon angling.
10/1-10/31	2 fish limit, 1 Chinook (Chinook 22" min size). South of Angeles Pt./Observatory Point line – closed to angling. Pt. Angeles Hbr. W. of a line from the tip of Ediz Hook to ITT Rayonier Dock – closed to salmon angling. Sequim Bay south of a line from the south end of Gibson Spit to the west end of Travis Spit - closed to salmon angling. Discovery Bay south of a line from the Gardiner Boat Ramp to Beckett Point - closed to salmon angling. (see: Dungeness Bay Recreational below.)

11/1 - 11/30	Closed
12/1 - 4/10	2 fish limit (Chinook 22" min size). Release unmarked Chinook. Dungeness Bay closed to salmon angling.
4/11 - 4/30	Closed

2.2 Strait of Juan de Fuca Terminal Areas

Area 6D Dungeness Bay Net

Chinook	All	Closed
Pink	All	Closed
Coho	Trty	Open 9/21 through 10/26 with additional openings possible based on in-season catch composition data; 9/21 through 10/10, seven days per week, fishing 7 am to 7 pm only, nets must be attended by fisher, Chinook and chum release; 10/11 through 10/26, seven days per week, 24 hours per day; 1,500 ft closure around mouth of Dungeness River.
	Ntrty	Open Wk 38 (wb 9/15) through Wk 43 (wb 10/20) for skiff gillnet gear; 7AM – 7PM, 1 days first week starting 9/21 per SCSCI, 4 days T-F wk 39 (wb 9/21); 5 days M-F wks 40 (wb 9/29)-43 (wb 10/20); Chinook and Chum NR, release by cutting ensnaring meshes; 1,500 ft. (1/4 nautical mile) closure around each river mouth. Additional openings possible in wk 44 (wb 10/27) based on in-season information.
Chum	All	Closed

Dungeness River (Treaty & Recreational)

The following applies to all in-river fisheries (Tribal & WDFW): Co-managers will meet on, or prior to October 7, 2013 to review river flow and weather conditions for the week of October 8 – 15. In the absence of agreed-to river flow and weather conditions, Dungeness River fisheries will close through emergency rule until start dates listed below.

Dungeness River Treaty (Ntrty net closed)

Chinook	Trty	Closed
Pink	Trty	Closed
Coho	Trty	Commercial fishing up to 3 days/wk, to be determined in-season, for coho only, may occur no earlier than 10/16 and will be restricted to areas below the Dungeness hatchery intake using species selective (non-gillnet) gear. Subsistence fishing using selective gear may open after 10/15.
Chum	Trty	Closed

Elwha River Treaty (Ntrty net closed)

Chinook	Trty	Closed except Ceremonial Harvest of 5 fish in July.
Coho	Trty	Closed
Chum	Trty	Closed

Dungeness Bay Recreational

5/1-9/30	Closed to salmon angling.
10/1-10/31	2 fish limit, coho only.
11/1-4/30	Closed to salmon angling.

Dungeness River Recreational

(mouth to hatchery intake pipe at RM 11.3)	10/16 - 12/31	4 fish limit, coho only; 12" min size.
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Elwha River Recreational

Closed to all fishing.

Hoko River Recreational

(mouth to cement bridge (mile 7.0) on Hoko/Ozette Hwy.)	All year Closed to salmon.
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All other STRAIT OF JUAN DE FUCA REGION freshwater recreational closed to salmon angling.

2.3 San Juan Islands/Point Roberts Area**Areas 6, 7, & 7A Net**

Chinook	All	Closed
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Sockeye	Trty	Schedule to be determined. The Co-managers have identified the following management actions to track and control by-catch of Chinook. Estimated by-catches are best estimates and are not quotas. The priority for this fishery is to harvest the full treaty share of sockeye and pink salmon, while managing the fishery so as to not greatly exceed the projected incidental harvest of Chinook salmon. All Chinook by-catch in this fishery will be promptly reported by each Tribe to the NWIFC TOCAS database and reported to the U.S. Section of the Fraser Panel at least weekly, including take home and ceremonial and subsistence (C&S). Prior to achieving a by-catch of 4,200 Chinook there will be no restrictions on the retention or sale of Chinook salmon. If, during the season, the Fraser Panel schedules a fishery that is projected to result in a total Chinook by-catch exceeding 4,200 fish, the Tribes will, effective with that scheduled fishery, prohibit any commercial sales of Chinook salmon, and any Chinook salmon landed must be delivered to the fisher's respective Tribe. Reef net unmarked coho, unmarked Chinook, and chum NR. Reef net may retain marked Chinook through 9/30. July and August – C&S fishery. Further policy discussion may occur among the affected parties prior to the season.
	Ntrty	Schedule to be determined. The Co-managers have identified the following management actions to track and control by-catch. Modeled by-catches are best estimates and are not quotas. All vessel operators must complete best fishing practices certification prior to fishing. PS: brailing required. Chinook, coho, and chum NR. Reef net unmarked coho, chum, and unmarked Chinook NR. Reef net: fishers may retain marked Chinook, with a cap of 300 for all gears through 9/30. Estimates of by-catch will be shared at least weekly in the U.S. Section of the Fraser River Panel. Purse seine and gillnet fisheries will be managed to ensure that the non-treaty impact does not exceed 3,500 total Chinook (120% of pre-season estimate).
Pink	Trty	Purse seine, gill net, and reef net: schedule dependent upon Fraser Panel. See Chinook by-catch in-season actions description in sockeye section above. Reef net: unmarked coho, unmarked Chinook, and chum NR. Reef net may retain marked Chinook through 9/30.
	Ntrty	Schedule to be determined. All vessel operators must complete best fishing practices certification prior to fishing. PS: brailing required. Chinook, coho, and chum NR. Reef net: chum, unmarked Chinook, and unmarked coho NR. See Chinook by-catch in-season actions description in sockeye section above.
Coho	Trty	Reef net: 7 days/wk beginning at end of Fraser management through 11/9; Chinook NR after 9/30; unmarked coho NR through 9/30, then coho retention. Chum NR through 9/30.

	Ntrty	Reef net: 7 days/wk beginning at end of Fraser Mgmt through Chum mgmt wk 45 (wb 11/3); Chinook NR after 9/30; unmarked-Coho release through 9/30, then Coho non-selective. Chum retention prohibited until after 9/30. All vessel operators must complete best fishing practices certification prior to fishing.
Chum	Trty	The treaty fishery will open October 10 and remain open for the duration of the chum fishery, dependent on run status updates from CDFO. See attached 2013 7/7A Chum Fishing Plan. Reef nets open from end of Fraser management through end of chum management (11/9), 7 days/wk. Reef net release requirements listed in coho management, above.
	Ntrty	Dependent on update of run status from CDFO. PS and GN open wk 41 (wb 10/6) through wk 45 (wb 11/3). Open 10/12, 10/13, 10/15 and 10/19 through end of season. Co-managers will meet via conference call on Wednesday 10/16 to discuss catch through that date. Fishery will re-open based on conditions outlined in the attached agreement. PS: brailing required, Chinook and Coho NR. GN: during wks 41 and 42, Chinook and Coho NR, live box required and limited soak times in effect. Reef nets open from end of Fraser Panel management through wk 45 (wb 11/3), 7 days/wk, must release all Chinook and unmarked coho. All vessel operators must complete best fishing practices certification prior to fishing.
Subsistence	Trty	12/1-4/30 subsistence troll fishery (Chinook 22" min. size). Bellingham Bay closed 4/1 – 4/30.

Area 7 Recreational

5/1-6/30	Closed
7/1-7/31	2 fish limit, 1 Chinook (Chinook 22" min size) plus 2 additional pink salmon; Waters of Area 7 in Rosario Strait and the eastern portion of the Strait of Juan de Fuca southerly of a line running true south from the westernmost point on Fidalgo Head to Burrows Island, then westerly and southerly along the shore of Burrows Island to the Burrows Island Lighthouse, then westerly to Bird Rocks, then westerly from Bird Rocks to the southernmost point on Decatur Island, then southerly across Lopez Pass to Lopez Island and following the shore of Lopez Island southerly and westerly to Iceberg Point, then from Iceberg Point to Cattle Point, then south southwest to the Salmon Bank Buoy, and then true south from the Salmon Bank Buoy to the Area 7 boundary, closed to salmon angling. Bellingham and Samish Bay closed to salmon angling.

8/1-9/30	2 fish limit, 1 Chinook (Chinook 22" min size) plus 2 additional Pink salmon; release Chum and unmarked Coho; Waters of Area 7 in Rosario Strait and the eastern portion of the Strait of Juan de Fuca southerly of a line running true south from the westernmost point on Fidalgo Head to Burrows Island, then westerly and southerly along the shore of Burrows Island to the Burrows Island Lighthouse, then westerly to Bird Rocks, then westerly from Bird Rocks to the southernmost point on Decatur Island, then southerly across Lopez Pass to Lopez Island and following the shore of Lopez Island southerly and westerly to Iceberg Point, then from Iceberg Point to Cattle Point, then south southwest to the Salmon Bank Buoy, and then true south from the Salmon Bank Buoy to the Area 7 boundary, closed to salmon angling. Bellingham Bay closed to salmon angling 7/1-8/15; Samish Bay closed to salmon angling. Lummi Bay closure area: east of a line from Gooseberry Point to Sandy Point 9/3 – 10/15.
10/1-10/31	2 fish limit, 1 Chinook (Chinook 22" min size); Release unmarked Coho. Samish Bay closed to salmon angling 10/1-10/15. Lummi Bay closure area: east of a line from Gooseberry Point to Sandy Point 9/3 – 10/15.
11/1-11/30	Closed
12/1-4/30	2 fish limit, (Chinook 22" min size), release unmarked Chinook Bellingham Bay and Samish Bay closed to salmon angling 4/1 – 4/30.

2.4 Nooksack/Samish Terminal Region

Bellingham Bay (Areas 7B, 7C, 7D; 7A On-Reservation) Net

Chinook/Pink	Trty	<p>Areas 7B & 7D: August 1 through September 6, open weekly 4 PM Sunday to 4 PM Friday, except opens 12:01 AM August 1; Fishing pattern 2,5,5,5,5,5.</p> <p>Area 7C: August 1 through September 13, open weekly 4 PM Sunday to 4 PM Friday except opens 12:01 AM August 1; fishing pattern 2,5,5,5,5,5.</p> <p>Samish Bay is closed southeasterly of a line from Oyster Creek to the fisheries marker on Samish Island, except that hand pull gill nets may fish south of a line from Oyster Creek to Fish Point on Samish Island, August 1 through September 11 4 PM Sunday – 4 PM Wednesday, weekly; except opens 12:01 AM August 1 and closes 4 PM August 2 during the first week; fishing pattern: 2,3,3,3,3,3,3. 6 ½" mesh in 7C and off reservation areas of 7B, except when open for sockeye in 7 and 7A.</p>
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	Ntrty	Areas 7B & 7C: Wks 33 (wb 8/11) - 36 (wb 9/1); PS Coho NR. GN fishing pattern: 3, 4, 4, 5; PS fishing pattern: 1,1,1,1. See Hales Pass closure below beginning 9/1.
Coho	Trty	Area 7A on reservation fishery: September 15 through October 9. Open weekly 4 PM Sunday – 4 PM Wednesday. Fishing pattern 3,3,3,3.
		Areas 7B and 7D: September 8 through October 26, open Sunday 4 PM – Saturday 4 PM. Fishing Pattern: 6,6,6,6,6,6.
		7C: On October 2, a co-manager conference call will be held to determine the status of Samish Chinook escapement. If the escapement goal appears to be attainable, and there is harvestable surplus of Samish coho, then a coho fishery will open October 6 – October 23, 4 PM Sunday to 4 PM Wednesday, weekly; fishing pattern 3,3,3.
	Ntrty	Area 7B: Wks 37 (wb 9/8) - 43 (wb 10/20); GN fishing pattern: 5,5,7,7,7,7,7 (24 hrs for all days); PS fishing pattern: 3,3,7,7,7,7,7. Hales Pass closed for all NT GN openings from Sept. 1 - 21, in the waters of Area 7B west of a line from Point Francis (48°41'46"N, 122°36'32"W), to the red and green buoy southeast of Point Francis (48°40'27"N, 122°35'24"W), then to the northernmost tip of Eliza Island (48°39'38"N, 122°35'14"W), then along the eastern shore of the island to its southernmost tip (48°38'40"N, 122°34'57"W) and then north of a line from the southernmost tip of Eliza Island to Carter Point (48°38'24"N, 122°36'31"W). NT purse seines fishing in this area must release Coho Sept. 1-21.
Chum	Trty	Areas 7B & 7D: Oct. 27 – Dec. 11; open weekly 4PM Sunday-4PM Wednesday; 3,3,3,3,3,3,3.
	Ntrty	Area 7B: Wks 44 (wb 10/27) - 48 (wb11/24); PS/GN; 5,5,5,5,5. Whatcom Creek Zone (east of line from Post Point to flashing red light at west entrance of Squalicum Harbor) open 7 days per week.

Nooksack River Treaty Net (Ntrty net closed)

Note: On a weekly basis, Nooksack Tribe commercial fisheries on the Nooksack River will open at 12:01 AM Sun., except that portion of the river between the Marine Drive Bridge and the first turn in the river upstream of the Slater Road Bridge, which will open at 4:00 PM Sun. On a weekly basis the Nooksack Tribe's commercial Chinook and coho fisheries will close 4:00 PM Sat. and chum fisheries will close 4:00 PM Wed.

Chinook/Pink	April 1 – June 15	April to mid June: limited ceremonial and subsistence fishery will be managed for a total mortality of 16 NOR Chinook. A traditional fishery will occur between the Highway 9 Bridge in the lower North Fork and the Nugent's Corner Boat Launch in the mainstem (the boat launch is located just down river from Nugent's Corner Bridge) (RM 30.8 and 36.7). A total of 32 Chinook are projected in this fishery with an anticipated 4 NORs among the 32. This fishery is by permit only. Another fishery will occur in the lower Nooksack River between the Slater Road bridge and the river mouth (between RM 0.0 and 3.5). The lower river fishery will be selective and is projected to encounter 31 NOR Chinook with an expected survival rate of 60% and an estimated mortality of 12 NOR Chinook.
	8/1- 9/7	Open weekly 4 PM Sunday to 4 PM Saturday, except open 12:01 AM Thursday August 1 to 4 PM Saturday August 3. Fishing pattern: 3,6,6,6,6,6. The river is divided into five zones during this period. These zones open in subsequent weeks, proceeding upriver, to protect migrating spring Chinook. Zone 1 is from Marine Drive Bridge to Slater Bridge. Zone 2 is from Slater Br. To Hannegan Br. In Lynden. Zone 3 is from Hannegan Br. to Nugents Corner Br. Zone 4 is from Nugents Corner Br. to the confluence of the north and south forks. Zone 5 is upriver of the confluence of the north and south forks.
Coho	9/8-10/26	Open weekly Sunday 4 PM through Saturday 4 PM. Fishing Pattern: 6,6,6,6,6,6,6. The area extending from the confluence of the North and South Forks downstream to a marker behind the Nooksack Tribal Works Building will not be open during the early portion of the coho management period, remaining closed prior to Sept 11.
Chum	11/7-8 or 11/14-15	Subsistence harvest only. The Lummi and Nooksack tribes will determine in-season which two days to hold this subsistence fishery.
	10/27-12/11	Commercial. Open weekly Sunday 4 PM through Wednesday 4 PM. Fishing pattern: 3,3,3,3,3,3,3.

Bellingham Bay Terminal Area Recreational

5/1-8/15	Closed to salmon angling.
8/16-10/31	4 fish limit, 2 Chinook (Chinook 22" min size); Samish Bay closed to salmon angling thru 10/15.
11/1-3/31	Same as Area 7.
4/1-4/30	Closed to salmon angling.

Nooksack River Recreational; mainstem and North Fork

(from Lummi Indian Reservation boundary to Hwy 544 Bridge at Everson)	7/16-8/31	Daily limit 4 pink salmon only.
(from Lummi Indian Reservation boundary to Hwy 544 Bridge at Everson)	9/1 – 12/31	2 fish limit, plus 2 additional Coho; 12" min size. Release unmarked Chinook thru 9/30.
(from Hwy 544 Bridge at Everson to yellow marker at the FFA high school barn in Deming)	9/1 – 12/31	2 fish limit, plus 2 additional Coho; 12" min size. Release unmarked Chinook thru 9/30.
(from yellow marker at the FFA high school barn in Deming to confluence of North and South forks)	10/1 – 12/31	2 fish limit, plus 2 additional Coho; 12" min size.
(from confluence of North and South forks to Maple Creek on North Fork)	10/1 – 11/30	2 fish limit, plus 2 additional Coho; 12" min size.

Nooksack River Recreational, South Fork

(from mouth to Skookum Creek)	10/1 – 12/31	2 fish limit, plus 2 additional Coho; 12" min size. Release Chum.
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Samish River Recreational

(from mouth to I-5 Bridge)	8/1-11/30	2 fish limit, 12" min size.
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Dakota Creek Recreational

(mouth to Giles Road Bridge)	10/1 – 12/31	2 fish limit, 12" min size. Release unmarked Chinook.
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Whatcom Creek Recreational

(mouth to yellow markers below foot bridge below Dupont St. in Bellingham)	8/1 – 12/31	6 fish limit, 2 adults; 12" min size.
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All other NOOKSACK/SAMISH TERMINAL REGION freshwater recreational: Closed to salmon angling.

2.5 Skagit Terminal Region

Skagit Bay (Area 8) Net

Note: Fishing schedules for Skagit Bay, Skagit River, and Baker River are pre-season projections. Schedules may be changed in-season as necessary to meet management objectives and harvestable shares. A technical review of the estimated Chinook release mortality rate used to model the Treaty pink and coho fisheries will be completed prior to the start of the pink fishery. The Co-managers will develop a joint monitoring plan for inclusion in the MOU prior to the start of the 2013 fishery openings.

Spring Chinook	Area 8 – Trty	<u>Swinomish fishing pattern:</u> wk 19 (wb 5/5) thru wk 21 (wb 5/19); 1, 1, 1. <u>Upper Skagit fishing pattern:</u> No scheduled fishery.
Sockeye	Area 8 – Trty	<u>Swinomish fishing pattern:</u> wk 25 (wb 6/16) thru wk 28 (wb 7/7); 1.125, 4, 4, 4. <u>Upper Skagit fishing pattern:</u> No scheduled fishery.
	Area 8 - Ntrty	Closed

Sockeye Research Tagging Study	Area 8	Wk 24 (wb 6/9) thru wk 29 (wb 7/14); 1 beach seine, 8 hours/wk. Sockeye pit and/or acoustic tagged, all species released.
Pink	Trty	<u>Swinomish fishing pattern:</u> wk 35 (wb 8/25) thru wk 37 (wb 9/8); 5, 6, 6.667. Schedule after ISU dependent on ISU. <u>Upper Skagit fishing pattern:</u> No scheduled fishery.
	Area 8 - Ntrty	Wk 34 (w/b 8/18) – 36 (w/b 9/1); PS NR for CK, SO, and CH; PS fishing pattern 2, 2, 1; GN fish daylight hours; GN fishing pattern 2, 2, 1.
Coho	Trty	Terminal Treaty HR targets 20% as a response to “Normal” abundance. If ISU changes abundance status, HR may be modified following co-manager discussions.
	Area 8 – Trty	<u>Swinomish fishing pattern:</u> wk 38 (wb 9/15) thru wk 41 (wb 10/6); 2, 2, 2, 1.167. <u>Upper Skagit fishing pattern:</u> No scheduled fishery.
	Area 8 - Ntrty	Closed
Chum Test	Area 8	1 boat at Jetty 1 day/wk 44 (wb 10/27) & wk 45 (wb 11/3) and 1 boat in Bay 1 day/wk 44 (wb 10/27) & wk 45 (wb 11/3).
Chum	Area 8 - Trty	<u>Swinomish fishing pattern:</u> No preseason harvestable. Placeholder modeled schedule wk 46 (wb 11/10); 1. Fishery dependent on ISU and harvestable fish. <u>Upper Skagit fishing pattern:</u> No scheduled fishery.
	Area 8 - Ntrty	Closed. May open pending co-manager agreement on ISU that indicates harvestable runsize.

Skagit River Treaty Net (Ntrty net closed)

Note: Fishers from the Sauk-Suiattle Tribe are invited to participate in the 2013 Swinomish salmon fishery in Skagit River Area 78C (Mount Vernon bridge to the Spud House), subject to and in accordance with all provisions of fishing ordinances and regulations of the Swinomish Indian Tribal Community that apply to such fishery.

Chinook		Ceremonial and Subsistence – 234 fish (14 hatchery spring and 220 summer/fall) total Swinomish, Sauk-Suiattle, and Upper Skagit Tribes.
	Area 78C	<u>Swinomish and Sauk-Suiattle Tribes fishing pattern:</u> wk 19 (wb 5/5) thru wk 21 (wb 5/19); 1, 1, 1; <u>Upper Skagit fishing pattern:</u> wk 20 (wb 5/13) thru wk 22 (wb 5/27); 1, 1, 1.
	Area 78D	<u>Upper Skagit fishing pattern:</u> wk 20 (wb 5/12) thru wk 22 (wb 5/26); 1, 1, 1.

Sockeye	Area 78C	<p><u>Swinomish and Sauk-Suiattle Tribes fishing pattern:</u> wk 25 (wb 6/16) thru wk 28 (wb 7/7); 1.125, 4, 4, 4.</p> <p><u>Upper Skagit fishing pattern:</u> wk 27 (wb 6/30) thru wk 28 (wb 7/7); 0.5833, 1. Additional fishing dependent on ISU, per MOU.</p>
	Area 78D	<p>[Swinomish Tribe fishing pattern: Baker River: Wk 29 (wb 7/14):1. Fishery will be managed so as to achieve but not exceed the Swinomish sockeye share based on preseason forecast until such time as an in-season update becomes available; - Upper Skagit Tribe does not agree – Tribes are currently in discussion and it is the intent to have a resolution prior to this fishery.]</p> <p>[Upper Skagit fishing pattern: Areas 78D-2, 78D-3, 78D-4 and 78O (Baker River): wk 27 (wb 6/30) thru wk 28 (wb 7/7); 0.5833, 1. Additional fishing dependent on ISU, per MOU. – Swinomish Tribe does not agree – Tribes are currently in discussion and it is the intent to have a resolution prior to this fishery].</p>
Pink	Area 78C	<p><u>Swinomish and Sauk-Suiattle Tribes fishing pattern:</u> wk 35 (wb 8/25) thru 37(wb 9/8); 5, 6, 6.667 . Schedule after ISU dependent on ISU.</p> <p><u>Upper Skagit fishing pattern:</u> wk 36 (wb 9/1) Chinook retention. Wk 37 (wb 9/8) thru 39 (wb 9/22) Chinook non-retention; 4.167, 3.167, 3.167, 3.000.</p>
	Area 78D	<p><u>Upper Skagit fishing pattern:</u> wk 36 (wb 9/1) Chinook retention. Wk 37 (wb (9/8) thru wk 39 (wb 9/22) Chinook non-retention; 4.167, 3.167, 3.167, 3.000.</p>
Coho	Terminal Treaty HR target 20% as a response to “Normal” abundance. If ISU changes abundance status, HR may be modified following co-manager discussions.	
	Area 78C:	<p><u>Swinomish and Sauk-Suiattle Tribes fishing pattern:</u> wks 38 (wb 9/15) thru wk 41 (wb 10/6); 2, 2, 2, 1.167.</p> <p><u>Upper Skagit fishing pattern:</u> wk 42 (wb 10/13) thru wk 43 (wb 10/20); 1.167, 1.0 Chinook non-retention..</p>
	Area 78D	<p><u>Upper Skagit fishing pattern:</u> wk 42 (wb 10/13) thru wk 43 (wb 10/20); 1.167, 1.0. Chinook non-retention.</p>

Chum	Area 78C	<u>Swinomish and Sauk-Suiattle Tribes fishing pattern:</u> No preseason harvestable. Placeholder modeled schedule wk 46 (wb 11/10); 1. Fishery dependent on ISU and harvestable fish. <u>Upper Skagit fishing pattern:</u> No preseason harvestable.
	78D	<u>Upper Skagit fishing pattern:</u> No preseason harvestable.
River Test	Chinook	Area 78C - Blakes wk 19 (wb 5/5) thru wk 35 (wb 8/25); 1 boat, 6 hours/wk.
	Sockeye	Area 78C – Blakes wk 24 (wb 6/9) thru wk 29 (wb 7/14); 1 boat, 12 hours/wk. Area 78D-3 – Upper Skagit – wk 23 (wb 6/2) thru wk 30 (wb 7/21);1 boat, 4 hours/wk.
	Coho	Area 78C - Blakes Drift wk 34 (wb 8/18) thru wk 45 (wb 11/3), 12 hours/wk; Area 78C – Spudhouse Drift, Upper Skagit, wk 34 (wb 8/18) thru wk 44 (wb 10/27);1 boat, 12 hours/wk; Area 78D-3 wk 35 (wb 8/25) thru wk 44 (wb 10/27);1 boat, 4 hours/wk.
	Chum	Area 78C - Blakes Drift wk 44 (wb 10/27) and wk 45 (wb 11/3);1 boat, 12 hours/wk.

Swinomish Channel Treaty Net (Ntrty net closed)

Coho	No separate openings. Area opens during Area 8 openings.
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Area 8-1 Recreational

5/1-7/31	Closed
8/1-9/30	2 fish limit, plus 2 additional Pink, release Chinook.
10/1- 10/31	2 fish limit, release Chinook.
11/1 – 4/30	2 fish limit, Chinook 22” min size, release unmarked Chinook.

Baker River/Lake Recreational

Baker Lake	7/10- 9/2	2 fish limit, sockeye only, 18” min. size.
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Cascade River Recreational

(mouth to Rockport-Cascade Road Bridge)	6/1 – 7/15	4 fish limit, only 2 may be adults, marked Chinook only, 12” min. size. Co-managers will consult on harvest guidelines and fishery may close early.
	9/16 – 11/30	4 fish limit, coho only, 12” min size.

Skagit River Recreational

(mouth to Memorial Hwy. Bridge (Hwy 536 at Mt. Vernon))	8/1 – 12/31	4 fish limit, only 2 unmarked Coho, 12” min size, release chum and Chinook.
(From Memorial Hwy Bridge to Gilligan Creek)	8/1 – 12/31	4 fish limit, only 2 unmarked Coho, 12” min size, release chum and Chinook.
(From Gilligan Creek to Dalles Bridge at Concrete)	8/16 – 12/31	4 fish limit, only 2 unmarked Coho, 12” min size, release chum and Chinook.
(From Dalles Bridge at Concrete to Marblemount Bridge)	6/1 – 7/15	4 fish limit, only 2 may be adults, marked Chinook only, 12” min size, open only from Highway 530 bridge at Rockport to Cascade River Road.
	9/1 – 12/31	4 fish limit, only 2 unmarked coho, 12” min size, release Chum and Chinook.
	6/1- 8/31	Closed waters – between a line projected across the thread of the river 200’ above the east bank of the Baker River and a line projected across the thread of the river 200’ below the west bank of the Baker River.

All other SKAGIT TERMINAL REGION freshwater recreational closed to salmon angling.

2.6 Stillaguamish/Snohomish Terminal Region

Area 8A Net		
Chinook	Trty	Closed (Ceremonial set-aside of up to 100 Chinook, July-September period).

	Ntrty	Closed
Pink	Trty	Tulalip Tribes - 8/11 – 9/14; up to 7 days per week. Closed north of the line drawn from Kayak Point due west to Camano Island. [Swinomish and Suquamish Tribes – Wks 34 (wb 8/18) – 36 (wb 9/1); up to 3 days/wk. PS only, limit to 5 vessels, release Chinook. Closed north of a line from the Mulkiteo ferry dock to the Clinton ferry dock.]
	Ntrty	Wk 34 (w/b 8/18) – 36 (w/b9/1); PS NR for CK, SO, and CH; PS fishing pattern 2, 2, 1; GN fish daylight hours; GN fishing pattern 2, 2, 1.
Coho	Trty	Tulalip Tribes: (9/15 – 10/19) 5 days per week. Update fishery through 10/5. Manage for CCMP breakpoints and rates.
	Test	9/15 – 10/19: 1 day per week; 2 GN landings per week.
	Ntrty PS	Wks 39 (wb 9/22) – 40(wb 9/29): PS limited participation (2 boats per day): Chinook and Chum NR; fishing pattern: 1,1.
	Ntrty GN	Wks 39 (wb 9/22) – 40 (wb9/29): Wk 39 limited participation (2 boats only) GN fishing pattern: 1-2; GN fish night hours.
Chum	Trty	Evaluation Fishery, 10/20 – 11/9: Dependent on Co-manager agreement on ISU indicating increased run size. Port Susan closed; Max 3,000 Chum. Commercial fishery depending on evaluation fishery, 10/27 – 11/23, manage for Stillaguamish and Snohomish harvest rates and minimum escapement goals.
	Test	10/20 – 11/9; 1 day per week; 2 GN landings per week.
	Ntrty	Closed. May open pending co-manager agreement on ISU indicating increased runsizes.

Area 8D Net

Chinook	Trty	BS, RH, GN gear outside Tulalip Bay may be open during the following periods: 4/29 – 6/1 12:01 AM Sun – 11:59 PM Sat 6/2 – 8/25 12:01 PM Mon – 11:59 PM Thu 8/26 – 9/14 12:01 AM Mon – 11:59 PM Fri Setnets inside Tulalip Bay may be open during the following periods: 4/29 – 9/14 12:01 AM Sun – 11:59 PM Sat
	Ntrty	Closed (see recreational SAF)
Coho	Trty	9/15 – 11/2; BS, RH, GN gear outside Tulalip Bay open Sun, Mon, Thu, Fri; open to target Tulalip hatchery coho.
	Ntrty	Wks 39 (wb 9/22) - 45 (wb 11/3); PS Chinook NR; PS fishing pattern: 1,1,1,1,2,1,2; GN fish each night Sunday through Thursday night (5,5,5,5,5,5); also open daylight hours Tuesdays and Wednesdays (2,2,2,2,2,2). Closed east of the line from Mission Point to Hermosa Point.
Chum	Trty	11/3 – 12/14; open to target Tulalip hatchery chum. Managed to allow for hatchery egg take needs based on Tulalip hatchery escapement updates and projections. All Area 8D fisheries will close concurrently as agreed to by Tulalip and WDFW to ensure egg take requirements are met.
	Ntrty	Wks 46 (wb 11/10) - 48 (wb 11/24); PS fishing pattern: 1,1,1; GN fishing pattern:3,3,3 daylight hours. Closed east of the line from Mission Point to Hermosa Point. Managed to allow for hatchery egg take needs based on Tulalip hatchery escapement updates and projections. All Area 8D fisheries will close concurrently as agreed to by co-managers to ensure egg take requirements are met.

Stillaguamish River Treaty Net (Ntrty net closed)

Chinook	Wb 6/30 - wb 8/18 C&S fishery; maximum catch of 30 Chinook; Open from mouth of Hatt Slough (RM 0) to Danielson Hole (RM 14).
Pink	Open wb 8/11 – wb 9/1, up to 5 days per week; Open from mouth of Hatt Slough (RM 0) to Danielson Hole (RM 14).

Coho	Open wb 9/8 - wb 10/20; up to 5 days per week; Open from mouth of Hatt Slough (RM 0) to Danielson Hole (RM 14).
Chum	C&S fishery; wb 10/27 – wb 12/1; Up to 3 days per week; maximum catch of 300 chum; Open from mouth of Hatt Slough (RM 0) to Danielson Hole (RM 14).

Snohomish River Treaty Net (Ntrty net closed)

Chinook, Pink, Coho, Chum	Closed
Coho Test	Closed

Area 8-2 Recreational

5/1-7/31	Closed
8/1-9/30	2 fish limit, plus 2 additional Pink salmon, release Chinook.
10/1 – 10/31	2 fish limit, release Chinook.
11/1 – 4/30	2 fish limit (Chinook 22" min size). Release unmarked Chinook.

Tulalip Bay – closed to all fishing east of a line from Mission Point to Hermosa Point.

Tulalip Special Area Recreational Fishery

Same as Area 8-2 Recreational, except during the period 5/31-9/22:	5/31-9/2	Open 12:01 AM Friday – 11:59 AM Monday each week. Closed June 15. Open within Tulalip Special Area boundaries only. Closed to all angling east of the line from Mission Point to Hermosa Point. 2 fish limit salmon, plus 2 additional pink salmon, 2 pole endorsement (Chinook 22" min. size).
	9/7-9/22	Open Saturday and Sunday each week. Open within Tulalip Special Area boundaries only. Closed to all angling east of the line from Mission Point to Hermosa Point. 2 fish limit salmon, plus 2 additional pink salmon, 2 pole endorsement (Chinook 22" min. size).

Snohomish River Recreational

Mouth to Highway 9 bridge	8/1-8/15	3 fish limit, plus 1 additional pink salmon, 12" min. size. Release Chinook and Chum.
(mouth to confluence of Skykomish and Snoqualmie rivers, including all channels)	8/16 – 12/31	3 fish limit, plus 1 additional pink salmon, 12" min. size. Release Chinook and Chum.

Snoqualmie River Recreational

Mouth to Plum Access	9/1 – 12/31	3 fish limit, plus 1 additional Pink salmon, 12” min size. Release Chinook and Chum.
Plum Access to Falls	9/1 – 12/31	3 fish limit, 12” min size, plus 1 additional Pink, release Chinook and Chum

Skykomish River Recreational

(From mouth to Wallace River)	6/1 – 7/31	4 fish limit, only 2 may be adults, marked Chinook only 12” min. size. Chinook fishery dependent on agreed ISU of Chinook abundance sufficient to meet the hatchery escapement goal.
(From mouth to Lewis St. Bridge in Monroe)	8/16 – 12/31	3 fish limit, plus 1 additional pink salmon. 12” min size. Release Chinook and chum.
From Lewis St Bridge in Monroe to River at forks.	9/1 – 12/31	3 fish limit, plus 1 additional pink salmon, 12” min size. Release Chinook and chum

Wallace River Recreational

Mouth to 200’ upstream of water intake of salmon hatchery	9/16 – 11/30	3 fish limit, plus 1 additional pink salmon, 12” min size. Release Chinook and Chum.
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Stillaguamish River Recreational

(river and all sloughs downstream of Marine Drive)	9/1 – 12/31	2 fish limit, plus 2 additional pink salmon, 12” min size. Release Chinook and Chum.
(Marine Drive upstream to forks)	9/1 - 12/31	2 fish limit, plus 2 additional pink salmon, 12” min size. Release Chinook and Chum.

All other STILLAGUAMISH/SNOHOMISH TERMINAL REGION freshwater recreational closed to salmon angling.

2.7 Admiralty Inlet Area

Area 9 Net

Chinook	Trty	Ceremonial and Subsistence – Up to 500 Chinook as agreed upon by those Tribes with U&A in Area 9, (PS and Hook & Line, release all chum 6/1 – 9/30).
Chum	Research	Wk 43 (wb 10/20) – Wk 46 (wb 11/10) research fishery to develop stock composition/timing information. Research catch quota of 2,400 Chum. Details of research program will be based on previously agreed sampling design and a review of prior years' sampling results. Reference 2012 Area 9 Chum Salmon Research Fishery Plan (April 2012).
Chum	Trty	No commercial fishery, unless prior agreement by all affected Tribes and WDFW.
	Ntrty	Closed

Area 9 Recreational

5/1-6/30	Closed
7/1-7/15	2 fish limit; plus 2 additional Pink salmon. Release Chinook and Chum.
7/16-8/31	2 fish limit; plus 2 additional Pink salmon, (Chinook 22" min size) release Chum and unmarked Chinook. Closed south and west of a line from Foulweather Bluff to Olele Point, except angling allowed from shore between Hood Canal Bridge and the northern boundary of Salsbury Point Park, daily limit 2, plus 2 additional Pink salmon. Release Chinook and Chum..
9/1-9/30	2 fish limit, plus 2 additional Pink salmon, release Chinook and chum.
10/1-10/31	2 fish limit, release Chinook
11/1-11/30	2 fish limit, release unmarked Chinook (Chinook 22" min size).
12/1-1/15	Closed
1/16-4/15	2 fish limit (Chinook 22" min size), release unmarked Chinook.
4/16 – 4/30	Closed

Edmonds Pier Recreational

Year-Round	2 fish limit, 1 Chinook (Chinook 22" min size), plus 2 additional Pink salmon 7/1 – 9/30, release Chum 8/1-9/30.
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Part III. South Sound Region (All fisheries modeled in FRAM #1213 (Chinook) & #1323 (Coho))

3.1 Area 10 Subregion

Area 10 Net

Chinook	Closed	
Sockeye	Trty	Fishery dependent upon ISU (Ballard lock counts)
	Ntrty	Closed
Pink	Trty	Chinook encounters limited to 400 (132 total mortality). Coho mortality limited to 250. For Chinook and Coho, Suquamish and Tulalip incidental mortality combined. Suquamish - Wks 31(wb 7/24) – 36 (wb 8/28), Maximum of 5 days/wk, 1 PS, retention of Chinook prohibited, release chum North of a line from President Point due East to landfall, all waters within 1800 feet of shoreline closed; Tulalip – Wks 34 (wb 8/18) – Wks 36 (wb 9/1) Maximum of 5 days/wk, 8 RH (Chinook and chum non-retention unless species impaired).. 20 GN, East portion of Area 10 closed. All waters within 1800 ft of shoreline closed. Fishery monitoring will include observer and fisheries enforcement. Fishing schedule for Area 10 shall be set consistent with the MST agreement (1983).
	Ntrty	Wks 33 (wb8/11) – 35 (wb8/26); PS limited participation (5 boats/day); fishing pattern 1,2,1; Brailing and live boxes required; NR for CK, CO, SO, and CH; GN limited participation (5boats/day); fishing pattern 1,2,1; Live boxes and limited soak times required; NR for CK, CO, SO, and CH; observers required on vessels. Fishery will close if 200 Chinook mortalities are reached prior to scheduled completion. Fisheries closed east inside of a line originating from West Point, extending west to the closest mid-channel buoy; thence true through Pt Wells, until reaching latitude 47 44 500, thence extending directly east to the shoreline.

Coho	Test	Gillnet: Wks 37 (wb 9/8) – Wk 39 (wb 9/22); 3 boats, 3 sites; fishing pattern: 2,2,2
	Trty	Fishery based on ISU beginning Wk 37(wb 9/8). Treaty allocation based on intertribal sharing agreement. Fishing schedule for Area 10 shall be set consistent with the MST agreement (1983).
	Ntrty	Closed
Chum	Test	Purse Seine: Wks 41 (wb 10/6) – Wk 46 (wb 11/10); 1 site, fishing pattern: 1,1,1,1,1,1.
	Trty	Treaty allocation based on intertribal sharing agreement; Wks 41 (wb 10/6) – Wk 48 (wb 11/24) fishing pattern – ISU dependent; Fishing schedule for Area 10 shall be set consistent with the MST agreement (1983).
	Ntrty	Wks 43 (wb 10/20) - 48 (wb 11/24); PS Chinook and Coho NR; PS fishing pattern: 1,2,1,2,1,1; GN fishing pattern: 2,2,2,2,2,2. ISU Dependent.

Area 10A Treaty Net (Ntrty net closed): That portion of Elliott Bay east of the line from Pier 91 to the light at Duwamish Head.

Chinook	Trty Test	Gillnet: Wks 29 (wb 7/14) – Wk 31 (wb 7/28); 7/17 or 7/24, 7/31 (Wednesday); 5 fishing sites (one boat per site).8 PM to 8 AM. The structure/correlation of this fishery is under review and may be modified or temporarily discontinued based on co-manager agreement.
	Trty	Closed
Pink	Trty	Wk 36 (wb 9/1) – Wk 37 (wb 9/8) Fishery will open Sept 3; (5 days/week Sun – Fri).
Coho	Trty	Gillnet: wk 37 (wb 9/8) – wk 44 (wb 10/27) fishing pattern: 5 days per week (Sun – Fri).
Chum	Trty	Gillnet: wk 45 (wb 11/3) – Wk 48 (wb 11/24); fishing pattern: up to 5 days per week (Sun – Fri).

Duwamish/Green River (Area 80B) Treaty Net (Ntrty net closed)

Chinook	Trty	Closed
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Pink	Trty	Wk 36 (wb 9/1) Clearance Fishery (CF) on lower river (up to 1 st Avenue Bridge) begins 9/1; (5 sites); If the Chinook criteria are met or pink predominate, fishery will open Wk 36 (wb 9/1) – 37 (wb 9/8): fishing pattern 5 days per week (Sun – Fri).
Coho	Trty	Wk 37 (wb 9/8) – Wk 44 (wb 10/27) Closed until Chinook clear or coho predominate. Clearance fishery (CF) on lower river (up to 16 th Avenue Bridge) begins September 12; (6 sites); If Chinook clearance is met or coho predominate, fishery will open September 15; starting September 22, fishery will open up to Boeing St. Bridge. Starting October 1 fishery will open up to Hwy 99 Bridge; fishing pattern: Sunday – Friday; 5 days per week. CF will occur in Week 37 if the Pink fishery does not extend through Week 37 otherwise it will not be needed.
Chum	Trty	Gillnet: Wk 45 (wb 11/3)-Wk 48 (wb 11/24); fishing pattern: 5 days per week (Sun – Fri).

Area 10E Treaty Net (Ntrty net closed; see below for recreational SAF)

Chinook	Wks 30 (wb 7/21)-Wk 38 (wb 9/15); fishing pattern: 7 days/wk. Possible extension for Sinclair Inlet
Coho	On-Reservation only; Wks 38 (wb 9/15)-Wk 43 (wb 10/20); Gillnet/beach seine; 7 days/wk.
Chum	Wks 43 (wb 10/20)-Wk 50 (wb 12/8); schedule dependent upon ISU.

Lake Washington System (includes lake, ship canal, & Lake Sammamish)

Areas 10F, 10G, 10C, 10D Treaty Net (Ntrty net closed)

Sockeye	Dependent upon ISU (lock counts). Potential fishery beginning Wk 28 (7/7).	
Chinook	Dependent on ISU and co-manager agreement.	
Coho	The coho fisheries in the four following areas are dependent upon the ISU (if lock counts project run size < 10,000 coho entering the lake, then no coho fishery):	
	Lower ship canal (below Ballard Locks)	Closed until Chinook clearance as seen in lock counts; anticipated pattern 5-7 days/wk dependent on in-season information, with a potential start date for fisheries beginning Wk 38 (9/15).

Upper ship canal (above Ballard Locks):	Fishing pattern 5 days/wk (Sun – Fri) with a potential start date for fisheries beginning Wk 38 (9/15).
North end Lake Washington (North of Hwy. 520 bridge):	Starting Wk 40 (wb 9/29): fishing pattern 5 days/wk (Sun – Fri).

Lake Sammamish (10D) Treaty Net

Chinook and Coho	Fisheries will be based on ISU from the Ballard Lock counts.
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Area 10 Recreational

5/1-5/31	Closed
6/1-6/30	Catch-and-release in waters N of Meadow Pt./Pt. Monroe line.
7/1-7/15	2 fish limit, plus 2 additional Pink salmon, Release Chinook.
7/16-8/31	2 fish limit, plus 2 additional Pink salmon, (Chinook 22" min size), release unmarked Chinook and beginning 8/1 release chum.
9/1-9/30	2 fish limit, plus 2 additional Pink salmon, release Chinook and through 9/15 release chum.
10/1-1/31	2 fish limit, release unmarked Chinook (Chinook 22" min size).
2/1-4/30	Closed

Shilshole Bay (East of Meadow Point/West Point line) closed 7/1-8/31.

Elliott Bay (E of West Pt./Alki Pt line to Pier 91/Duwamish Head line) Closed to salmon angling 7/1-8/31.Except 8/16 – 8/31 see Elliot Bay recreational SAF.

Special gear restrictions in Duwamish Waterways area when open.

Area 10 Piers Recreational

Seacrest Pier, Pier 86, Waterman Pier, Bremerton Boardwalk, Illahee State Park Pier	Year-Round	2 fish limit, 1 Chinook (22" min size), plus 2 additional Pink salmon 7/1 – 9/30, release chum 8/1-9/15.
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Elliott Bay Recreational SAF

5/1-6/30	Same as Area 10
7/1-8/15	Closed
8/16-8/31	2 fish limit, plus 2 additional Pink salmon, Release Chinook and Chum. Open Friday – Sunday in waters north of a line continuing from Jack Block Park through the north tip of Harbor island to shore northeast of the North Waterway (47°35.47'N, 122°20.58'W). All waters south to the 1 st Ave bridge are closed.
9/1-4/30	Same as Area 10.

Sinclair Inlet Recreational SAF

5/1-6/30	Same as Area 10.
7/1-9/30	Open S of Manette Bridge, S of line drawn true W from Battle Point, and W of line drawn true S from Point White; 3 fish limit, plus 1 additional pink salmon, (Chinook 22" min size), release unmarked Chinook and release chum 8/1-9/15, 2 pole endorsement. .
10/1-4/30	Same as Area 10.

Green River Recreational

(1 st Ave South Bridge to Old Hwy.99/Tukwilla Intl. Blvd.)	8/23 – 12/31	Daily limit 6. No more than 3 adults may be any combination of Coho and Chum, 12" min size, release Chinook.
(Old highway 99/Tukwilla Intl. Boulevard to I-405)	9/1 – 12/31	Daily limit 6. No more than 3 adults may be any combination of Coho and Chum,, 12" min size, release Chinook.
(I-405 to the S. 277 th Bridge in Auburn)	9/1 – 12/31	Daily limit 6. No more than 3 adults may be any combination of Coho and Chum,, 12" min size, release Chinook.
(S. 277 th Bridge to Auburn Black Diamond Rd Bridge)	9/16 – 12/31	Daily limit 6. No more than 3 adults may be any combination of Coho and Chum,, 12" min size, release Chinook.

(from Auburn-Black Diamond Rd Bridge to mouth of Cristy Creek at Flaming Geyser Park])	9/16 - 10/31	Closed to all fishing.
(from Auburn-Black Diamond Rd Bridge to Tacoma Headworks Dam)	11/1 – 12/31	Daily limit 6. No more than 3 adults may be any combination of Coho and Chum, 12” min size, release Chinook, Closed waters - within 150’ of the Palmer Ponds outlet rack and within 150’ of the mouth of Keta (Crisp) Creek.

Soos Creek Recreational

Closed.

Lake Washington Recreational

East of the Montlake Bridge	July-August	Dependent upon ISU (lock counts). Potential fishery, starting date to be determined. 2 fish limit, sockeye only, 12” min. size. Chinook retention dependent on ISU and co-manager agreement.
North of Hwy 520 Bridge	9/16 – 10/31	4 fish limit, coho only, 12” min size

Lake Sammamish Recreational

8/16 – 11/30	4 fish limit, only 2 Chinook, 12” min size, release Sockeye. Closed: waters within 100 yards of the mouth of Issaquah Creek are closed to salmon fishing.
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All other SOUTH SOUND AREA 10 REGION freshwater: Closed to salmon angling.

3.2 Area 11 Subregion

Area 11 Net

Pink	Trty:	Commercial fishery open beginning Wk 32 (wb 8/4) – Wk 35 (wb 8/25) Drift Gillnets only, 3 days per week, 2 hours before sunrise through 2 hours after sunset, times will vary per week. Fishery will end when either 100 Chinook or 200 Coho mortalities are reached or the end of week 35.
	Nrty:	Closed

Chinook	All	Closed
Coho	Trty:	Commercial fishery open beginning Wks 37 (wb 9/8)- Wk 41 (wb 10/6); ISU dependent; gillnets 7 days/wk, could close any time. Beach seine daylight hours only, 7 days/wk.
	Ntrty:	Closed
Chum	Trty:	Commercial fishery open Wks 42 (wb 10/13)-Wk 49 (wb 12/1); gillnets 7 nights/wk, could close at anytime. Beach seine daylight hours only, 7 days/wk.
	Ntrty	Wks 43 (wb 10/20) - 48 (wb 11/24); PS Chinook and Coho NR; PS fishing pattern:1,2,1,2,1,1; GN fishing pattern: 2,2,2,2,2,2. ISU dependent.

Area 11A Net Treaty Net (Ntrty net closed)

Chinook	Closed
Coho	Commercial fishery open Wks 37 (wb 9/8)-Wk 42 (wb 10/13); 3 nights/wk
Chum	Commercial fishery open Wks 46 (wb 11/10)- Wk 53 (wb 12/29) 3 nights/wk.

Puyallup River (Area 81B) Puyallup and Muckleshoot Treaty Net (Ntrty net closed)

Chinook	Spring Chinook	Ceremonial and Subsistence 5/1 – 6/30
	Summer – Fall	Commercial fishery 8/11, fishing pattern: 12 hours.
Coho	Commercial fishery Wks 36 (wb 9/1)-Wk 42 (wb 10/13) fishing pattern: 1,2,2,3,3,3,3.	
Chum	Test fishery Wks 43 (wb 10/20)-Wk 46 (wb 11/10) 1 day/wk, drift net only.	
Winter Chum	Commercial fishery Wks 46 (wb 11/10) – Wk 2 (wb 1/5) 1 to 3 days a week.	

White River Treaty Net

Spring Chinook	Ceremonial and subsistence fisheries.
Pink/Coho/Chum	Fishing pattern 7 days/wk.

Area 11 Recreational

5/1-5/31	Closed	
6/1-6/30	2 fish limit (Chinook 22" min. size), release unmarked Chinook; Commencement Bay (E. of Cliff House Restaurant/Sperry Ocean Dock line) closed to salmon angling.	
7/1-9/30	2 fish limit (Chinook 22" min. size), plus 2 additional pink salmon, release unmarked Chinook. Commencement Bay (E. of Cliff House Restaurant/Sperry Ocean Dock line) closed to salmon angling through 7/31.	
10/1-10/31	2 fish limit, (Chinook 22" min size).	
11/1-12/31	2 fish limit, 1 Chinook (Chinook 22" min size).	
1/1-1/31	Closed	
2/1-4/30	2 fish limit (Chinook 22" min size), release unmarked Chinook. Commencement Bay (E. of Cliff House Restaurant/Sperry Ocean Dock line) closed to salmon angling 4/1-4/30.	
Dash Point Dock, Point Defiance Boathouse Dock, Les Davis Pier, Des Moines Pier and Redondo Pier	Year-Round	2 fish limit, 1 Chinook (Chinook 22" min size), plus 2 additional pink salmon 7/1 – 9/30.

Puyallup River Recreational:

(from 11 th St. Bridge to mouth of White River)	8/16 – 12/31	To be determined, dependent on outcome of WDFW – tribal discussions]
(mouth of White River to Carbon River)	8/1 – 12/31	6 fish limit, 2 adults, plus 2 additional adult Pink, 12" min size, release unmarked adult Chinook

Carbon River Recreational

(mouth to Voight Creek)	9/1 – 11/30	6 fish limit, 4 adults; no more than 2 adult Chinook may be retained; 12" min size, release Chum and unmarked adult Chinook.
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All other SOUTH SOUND AREA 11 REGION freshwater recreational Closed to salmon angling

3.3 Area 13 Subregion

Fox Island/Ketron Island (Area 13)		
Chinook	Treaty:	8/1-9/15, 7 days/wk
	Ntrty:	Closed
Coho	Treaty:	9/15-10/20, 7 days/wk
	Ntrty:	Closed
Chum	Treaty:	Closed unless opened by Medicine Creek Treaty Tribes' agreement
	Ntrty:	Closed

Area 13 Treaty Net (Ntrty net closed)	
Chinook	Closed
Coho	Closed
Chum	Closed

Carr Inlet (Area 13A) Treaty Net ¹(Ntrty net closed) Based on Medicine Creek Treaty Tribal proposal annual regulations. Individual Tribal regulations may deviate from this schedule.

Chinook	8/1-9/21, 7 days/wk, open in sections.
Coho	9/15-10/26, 7 days/wk, in-season monitoring to meet hatchery escapement need.
Chum	10/27-12/7, 7 days/wk

Chambers Bay (Area 13C) Treaty Net¹ (Ntrty net closed)

Chinook	Wb 7/28 – wb 10/12; Beach Seines Sunday noon to Tuesday noon. Set Nets Wednesday noon to Friday noon.
Coho	Wb 10/13 – wb 11/2; Beach Seines Sunday noon to Monday noon. Set Nets Monday noon to Tuesday noon.
Chum	11/3 – 11/30; Beach Seines Sunday noon to Tuesday noon. Set Nets Wednesday noon to Friday noon.

Area 13D Treaty Net (Ntrty net closed)

Chinook	7/15-9/9 or earlier date dependent on in-season management needs; 7 days/wk
Coho	9/10-12/31 or earlier date dependent on in-season management needs.

Dana Pass (13D-1)	7 days/wk
Pickering Pass (13D-2)	7 days/wk
Peale Pass (13D-3)	7 days/wk
Southern Case (13D-4)	7 days/wk
Chum	Open approximately 10/20; 2-3 days per week; managed weekly by updates (~10/11).
Area 13E Net	Closed to all fishing
Budd Inlet (Area 13F) Treaty Net (Ntrty net closed)	
Chinook	7/15 - 9/9 or earlier date dependent on in-season management needs; 7 days/wk
Coho	Closed
Chum	Open approximately 11/3, 2-3 days per week, managed by weekly in-season updates
Eld Inlet (Area 13G) Treaty Net (Ntrty net closed)	
Chinook	7/15-9/9; opening dependent upon in-season data, outer portion only
Coho	Closed
Chum	Open approximately 11/3, 2-3 days per week, managed by weekly escapement updates
Totten Inlet (Area 13H) Treaty Net (Ntrty net closed)	
Chinook	8/1 - 9/9; schedule dependent on in-season data
Coho	Closed
Chum	Open approximately 10/6, 2-3 days per week; managed by weekly escapement updates
Little Skookum Inlet (Area 13I) Treaty Net (Ntrty net closed)	
Chinook	8/1 - 9/9; schedule dependent upon in-season data
Coho	Closed
Chum	Open approximately 12/1, 2-3 days per week; managed by weekly escapement updates
Hammersley Inlet (Area 13J) Treaty Net (Ntrty net closed)	
Chinook	8/1-9/9 or earlier date dependent on in-season management needs
Coho	Closed

Chum	Open approximately, 9/13 - 12/25, 2-3 days/wk; managed by weekly escapement updates
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Northern Case Inlet (Area 13K) Treaty Net (Ntrty net closed)

Chinook	7/15 - 9/9
Coho	9/10 - 10/31 or earlier date dependent on in-season management needs
Chum	Open approximately 9/15 - 12/25; 2-3 days/wk; managed by weekly escapement updates

Nisqually River (Area 83D) Treaty Net (Ntrty net closed)

Chinook	<p>Gill Net 2 days/wk during the following weeks: Wk 31 (wb 7/28) through Wk 35 (wb 8/25).</p> <p>Beach Seine (all freshwater immersion beaches from Luhr Beach to East Bank of Red Salmon Slough, McAllister Creek, Red Salmon Slough, and the Nisqually River) 3 days/wk during the following weeks: Wk 36 (wb 9/1) through wk 39 (wb 9/22). Release all unmarked Chinook.</p> <p>Gear Test by Nisqually Fisheries Staff during the following weeks: Wk 31 (wb 7/28) through wk 39 (wb 9/22). Total encounter not to exceed 50 Chinook. Release all fish encountered.</p>
Coho	<p>Beach Seine (all freshwater immersion beaches from Luhr Beach to East Bank of Red Salmon Slough, McAllister Creek, Red Salmon Slough, and the Nisqually River) 3 days/wk during Wk 40 (wb 9/29). Release all unmarked Chinook.</p> <p>Gill Net 3 days/wk during the following weeks: Wk 41 (wb 10/6) through wk 47 (wb 11/17).</p>
Chum	<p>Proposed schedule: Gill Net 3-4 days/wk during the following weeks: Wk 48 (wb 11/24) through wk 5 (wb 1/26/2014) per annual Nisqually River Chum/Steelhead Management Plan.</p>

McAllister Creek (Area 83F) Treaty Net (Ntrty net closed)

Chinook/Pink	Wks 27 (wb 6/30)-Wk 40 (wb 9/29); 3 days/wk
Coho	Wks 41 (wb 10/6)-Wk 48 (wb 11/24); 3-4 days/wk
Chum	Proposed schedule: Wks 49 (wb 12/1)-Wk 5 (wb 1/26/2014); 4 days/wk per annual Nisqually River Chum/Steelhead Management Plan.

Area 13 Recreational

5/1-6/30	2 fish limit (Chinook 22" min. size), release unmarked Chinook. Minter Creek mouth closed.
7/1-9/30	2 fish limit (Chinook 22" min. size) plus 2 additional Pink salmon; release unmarked Chinook and unmarked coho. Minter Creek mouth closed through 9/30; Lower Budd Inlet closure zone 7/16-10/31.
10/1-10/31	2 fish limit, release unmarked coho (Chinook 22" min size). Lower Budd Inlet closure zone 7/16-10/31.
11/1-12/31	2 fish limit, 1 Chinook (Chinook 22" min size).
1/1-4/30	1 fish limit, (Chinook 22" min size). Minter Creek mouth closure begins 4/16.

Fox Island Pier Recreational

Year-Round	2 fish limit, 1 Chinook (Chinook 22" min size) plus 2 additional Pink salmon (7/1-9/30); 7/1-10/31 release unmarked coho.
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Chambers Creek Estuary Recreational

(downstream of markers 400' below Boise-Cascade Dam to Burlington Northern Railroad Bridge)	7/1 – 11/15	6 fish limit, only 2 adult, 12" min size, release unmarked coho.
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Deschutes River Recreational

Capitol Lake (from outlet to 400' below lowest Tumwater Falls (Deschutes River) fish ladder).	7/1 – 10/15	Closed.
(from Old Hwy 99 Bridge on Capitol Blvd in Tumwater to upstream of Henderson Blvd Bridge)	7/1 – 10/15	6 fish limit, 2 adults, 12" min size, release Coho.

Kennedy Creek Recreational

(mouth to northbound Hwy. 101 Bridge)	10/1 – 11/30	6 fish limit, 2 adults, 12” min size, release unmarked Coho.
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McAllister Creek Recreational

(mouth to Olympia-Steilacoom Rd Bridge)	7/1 – 11/30	6 fish limit, 2 adults, 12” min size.
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McLane Creek Recreational

(from a line 50’ north of and parallel to the Mud Bay Rd. Bridge to a line 100’ upstream of and parallel to the south bridge on Hwy.101)	Same as Area 13	Same as Area 13
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Minter Creek Recreational

(mouth to 50’ downstream of hatchery rack)	11/1 – 12/31	4 fish limit, 12” min size, Chum only.
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Nisqually River Recreational

(mouth to the military tank crossing bridge, one mile upstream of the mouth of Muck Creek)	7/1-1/31	6 fish limit, 2 adults, plus 2 additional adult Pink, 12” min. size; release unmarked Chinook. Unlawful to fish from floating device: 7/28-7/30, 8/4-8/6, 8/11-8/13, 8/18-8/20, 8/25-8/27.
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All other SOUTH SOUND AREA 13 REGION freshwater recreational closed to salmon angling.

Part IV. Hood Canal Region (All fisheries modeled in FRAM #1213 (Chinook) & #1323 (Coho))

Hood Canal Mainstem (Areas 12, 12B, 12C, 12D)

Treaty: 1,000 feet closure around streams that are closed to net fishing. Beach seines and hook and line gear release chum through 9/30 (through 10/10 if within 500' of western shore of Areas 12B and 12C).

Nontreaty: See WAC 220-47-307 for Nontreaty exclusion zones.

Chinook:	Trty:	Areas 12, 12B and 12D: Closed
		Area 12C: Beach seines open wb 7/14-8/31; 5 days/wk; release chum 8/1-8/31. Open wb 7/14 – 8/24 for gillnets 5 days/wk; restricted to 7" min mesh starting 8/1.
		Area 12H: Open wb 7/14 through 9/21; hook and line gear continuous; beach seines daylight hours Tues and Thur each week; possible in-season modifications; Chum release.
	Ntrty	Closed
Pink	All	Same as Chinook openings.
Coho	Trty:	Area 12: Open 9/25 through 10/12 for gillnets. Beach seines for Coho only (release all Chinook and Chum through 9/30) may start no earlier than 9/16. Gillnet fishing pattern: 1,4,4. Beach Seine fishing pattern: 5,4,4,4.
		Area 12B: Open 10/1 through 10/19 for gillnets; 500 foot closure along western shore through 10/10; beach seines for Coho only (release all Chinook and Chum through 9/30) may start no earlier than 9/16. Gillnet fishing pattern: 2,4,6. Beach Seine fishing pattern: 5,4,4,4,6.
		Area 12C: Open 10/1 through 10/19 for gillnets; with 500 foot beach closure from Ayock Pt. to approx. 2,000 feet south of Lilliwaup (at the large house, north of Octopus Hole) through 10/10; beach seines for Coho (release all Chum through 9/30) may start no earlier than 9/21. Gillnet fishing pattern: 2,4,6. Beach Seine fishing pattern: 4,4,4,6.

		Area 12D (west of Madrona Pt. - local name): Open for gillnets no earlier than 10/1. Weekly schedules identical to Area 12C.
	Ntrty:	Closed
Chum	Chum fishing schedules may be modified if pre-season harvestable abundance and catch shares are changed using the agreed ISU, based on non-treaty purse seine cumulative CPUE for October 15 through October 31..	
	Trty:	Area 12: Open 10/13 through 11/19 - 6 d/wk; 10/20 through 11/20 - 7 day/wk.
		Area 12B: Open 10/20 through 11/20; 7 d/wk; except north of an East-West line from Zelatched Point to Seal Rock open through 11/27.
		Area 12C: Open 10/20 through 11/27; 7 d/wk.
		Area 12D: Closed.
Area 12H: Hook and line gear open from 10/13 through 11/30; beach seines open Tuesday and Thursday of each week. Then Monday and Wednesday for the week beginning 11/11; possible in-season adjustments to 3 days/wk. Starting 11/1, hatchery escapement control measures will go into effect.		
Ntrty:	Area 12, 12B. Fisheries scheduled wks 43 (wb 10/20) - 47 (wb 11/17): PS Chinook NR; PS fishing pattern: 1,2,1,2,1; GN fishing pattern: 2,2,2,2 daylight hours. Area closures (south of Hood Canal Bridge and adjacent to Hazel Pt.) apply.	
	Area 12C Fisheries scheduled wks 46 (wb 11/10) - 48 (wb 11/24): PS Chinook NR; PS fishing pattern: 2,1,1; GN fishing pattern: 2,2,2 daylight hours. Area 12H: BS (Hoodsport Hatchery Zone) beach seine fishing wks 46-48, pattern pending discussions with tribal Co-managers.	
	Area 12D Closed	

Port Gamble (Area 9A)

Chinook	All	Closed
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Coho	Trty:	Open 8/18 through 11/2; 7 days/wk; gillnet only. Ceremonial harvest of 20 Chinook in August.
	Test:	Open wb 8/4 through wb 9/29, gillnet only. 2 days per week.
	Ntrty:	Open Wks 35 (wb 8/25) - 44 (wb 10/27) skiff GN limited to 100 fathoms length and 60 meshes in depth; 7 days/wk; Chinook NR; Chum NR through 9/30; release NR fish by cutting ensnaring meshes. The beach area of the Port Gamble Indian Reservation, between Pt. Julia and the boundary marker at the south end of the reservation - closed to all fishing.
Chum	Trty:	Open 11/3 through 11/30; 7 days/wk; gillnet only.
	Ntrty:	Closed

Quilcene / Dabob (Area 12A)

Coho	Trty:	Open 8/21 through 10/12; Chum and Chinook release from hook and line and beach seine gear through 9/30; beach seines 5 days/wk, daylight hours. Hook and line fisheries for Coho only, open continuously. Gillnets closed until Summer Chum escapement exceeds 1500. Beach seine advance notification required prior to fishing.
	Ntrty:	Beach seine open wks 35 (wb 8/21) – 40 (wb 9/29); Limited participation (4 permits/day); CK and CH NR; fishing pattern 3,5,5,5,5,5; Fishery will be managed consistent with SCSCI. GN closed unless Treaty GN opening.
Chum	Trty:	Open to set and drift gillnets 10/13 through 11/20, South of an E-W line through Pt. Whitney.
	Ntrty:	Closed

Skokomish River (Area 82G) Treaty (Ntrty net closed)

Note: Hook and line gear and beach seines release chum through 10/15 above Hwy 106 Bridge.

Chinook	Fishing schedules to be determined.
Coho	Fishing schedules to be determined.
Chum	Open 11/10 through 11/30; 7 days/wk.

Big Quilcene River (Area 82F) Treaty (Ntrty net closed)

Coho	Openings to be determined in-season, for Coho only, from 9/1 through 10/15. Closed below Rodgers St. From Rodgers St. to U.S. Hwy 101, hook and line gear only, Release All Other Salmon (Chinook and Chum). The hatchery area, from U.S. Hwy 101 to the Quilcene Hatchery rack, may be opened for short periods to take surplus coho. Hand held gear only (dipnets, hand lines, etc.).
Chum	Closed

Misc. Hood Canal Rivers (Dosewallips, Duckabush, Hamma Hamma, Tahuya, Dewatto, Union)

All species	Closed to commercial harvest.
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Area 12 Recreational

5/1-6/30	Closed
7/1-8/31	North of Ayock Pt. – Closed to salmon angling except see Quilcene/Dabob Bay Recreational below.
9/1-10/15	North of Ayock Pt. (including Quilcene/Dabob Bay) – 4 fish limit, coho only.
7/1-10/15	South of Ayock Pt. - 4 fish limit, 2 Chinook (Chinook 22" min size); release Chum and unmarked Chinook; Closed in Tarboo Bay north of Broad Spit starting 9/16.
10/16-12/31	4 fish limit, 2 Chinook (Chinook 22" min size). Release unmarked Chinook. Closed in Tarboo Bay north of Broad Spit.
1/1-1/31	Closed
2/1-4/30	2 fish limit (Chinook 22" min size), release unmarked Chinook

Quilcene/Dabob Bay Recreational

5/1-8/15	Same as Area 12
8/16-8/31	4 fish limit, coho only.
9/1-4/30	Same as Area 12

Hoodsport Hatchery Zone Recreational

Same as Area 12 except:

7/1-12/31	4 fish limit, no minimum size, only 2 Chinook greater than 24"; Release unmarked Chinook and release Chum 7/1-10/15.
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Dewatto River Recreational

(mouth to Dewatto-Holly Rd. Bridge)	10/1 – 10/31	2 fish limit, 12" min size, Coho only.
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Dosewallips River Recreational

(mouth to Hwy. 101 Bridge)	11/1 – 12/15	2 fish limit, 12" min size, Chum only.
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Duckabush River Recreational

(mouth to Mason Co. PUD #1 overhead electrical distribution line)	11/1 – 12/15	2 fish limit, 12" min size, Chum only.
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Quilcene River Recreational

(from Rodgers St. to Hwy 101 Bridge)	8/16 – 10/31	4 fish, 12" min size, Coho only.
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Skokomish River Recreational Fishing**Tahuya River Recreational**

(mouth to marker 1 mile above N. Shore Rd. Bridge)	10/1 – 10/31	2 fish limit, 12" min size, Coho only.
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All other HOOD CANAL REGION freshwater recreational closed to salmon angling.

Impacts are expressed as total fishery-related mortality, which includes landed catch, non-retention mortality, and other fishery-related mortality; not to be used for allocation computations.

Fishery	Fishery-related Mortality	Fishery Description and/or Comments:
CANADIAN (B.C.) FISHERIES:		
WCVI Troll/Sport	130,962	2013 TAC per PSC Abundance Index
Area 20 Net	267	2011 post season
Georgia St./JDF T	0	Incidental mortality
Georgia St./JDF S	49,121	Preliminary 2012 post season
SOUTH OF CAPE FALCON:		
		March PFMC Preseason Report
NORTH OF CAPE FALCON OCEAN:		
Treaty Ocean Tro	60,115	TAC 52,500 chinook
NT Ocean Troll	56,091	TAC 44,000 chinook
NT Ocean Sport	55,210	TAC 48,000 chinook (no MSF = 44,000)
NT NOF Impacts:	111,301	
4B Add-on		Included with Area 4
Canadian License	0	(For Areas 4 and 4B)
Buoy 10	>>>>	see In-River models

Final Chinook
NT 88K, T 52.5K

PUGET SOUND SPORT & TROLL:		
Treaty Strait&Win	6,322	4,500 for winter troll; 850 JDF summer troll
Puget Sound Sport (landed + non-retention mortality):		
Area 5	9,063	Area 5 5/1-6/30 clsd; 7/1-8/15, bag 2 + 2 pink, co & ch MSF, cm NR; 8/16-9/14, bag-2 + 2 pink, co MSF, ch NR, cm NR; 9/15-9/30, bag-2, ch NR, cm NR; 10/1-10/31 bag 2, 1 ch; 11/01-2/15 clsd; 2/16-4/10, 1 bag; 4/11-4/30 clsd; Kydaka closure 7/1-9/30
Area 6	4,445	Area 6 5/1-6/30 clsd; 7/1-8/15 bag 2 + 2 pink, co & ch MSF expt ch NR East of Ediz, cm NR; 8/16-9/30, bag 2 + 2 pink, co MSF, ch & cm NR; 10/1-10/31 bag-2, 1 ch; 11/1-11/30 clsd; 12/1-4/10, 2 bag, ch MSF; Dungeness Bay, 10/1-10/31, 2 bag, coho only; FW Bay closure 7/1-10/31, PA Har clsd 7/1-10/31, Dung Bay clsd 11/1-9/30, Sequim & Disco Bays clsd 10/1-10/31
Area 7	7,818	Area 7 5/1-6/30 clsd; 7/1-7/31, bag-2 + 2 pink, 1ch; 8/1-9/30, bag-2 + 2 pink, 1ch, co MSF, cm NR; 10/1-10/31, bag-2, 1 ch; 11/1-11/30 clsd; 12/1-4/30 bag-2, ch MSF; B'Bay, 8/16-10/31, 4- bag, 2 ch; S. Rosario & E. JDF clsd 7/1-9/30; B Bay - clsd 4/1 thru 8/15; Samish Bay - clsd 7/1-10/15
Areas 8-1,2 8D	6,853	Area 8-1 5/1-7/31 clsd; 8/1-9/30, bag-2 + 2 pink, ch NR, 10/1-10/31 bag-2, ch NR; 11/1-4/30, bag-2, ch MSF; Area 8-2 5/1-7/31 clsd; 8/1-10/31, bag-2 + 2 pink, ch NR; 11/1-4/30, 2 bag, ch MSF; Tulaip, 5/17-6/7 Fri- noon Mon, 2 bag, 6/9-9/2 Fri-noon Mon, 2+2 pink, 2 pole option, 9/7-9/22 Sat & Sun, 2+2 pink, 2 pole option
Area 9	11,935	Area 9 5/1-6/30 clsd; 7/1-7/15, 2+2 pink, ch&cm NR; 7/16-8/31, 2+2 pink, ch MSF, cm NR; 9/1-9/30, bag-2 + 2 pink, ch & cm NR; 10/1-10/31, bag-2, chNR; 11/1-11/30, bag-2, ch MSF; 12/1-1/15 closed; 1/16-4/15, bag-2, ch MSF; 4/16-4/30 clsd; Edmds YR, bag 2, 1 ch, 8/1-9/30, cm NR + 2 pink
Ar 10, 10A, 10E	11,815	Area 10 5/1-5/31, closed; 6/1-6/30 C&R; 7/1-7/15, bag-2 + 2 pink, ch NR; 7/16-8/31, bag-2 + 2 pink, ch MSF, cm NR 8/1-8/31; 9/1-9/30, bag-2 + 2 pink, ch NR, cm NR through 9/15; 10/1-1/31, bag-2, ch MSF; 2/1-4/30 closed; Shilshole clsd 7/1-8/31; Agate Fly Only 1/1-3/31; Elliot Bay, 7/1-8/15 clsd, 8/16-9/31 Fri-Sun, 2 bag + 2 pink, ch & cm NR; Sinc TAF, 7/1-9/30, bag-2 + 2 pink, ch MSF, cm NR 8/1-9/15; Piers Yr-round, bag-2, 1 ch, + 2 pink 7/1-9/30, cm NR 8/1-9/15, 11/1-12/31, bag-2, 1 ch; 1/1-1/31 clsd; 2/1-4/30, bag-2, ch MSF. Commencement Bay closure: 6/1-7/31. Piers Yr-Round: Dash Pt, Pt Def., Les Davis, Des Moines, & Redondo, bag-2, + 2 pink 7/1-9/30, 1 ch
Area 11	10,478	Area 11 5/1-5/31 clsd; 6/1-6/30 bag-2, ch MSF; 7/1-9/30, bag-2 + 2 pink, ch MSF; 10/1-10/31, bag-2; 11/1-12/31, bag-2, 1 ch; 1/1-1/31 clsd; 2/1-4/30, bag-2, ch MSF. Commencement Bay closure: 6/1-7/31. Piers Yr-Round: Dash Pt, Pt Def., Les Davis, Des Moines, & Redondo, bag-2, + 2 pink 7/1-9/30, 1 ch
Area 13	2,923	Area 13 5/1-6/30, bag-2, ch MSF; 7/1-9/30, bag-2 + 2 pink, ch & co MSF; 10/1-10/31, bag-2, co MSF; 11/1-12/31, bag-2, 1 ch; 1/1-4/30 bag-1; Minter closed 4/16-9/30; Budd closures 7/16-10/31; Fox Island Yr-Round: bag-2, + 2 pink 7/1-9/30, 1 ch, coho MSF 7/1-10/31
Area 12	2,982	Area 12 Entire Area: 5/1-6/30 clsd; So. Ayock 7/1-10/15, bag-4, 2 ch, cm NR, ch MSF; No. Ayock 7/1-8/31 clsd; 9/1-10/15, bag-4 coho only; Entire Area: 10/16-12/31, bag -4, 2 ch, ch MSF; 2/1-4/30 bag-2, ch MSF; Hoodspout: 7/1-12/31, bag -4, 2 ch, ch MSF, cm NR through 10/15; Quilcene: 8/16-9/30, bag-4 coho only

PUGET SOUND I JUL-SEP	Oct-Apr	TOTAL
JDF Net (4B/5/6C)	0	0
Treaty	1,213	1,300
SJI Net (7/7A) NT	3,184	3,243
Treaty	4,792	4,822
B6/9Net NT		
Treaty	729	729

2013 Total Mortality (Fraser Panel and other)

JDF Chinook:	Trty (GN): wb 6/23 through wb 8/11, Set Gillnet Only, 7 days/wk
JDF Sockeye/Pink:	Trty (GN): wb 7/21 through wb 9/15, Schedule TBD by Fraser Panel
JDF Coho:	Trty (GN): end of Fraser Panel control through wb 9/29, 6 days/wk
JDF Chum:	Trty (GN): wb 10/6 through wb 11/3, 6 days/wk
SJI Coho:	Ntry RN - Open 7 d/wk from end of Fraser Panel control thru chum (wb 11/03), MSF co&ch thru 9/30 (ch 300 cap), cm NR though 9/30, ch N
SJI Sockeye/Pink:	Ntrty (GN/PS/RN) Schedule TBD by Fraser Panel, modeled as weeks 31-33, 1-2-1, and 35-37, 4-4-4, PS co, cm & ch NR, RN MSF co&ch (c Trty (GN/PS) Schedule TBD by Fraser Panel, modeled as: wk 32 (wb 8/04) and wk 36 (wb 9/1) - wk 37 (wb 9/8).
SJI Chum:	Ntry (GN/PS/RN): Opens wk 41 (wb 10/6), PS & GN schedule to be determined with co-mgr. modeled wks 41-46, 2-7-7-7-7-7, PS co&ch NR Trty (GN/PS): Schedule TBD by Co-Managers, modeled as: wk 42 (wb 10/13) - wk 46 (wb 11/10).

Table 2. Total, southern US (SUS), and SUS preterminal (PT) exploitation rates (ER) and natural escapements of Puget Sound chinook stocks (MSF compatible Management criteria are: LAT = Low Abundance Threshold, RER = Recovery ER, and CERC = Critical ER Ceiling.

Stock	Model Prediction				Management Criteria			
	Tot. ER	SUS ER	SUS PT ER	Natural Escapement	Escape-ment LAT	RER type	CERC type	Notes
Spring/Early:								
Nooksack (n) - Total	27.2%	6.93%	2.6%	302	2,000	SUS 7%	SUS	Can be >7% but <9% in 1/5 years; last year >7%, 2011
North Fork				173	1,000			
South Fork				129	1,000			
Skagit (n) - Total	27.3%	18.2%	7.6%	921	576	38% Total	18% SUS	
Upper Sauk				494	130			
Upper Cascade				235	170			
Suitttle				191	170			
White	19.8%	18.4%	3.9%	963	200	20% Total	15% SUS	
Dungeness	44.5%	3.7%	3.5%	569	500	10% SUS	6% SUS	
Summer/Fall:								
Skagit - Total	48.22%	25.9%	5.9%	10,025	4,800	50% Tot	17% SUS	CERC = 17%/15% odd/even years
Upper Skagit				7,498	2,200			
Sauk				423	400			
Lower Skagit				1,859	900			
Stillaguamish (n) - Total	21.203%	12.1%	6.6%	415	700	25% Tot	15% SUS	
North Fork Summer				331	500			
South Fork Fall				84	200			
Snohomish (n) - Total	23.06%	11.8%	8.1%	3,035	2,800	21% Tot	15% SUS	
Skykomish				1,891	1,745			
Snoqualmie				1,144	521			
Lake Wa. (Cedar R.)	34.2%	17.3%	10.2%	985	200	20% SUS	10% PT SUS	
Green	33.6%	16.8%	10.2%	1,740	1,800	15% PT SUS	12% PT SUS	
Puyallup	49.95%	33.1%	10.2%	1,801	500	50% Tot	12% PT SUS	
Nisqually	55.77%	40.4%	21.8%	904		56% Tot		
Western Strait-Hoko	25.0%	5.4%	5.4%	1,057	500	10% SUS	6% SUS	
Elwha	43.7%	3.5%	3.4%	2,659	1,000	10% SUS	6% SUS	LAT 500 N+500 H
Mid-Hood Canal tribs. (n)	24.7%	12.2%	11.92%	250	400	15% PT SUS	12% PT SUS	
Skokomish	50.0%	38.1%	12.4%	1,710	800	50% Tot	12% PT SUS	LAT additionally includes 500 to hatchery

SRFI = .519 (0.70 ceiling)
 Lower Col Nat Tule ER = 0.4096 (0.41 ceiling)

FRAM Version: 2.11
 FRAM Description: 2013 2nd NOF
 FRAM Run Number: Final April Chinook Run

TABLE 1: DESCRIPTION OF FISHERY REGULATIONS AND SUMMARY OF COHO CATCH TARGETS

Fishery Regulation Assessment Model Run Number: 1323
 Run Description: Final coho for 2013
 Impacts expressed as total fishery-related mortality, including landed catch, non-retention mortality, and other fishery-related mortality; except where noted.

04/18/13
 02:32 PM

Fishery	Catch + Mortality	Comments
CANADIAN (B.C.) FISHERIES:		
WCVI Troll	1,836	Incidental
Area 20 Net	0	Incidental
Georgia St. Sport	27,304	Selective fishery
Georgia St. Troll	0	Assumes no Gulf troll fishery
SOUTH OF CAPE FALCON:	47,844	Sport TAC 10,500 selective and 16,000 non-selective
NORTH OF CAPE FALCON OCEAN:		
Treaty Ocean Troll	51,040	TAC 47,500
NT Ocean Troll	30,057	Troll TAC 14,200 selective
NT Ocean Sport	95,787	Sport TAC 74,800 coho, selective
NT North-of-Falc. total:	125,844	
4B Add-on	0	4B Add-on fishery of 0
Canadian License catch	50	(For Areas 4 and 4B) Landed catch only
Buoy 10	16,093	Sport 13,000 selective
PUGET SOUND SPORT & TROLL:		
Treaty Strait Troll	210	Source data for treaty troll are from 2003-2012.
Puget Sound Sport:		
Area 5	40,023	5/1-6/30 clsd; 7/1-8/15, bag 2 + 2 pink, co & ch MSF, cm NR; 8/16-9/14, bag-2 + 2 pink, co MSF, ch NR, cm NR; 9/15-9/30, bag-2, ch NR, cm NR; 10/1-10/31 bag 2, 1 ch; 11/01-2/15 clsd; 2/16-4/10, 1 bag; 4/11-4/30 clsd; Kydaka closure 7/1-9/30
Area 6	2,254	5/1-6/30 clsd; 7/1-8/15 bag 2 + 2 pink, co & ch MSF expt ch NR East of Ediz, cm NR; 8/16-9/30, bag 2 + 2 pink, co MSF, ch & cm NR; 10/1-10/31 bag-2, 1 ch; 11/1-11/30 clsd; 12/1-4/10, 2 bag, ch MSF; Dungeness Bay, 10/1-10/31, 2 bag, coho only; FW Bay closure 7/1-10/31, PA Har clsd 7/1-10/31, Dung Bay clsd 11/1-9/30, Sequim & Disco Bays clsd 10/1-10/31
Area 7	695	5/1-6/30 clsd; 7/1-7/31, bag-2 + 2 pink, 1ch; 8/1-9/30, bag-2 + 2 pink, 1ch, co MSF, cm NR; 10/1-10/31, bag-2, 1 ch, coho MSF; 11/1-11/30 clsd; 12/1-4/30 bag-2, ch MSF; B'Bay, 8/16-10/31, 4- bag, 2 ch; S. Rosario & E. JDF clsd 7/1-9/30; B Bay - clsd 4/1 thru 8/15; Samish Bay - clsd 7/1-10/15
Area 8-1	895	5/1-7/31 clsd; 8/1-9/30, bag-2 + 2 pink, ch NR, 10/1-10/31 bag-2, ch NR; 11/1-4/30, bag-2, ch MSF;
Area 8-2	4,491	5/1-7/31 clsd; 8/1-10/31, bag-2 + 2 pink, ch NR; 11/1-4/30, 2 bag, ch MSF; Tul. Term Area, 5/17-6/7 Fri- noon Mon, 2 bag, Tul. Term Area, 6/9-9/2 Fri-noon Mon, 2 bag + 2 pink, 2 pole option, 9/7-9/22 Sat & Sun, bag-2 + 2 pink, 2 pole option
Area 9	11,256	5/1-6/30 clsd; 7/1-7/15, bag-2 + 2 pink, ch & cm NR; 7/16-8/31, bag-2 + 2 pink, ch MSF, cm NR; 9/1-9/30, bag-2 + 2 pink, ch & cm NR; 10/1-10/31, bag-2, ch NR; 11/1-11/30, bag-2, ch MSF; 12/1-1/15 closed; *1/16-4/15, bag-2, ch MSF; 4/16-4/30 clsd; Edmds YR, bag 2, 1 ch, 8/1-9/30, cm NR + 2 pink
Area 10	7,589	5/1-5/31, closed; 6/1-6/30 C&R; 7/1-7/15, bag-2 + 2 pink, ch NR; 7/16-8/31, bag-2 + 2 pink, ch MSF, cm NR 8/1-8/31; 9/1-9/30, bag-2 + 2 pink, ch NR, cm NR through 9/15; 10/1-1/31, bag-2, ch MSF; 2/1-4/30 closed; Shilshole clsd 7/1-8/31; Agate Fly Only 1/1-3/31; Elliot Bay, 7/1-8/15 clsd, 8/16-9/31 Fri-Sun, 2 bag + 2 pink, ch & cm NR; Sinc TAF, 7/1-9/30, bag-2 + 2 pink, ch MSF, cm NR 8/1-9/15; Piers Yr-round, bag-2, 1 ch, + 2 pink 7/1-9/30, cm NR 8/1-9/15,
Area 11	2,234	5/1-5/31 clsd; 6/1-6/30 bag-2, ch MSF; 7/1-9/30, bag-2 + 2 pink, ch MSF; 10/1-10/31, bag-2; 11/1-12/31, bag-2, 1 ch; 1/1-1/31 clsd; 2/1-4/30, bag-2, ch MSF. Commencement Bay closure: 6/1-7/31. Piers Yr-Round: Dash Pt., Pt Def., Les Davis, Des Moines, & Redondo, bag-2, + 2 pink 7/1-9/30, 1 ch
Area 13	512	5/1-6/30, bag-2, ch MSF; 7/1-9/30, bag-2 + 2 pink, ch & co MSF; 10/1-10/31, bag-2, co MSF; 11/1-12/31, bag-2, 1 ch; 1/1-4/30 bag-1; Minter closed 4/16-9/30; Budd closures 7/16-10/31; Fox Island Yr-Round: bag-2, + 2 pink 7/1-9/30, 1 ch, coho MSF 7/1-10/31
Area 12	1,520	Entire Area: 5/1-6/30 clsd; So. Ayock 7/1-10/15, bag-4, 2 ch, cm NR, ch MSF; No. Ayock 7/1-8/31 clsd; 9/1-10/15, bag-4 coho only; Entire Area: 10/16-12/31, bag -4, 2 ch, ch MSF; 2/1-4/30 bag-2, ch MSF; Hoodspout: 7/1-12/31, bag -4, 2 ch, ch MSF, cm NR through 10/15; Quilcene: 8/16-9/30, bag-4 coho only

April PFMC Coho
NT 89K, T 47.5K

PUGET SOUND NET:	JUL	AUG	SEP	OCT-DEC	TOTAL
JDF 4B/5/6C Net NTrty	0	0	0	0	0
Trty	666	1,100	720	2,063	4,549
SJI 6/7/7A Net NTrty	3	360	872	1,781	3,016
Trty	0	103	1,336	3,670	5,109

2013 Total Mortality (Fraser Panel and other)

JDF Chinook: Trty (GN): wb 6/23 through wb 8/11, Set Gillnet Only, 7 days/wk
 JDF Sockeye/Pink: Trty (GN): wb 7/21 through wb 9/15, Schedule TBD by Fraser Panel
 JDF Coho: Trty (GN): end of Fraser Panel control through wb 9/29, 6 days/wk
 JDF Chum: Trty (GN): wb 10/6 through wb 11/3, 6 days/wk
 SJI Coho: Ntrty RN - Open 7 d/wk from end of Fraser Panel control thru chum (wb 11/03), MSF co&ch thru 9/30 (ch 300 cap), cm NR though 9/30, ch NR after 9/30
 SJI Sockeye/Pink: Ntrty (GN/PS/RN) Schedule TBD by Fraser Panel, modeled as weeks 31-33, 1-2-1, and 35-37, 3-3-3, PS co, cm & ch NR, RN MSF co&ch (ch 300 cap). Trty (GN/PS) Schedule TBD by Fraser Panel, modeled as: wk 32 (wb 8/04) and wk 36 (wb 9/1) - wk 37 (wb 9/8).
 SJI Chum: Ntrty (GN/PS/RN): Opens wk 41 (wb 10/6), PS & GN schedule to be determined with co-mgr. modeled wks 41-46, 2-7-7-7-7, PS co&ch NR, RN: 7 days/wk Trty (GN/PS): Schedule TBD by Co-Managers, modeled as: wk 42 (wb 10/13) - wk 46 (wb 11/10).

TABLE 4: SUMMARY OF COHO EXPLOITATION RATES BY FISHERY AGGREGATE

STOCK->	Skagit		Stilly		Snohom		HdGnl		JDF Tribs		South Sound		Nooksack		Quillayute		Hoh		Queets		Grys Hbr	
	Wild	Wild	Wild	Wild	Wild	Wild	Wild	Wild	Wild	Wild	Wild	Wild	Wild	Wild	Wild	Wild	Wild	Wild	Wild	Wild	Wild	Wild
Predicted Spawning Escapement	87,979	23,947	123,023	20,313	10,977	13,720	17,083	n/a	16,001	n/a	1,166	3,376	n/a	19,304	180,923	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Ocean Escapement*	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
RUN RECONSTRUCTION: 11																						
Ocean/Pre-term. Marine Fishery Mortality	15,378	2,876	14,708	6,445	1,573	5,230	5,125	6,445	1,573	43	472	399	5,125	12,840	1,029	1,029	1,029	1,029	1,029	1,029	1,029	1,029
Nonlocal Mixed-terminal Fishery Mortality	5,548	93	452	753	43	472	399	753	43	0	4,505	20,119	20,119	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Local Mixed Terminal Marine Fishery Mortality	1,339	2,434	13,513	6,544	0	4,505	20,119	6,544	0	0	3,137	706	706	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Extreme Terminal & FW NTRTY	5,328	1,334	4,988	1,209	0	3,137	706	1,209	0	11	9,134	2,429	2,429	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Extreme Terminal & FW TRTY	20,970	2,482	7,487	1,680	11	9,134	2,429	1,680	11	0	23	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Extr. Term. TEST	1,121	0	0	0	0	23	0	0	0	0	13,720	17,083	17,083	16,001	7,340	19,304	180,923	180,923	180,923	180,923	180,923	180,923
Escapement 12	87,979	23,947	123,023	20,313	10,977	13,720	17,083	20,313	10,977	12,604	36,221	45,861	45,861	17,017	8,506	22,680	193,763	193,763	193,763	193,763	193,763	193,763
TOTAL ABUNDANCE 13	137,663	33,166	164,171	36,944	12,604	36,221	45,861	36,944	12,604	12,604	62.1%	62.8%	62.8%	6.0%	13.7%	14.9%	14.9%	14.9%	14.9%	14.9%	14.9%	6.6%
"TOTAL" PREDICTED EXPL. RATE 14	36.1%	27.8%	25.1%	45.0%	12.9%	62.1%	62.8%	45.0%	12.9%	12.9%	0.9%	2.4%	2.4%	0.5%	1.6%	2.1%	2.1%	2.1%	2.1%	2.1%	2.1%	1.0%
Canada	1.7%	0.9%	0.9%	1.5%	1.2%	0.9%	2.4%	1.5%	1.2%	1.2%	0.0%	0.0%	0.0%	0.1%	0.4%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.4%
Alaska	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.5%	0.5%	0.0%	0.0%	0.0%	0.1%	0.4%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.4%
Subtotal Southern U.S. EXPL. RATE 15	34.4%	26.9%	24.2%	43.5%	11.2%	61.2%	60.3%	43.5%	11.2%	11.2%	61.2%	60.3%	60.3%	5.4%	11.7%	12.6%	12.6%	12.6%	12.6%	12.6%	12.6%	5.2%
S. Of Falcon Ocean	0.1%	0.1%	0.1%	0.1%	0.6%	0.1%	0.0%	0.1%	0.6%	0.6%	0.1%	0.0%	0.0%	0.2%	0.6%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	0.4%
NOF Ocean Troll:	NTRTY	0.4%	0.5%	0.7%	0.3%	0.5%	0.3%	0.7%	0.3%	0.3%	0.5%	0.3%	0.3%	1.4%	1.8%	3.3%	3.3%	3.3%	3.3%	3.3%	3.3%	0.7%
	TRTY	3.1%	2.0%	3.1%	2.5%	2.5%	2.7%	3.1%	2.5%	2.5%	2.7%	3.2%	3.2%	2.3%	6.1%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	2.5%
Ntrty NOF Ocean & Buoy10 Spt	Ntrty	0.6%	0.4%	0.7%	0.4%	0.4%	0.5%	0.7%	0.4%	0.4%	0.5%	0.5%	0.5%	0.7%	1.8%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	1.2%
Pgt Snd 5,6C Troll	Trty	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	1.4%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	0.4%
Pgt Snd 5,6 Sport		2.3%	1.9%	1.9%	4.2%	4.7%	3.0%	4.2%	4.7%	4.7%	3.0%	1.6%	1.6%	0.2%	0.6%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%
Pgt Snd 7 Sport		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Pgt Snd 8 Sport		0.5%	1.5%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
Pgt Snd 9 Sport		1.2%	1.1%	1.1%	2.9%	0.1%	1.8%	2.9%	0.1%	0.1%	1.8%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Pgt Snd 10,11,13		0.4%	0.2%	0.2%	1.7%	0.0%	4.3%	1.7%	0.0%	0.0%	4.3%	0.0%	0.0%	0.0%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
Pgt Snd 12 Sport		0.0%	0.0%	0.0%	1.5%	0.0%	0.0%	1.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
Pgt Snd Extr. Term. & FW Sport		3.9%	3.9%	2.9%	1.6%	0.0%	8.7%	1.5%	0.0%	0.0%	8.7%	1.5%	1.5%	0.7%	1.8%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	1.2%
PS Preterminal Net**:	Ntrty	0.2%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%	0.1%	0.1%	0.1%	0.9%	0.9%	0.1%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%	0.9%
	Trty	0.6%	0.3%	0.3%	0.8%	2.2%	0.5%	0.8%	2.2%	2.2%	0.5%	1.7%	1.7%	0.5%	1.7%	1.7%	1.7%	1.7%	1.7%	1.7%	1.7%	1.7%
Nonlocal Term. Net:	Ntrty	0.2%	0.0%	0.0%	0.1%	0.1%	0.2%	0.1%	0.1%	0.1%	0.2%	0.3%	0.3%	0.2%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%
	Trty	3.8%	0.2%	0.2%	1.9%	0.3%	1.1%	1.9%	0.3%	0.3%	1.1%	0.6%	0.6%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%
Local Terminal Net:	Ntrty	0.1%	0.2%	0.2%	3.6%	--	11.2%	3.6%	--	--	11.2%	11.2%	11.2%	0.5%	11.2%	11.2%	11.2%	11.2%	11.2%	11.2%	11.2%	11.2%
	Trty	0.9%	7.2%	8.1%	14.2%	--	32.7%	14.2%	--	--	32.7%	32.7%	32.7%	0.5%	32.7%	32.7%	32.7%	32.7%	32.7%	32.7%	32.7%	32.7%
Extreme Term. Net	Ntrty	0.0%	0.1%	0.1%	1.7%	0.0%	0.0%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Trty	15.2%	7.5%	4.6%	4.5%	0.1%	25.2%	4.5%	0.1%	0.1%	25.2%	5.3%	5.3%	0.1%	25.2%	25.2%	25.2%	25.2%	25.2%	25.2%	25.2%	25.2%
TEST	TEST	0.8%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

* Model-predicted Escapement for Washington Coastal stock aggregates represents run returning to their terminal area or "Ocean Escapement".

Footnotes:

- 11 From TAMM Tables 2.
- 12 Puget Sound Stocks' values are Spawner Escapement; Coastal stocks' values are "escapement from pre-terminal fisheries" equivalent to "Runsize Entering Terminal Area".
- 13 TOTAL ABUNDANCE is 'Fishery-related Mortality Plus Escapement', does not include 'natural mortality nor dip-in mortality of non-local stocks in coastal terminal fisheries.
- 14 For coastal stocks the presented ER is for pre-terminal fisheries only. See Table 2 for Total ER for coastal stocks.
- 15 Sum of exploitation rates for Southern U.S. only: SoF, Ocean areas 1-4, Col. R., Puget Sound; however does not include WA coastal terminal area impacts.

TABLE T: THOMPSON AND UPPER FRASER COHO FISHERY IMPACT SUMMARY

Estimated fishery impacts from regulations described by the following FRAM run:

FRAM Run Number: 1323

Run Description: Final coho for 2013

Impacts are expressed as total fishery-related mortality, incl. landed catch, non-retention mort., and other fishery-related mortality.

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FISHERY	Interior Fraser Wild	
Projected Escapement	33,218	
Projected Pre-Terminal Exploitation Rate	13.8%	
Exploitation in U.S. Fisheries	10.0%	
	Mortality	Expl. Rate
CANADIAN (marine)	1361	3.5%
ALASKA	86	0.2%
SOUTH OF FALCON & COL R	36	0.1%
NORTH OF CAPE FALCON OCEAN:		
Treaty Troll Area 2	15	0.0%
Treaty Troll Area 3	19	0.0%
Treaty Troll Area 4	1260	3.3%
NT Troll Area 1	8	0.0%
NT Troll Area 2	55	0.1%
NT Troll Area 3	75	0.2%
NT Troll Area 4	17	0.0%
NT Sport Buoy 10 & Area 1	24	0.1%
NT Sport Area 2	74	0.2%
NT Sport Area 3	8	0.0%
NT Sport Area 4*	127	0.3%
PUGET SOUND:		
JDF Troll and Net	43	0.1%
SJI 6/7/7A NT Net	186	0.5%
SJI 6/7/7A T Net	295	0.8%
Sport: Area 5	836	2.2%
Area 6	31	0.1%
Area 7	44	0.1%
Area 8-13	33	0.1%
Puget Sound Terminal net	666	1.7%
WA Extreme Terminal Net & FW Sport	4	0.0%
Total:	5303	13.8%

* Area 4 Sport numbers include 4B add-on, if any, and a number of fish caught on Canadian licenses in areas 4 and 4B.

April 12, 2013

**Mark-Selective Chinook Sport Fishery
Ocean Areas 1 - 4
2013**

The Washington Coastal Treaty Tribes and the Washington Department of Fish and Wildlife (WDFW) have reached agreement to implement a mark-selective sport fishery in the Pacific Ocean Areas 1 - 4 for the 2013 season. The fishery will be implemented consistent with management objectives defined by the co-managers and established principles concerning the allocation of harvestable salmon and the exercise of treaty rights (U.S. v. Washington, 384 F.Supp.312 (1974) and Hoh v. Baldrige, 522 F.Supp.683 (1981)). The co-managers will seek to minimize or eliminate any unintended effects of this fishery on individual treaty fisheries, including dislocation and/or disruption. Therefore, treaty fisheries will not be modified in order to accommodate this mark-selective fishery.

For 2013, the co-managers further agree that:

- The mark-selective fishing will be limited to the period from May 10-11, May 17-18, and June 22-28 (Areas 3 & 4 Only), June 8-21 (Area 1) and June 8-22 (Area 2);
- WDFW will monitor the total Chinook catch and incidental mortalities in Areas 1 – 4 as the fishery progresses and, consistent with federal in-season management procedures for Pacific Fishery Management Council fisheries, will regulate the fishery to ensure that the total landed catch does not exceed 8,000 Chinook;
- If the landed catch in the mark-selective fishery differs from the pre-season estimate, and adjustment to the quota for the nonselective sport fishery in Areas 1-4 is considered, the co-managers will support adjustment that is consistent with federal procedures for in-season management of Pacific Fishery Management Council fisheries intended to ensure the overall sport catch allocation and impact levels do not exceed pre-season estimates identified in FRAM 1213
- Total encounters of marked and unmarked legal and sub legal-size Chinook will be estimated through a monitoring and sampling program (**Attachment A**).

The Fishery Intent

This fishery has been implemented as a mark-selective fishery to provide season stability and increased harvest opportunity for marked Chinook. In addition, the 2013 fishery sampling program is designed to demonstrate the capability to provide data necessary for estimation of impacts on stocks affected by the fishery.

Data Needs for Evaluating the Fishery

WDFW will carry out the monitoring and sampling program described in Attachment A, employing on the water as well as shore-based surveys and sampling techniques, with the intention of collecting data that will form the basis of post-season analyses and evaluation of performance. These monitoring and sampling programs are designed to provide data to estimate, with acceptable levels of accuracy and precision, the following parameters:

- the mark rate in the fishery - marked and unmarked encounters will be estimated for legal and sublegal by both on-water and shore-based programs ;
- the number of fish retained or landed - marked and unmarked fish will be estimated using a shore-based program, including CWT and scale-age sampling;
- the number of unmarked fish released - estimated by on-water and shore-based programs;
- the number of unmarked fish retained - estimated by a shore-based program;
- the number of marked fish released - estimated by a shore-based program in conjunction with on-water programs estimates of mark and encounter rates estimates

- the number of the Chinook encounters that are of sub-legal size - estimated by on water and shore based programs;
- the stock composition of the marked and unmarked mortalities - estimated by CWT and DNA data.
- Estimate of the marked and unmarked mortalities of double-index tagged (DIT) and other CWT stocks.

Post-Season Report

WDFW will provide a post-season report with results of monitoring and sampling programs for the Areas 1-4 mark-selective fishery to the Tribes March 1, 2014. Prior to the 2014 season, WDFW and the tribes will jointly review and analyze available results of the sampling and monitoring program for this fishery, make any necessary changes to the calibration of the fishery assessment model, and evaluate the effectiveness of this fishery program at achieving the intended sampling and coverage objectives.

The post-season report will include the estimates described above together with the supporting information collected from monitoring and sampling program. In addition, the report will include estimates of marked and unmarked mortalities of double index-tagged (DIT) and other CWT stocks as described in the section below. The post-season report will include a comparison of independent on-water and shore-based estimates of mark rate, marked and unmarked fish released, and sub-legal size fish encountered if estimates are available.

Data Needs for Post-Season Estimation of Stock-Specific Unmarked Fish Mortalities

The co-managers agree to implement this fishery with the understanding that the capability to estimate stock-specific unmarked fish mortalities is preserved. Methods for estimating unmarked mortalities of double-index tagged CWT stocks within Area 1-4 mark-selective Chinook fishery will be determined jointly by co-managers, considering recommendations of the Selective Fisheries Evaluation Committee of the Pacific Salmon Commission. WDFW will be responsible for reporting the necessary fishery information and data to the Pacific States Marine Fisheries Commission that allows these estimates to be generated.

In the postseason report (see previous section), WDFW will provide estimates of unmarked mortalities, by DIT group (by stock and age). Unmarked DIT recoveries will be estimated based on estimated recoveries of marked DIT fish and assuming:

1. DIT release numbers provide a reasonable estimate of the unmarked to marked fish ratio; and,
2. the mortality rate for Chinook caught and released in the fishery (sfm) is known.

The assumption that the DIT release numbers provide a reasonable estimate of the unmarked to marked fish ratio will be evaluated through post-season comparisons of DIT tag groups. A design for these comparisons will be developed jointly by the co-managers following the method used in analyzing coho DIT groups. All information from this fishery necessary for making these comparisons is assumed to be included in the sampling design and will be included in the post-season report.

Estimates of total fishery related mortalities, including the total exploitation rate or pre-terminal southern US exploitation rate, that represent the co-managers' management objectives for Washington coastal Chinook management units, are made by combining mortality estimates in mark-selective fisheries with mortality estimates in non-selective fisheries. To ensure that all information necessary to make these estimates is collected, plans for sampling and monitoring of the ocean selective fishery in Areas 1-4 will be included as a component of the ocean regulation management package.

Attachment A

2013 OCEAN SAMPLING PROGRAM OPERATING PLAN

Introduction

The Washington Department of Fish and Wildlife's Ocean Sampling Program (OSP) documents ocean fishery impacts on the salmon and marine fish resources. The program is responsible for monitoring the non-treaty commercial salmon troll fisheries and all sport fisheries in the ocean.

The OSP has historically had three main functions: to estimate catch and effort in quota fisheries and recommend closures when quotas are projected to be met, to estimate catch and effort in non-quota sport fisheries, and to collect biological data such as tags, scales, and length frequency samples from the ocean fisheries. The current structure of the dockside sampling program has consistently produced estimates of catch and effort with coefficients of variation (CVs) less than 5 percent on commonly observed species. In 2013, the OSP intends to continue dockside sampling at the same rate and with similar staff levels as in the past several years.

Mark-selective fisheries

In response to mass marking and possible selective fisheries, the OSP added an on-water observer program in 1996. A number of on-water data collection techniques have been employed, including (1) ride-along trips on charter boats, (2) observing private boat fisheries from a remote platform, (3) collecting data through catch and release by WDFW biologists, and (4) collecting voluntary angler-completed trip reports (VTRs).

In 2013, the OSP plans to continue an on-water charter boat observer program in the larger coastal ports (Ilwaco and Westport) and a VTR program in all coastal ports in association with dockside sampling. Information collected will include:

- Encounters of marked and unmarked legal and sub legal-size Chinook and coho
- Number of Chinook and coho retained by mark status and size class
- Number of Chinook and coho released by mark status and size class
- Coded wire tags from any sampled tagged Chinook and coho
- DNA from Chinook (collected onboard from both legal and sublegal fish during all fisheries, and collected dockside during non mark-selective Chinook fisheries)

Post-Season Report

WDFW will provide a post-season report with results of monitoring and sampling programs for the Areas 1-4 mark-selective fishery by March 1, 2014. The post-season report will include the following estimates for mark-selective fisheries:

- the mark rate in the fishery;
- the number of marked fish retained - estimated by the dockside sampling program;
- the number of unmarked fish retained - estimated by the dockside sampling program;
- the number of marked fish released - estimated by the dockside sampling program in conjunction with on-water program estimates of mark and encounter rates estimates;
- the number of unmarked fish released - estimated by on-water and dockside sampling programs;
- the number of the Chinook encounters that are of sub-legal size - estimated by on water and dockside

- sampling programs;
- the stock composition of the marked and unmarked mortalities - estimated by CWT and (if available) DNA data;
- Estimate of the marked and unmarked mortalities of double-index tagged (DIT) and other CWT stocks;
- Estimate of total fishery mortality.

GOALS OF THE OCEAN SAMPLING PROGRAM

The goals of the Ocean Sampling Program are:

- 1) To generate in-season estimates of total catch used to keep quota non-treaty troll and sport fisheries within their assigned catch quotas.
- 2) To generate post-season estimates of total catch and effort for all species.
- 3) To collect coded wire tags (CWTs) from salmon used to estimate stock contribution by fishery, area, and time period.
- 4) To collect scale samples used to estimate age distribution of Chinook in the ocean fisheries.
- 5) To estimate the unmarked coho and Chinook retention rates in the selective fisheries.
- 6) To estimate ratios of released to retained coho and Chinook.
- 7) To estimate the total number of encountered coho and Chinook (marked plus unmarked) in the selective fisheries.
- 8) To estimate the ratio of marked to unmarked coho and Chinook encountered in selective fisheries.
- 9) To estimate the drop-off rates in selective fisheries.
- 10) To estimate the ratio of Chinook to coho encountered.
- 11) To estimate the ratio of sublegal to legal size Chinook encountered by mark status.
- 12) To estimate a recall error rate for the release of sublegal and unmarked salmon by comparing on-water and VTR data to dockside reports for the sport fishery.
- 13) To collect genetic tissue samples from Chinook landed in the recreational fisheries used to estimate stock composition.

DOCKSIDE SAMPLING

Sampling Objectives

The specific objectives of the OSP dockside monitoring are:

- 1) Collect catch and effort data sufficient to generate in-season and post-season estimates of total catch, released fish, and effort for all sport fisheries with CVs of 5% or less on commonly observed species. In-season catch estimates will be produced for all quota fisheries on a weekly (or more frequent) basis; post-season final catch estimates will be produced for these fisheries as well as all non-quota sport fisheries. Time strata will be statistical week periods for all salmon and halibut fisheries, statistical month periods for non-quota fisheries.
- 2) Examine, using electronic detection devices, a minimum of 20 percent of the landed catch of from the selective sport fisheries for the presence of CWTs and collect any

CWTs encountered.

- 3) Collect scales from a minimum of 5% of landed Chinook per stratum, with one stratum defined as a period of one statistical week per fishery, area, and gear.
- 4) From the recreational fishery, collect genetic tissue samples from Chinook with accompanying scale samples as possible.

Sampling Unit

The standard unit of sample is one boat trip for sport fisheries.

Assumptions

- 1) All boats exiting or entering the port are included in the exit/entrance count.
- 2) Catch and effort from sampled boats is representative of the entire port.
- 3) Anglers answer questions accurately and do not conceal fish.

Data Collected

The following data will be collected by the OSP:

- 1) The dockside sampling scheme is designed to sample charter boats, and private boats at an overall rate of no less than 20 percent. Weekend and weekday days are stratified in the sport fishery. Data collected include number of anglers, landed catch by species, released catch by species (sport fisheries only), mark status of both landed and released salmon, and CWT status for all salmon (using electronic detection devices).
- 2) Scales will be collected from a minimum of 5% of landed Chinook per stratum in sport fisheries.
- 3) Tissue samples for genetic stock identification with accompanying scales will be collected from Chinook as possible in the non-mark selective recreational fishery.

Methods

Dockside samplers will be stationed in the four major landing ports for the ocean fisheries: Neah Bay, La Push, Westport, and Ilwaco (including the port of Chinook and the Cape Disappointment launching ramp). Staff levels for the Chinook mark selective fishery will be 5 dockside samplers in Neah Bay, 2 samplers in La Push, 5 dockside samplers in Westport, and 5 samplers in Ilwaco collecting dockside data; staff levels will be increased in Neah Bay, Westport, and Ilwaco for the higher-effort all-species salmon fishery. Each port will be sampled a minimum of 4 to 5 days per week, with weekend and weekday days stratified. On each sample day, a total sport boat count will be obtained either by counting boats exiting the port or entering the port. A minimum of 20% of the boats returning to the port within each boat type (charter and private) will be included in the sample, which has historically provided weekly catch estimates with CVs no higher than 5%. The data described above will be collected for each boat sampled.

Analysis

The 1991 Washington Department of Fisheries Progress Report number 289, by Lai et. al., details the methodologies used to estimate ocean catch and effort statistics from the data collected dockside by the OSP.

The Chinook tissue samples collected for genetic stock identification will be stored for processing and analysis when funding is available.

ON-WATER MONITORING AND VTR PROGRAM

SAMPLING OBJECTIVES:

The specific objectives of the OSP on-water monitoring and VTR program are as follows:

1. Ride along on charter vessels in Areas 1 & 2 four days per week during the mark-selective Chinook fisheries to collect information on Chinook encounters by mark status and size class, drop-offs, and encounters of other salmon and non-salmon species. Charter boat ride-along trips may also occur in Area 4 if opportunity exists. The goal is to collect 100 total Chinook encounters per stratum. Stratum will initially be defined as one statistical month in one area, but may be modified if fishing patterns warrant.
2. Distribute and collect VTRs in all coastal ports throughout the Chinook mark selective fisheries with the goal of collecting 100 total Chinook encounters per stratum. Stratum will initially be defined as one statistical month in one area, but may be modified if fishing patterns warrant.
3. Provide post-season comparison of data observed through on-water observation and VTRs with parameters used preseason in the Chinook FRAM models.

SAMPLING UNITS AND SAMPLE SIZES

For on-water Chinook mark selective fishery monitoring, the standard unit of sample is one cohort or Chinook encounter to the boat. A total of 100 total encounters of each species are planned per stratum for on-water monitoring, with the goal being to define a stratum as a period of one statistical month per catch record card area. This level of sampling should provide estimates with a level of precision such that the 95% confidence interval is within +/- 10% of the point estimate.

ASSUMPTIONS

- 1) The on-water sample of observed salmon encounters is representative of the encounters by the fishing fleet.
- 2) On-water samplers do not record the outcome of a hookup if it is not observed.
- 3) The presence of on-water observers does not change angler behavior.
- 4) On-water observers are able to correctly categorize each observed hookup.
- 5) Volunteers completing trip reports fish in a manner representative of the fishing fleet.
- 6) Volunteers are able to correctly identify and record salmon and mark status.

METHODS

A number of strategies will be employed to meet the mark selective fishery monitoring goals:

- 1) **Dockside interviews:** Dockside interviews will be used in all major coastal ports (Neah Bay, La Push, Westport, and Ilwaco) in the sport fisheries to estimate the unmarked coho and Chinook retention rates and ratios of released to retained coho and Chinook. This method will be employed in all ports. See methods described above.
- 2) **Voluntary angler trip reports:** Sport anglers, including WDFW staff, will be approached and requested to complete a trip report while fishing in selective fisheries. Sport fishing volunteers will record the date, area fished, number of anglers aboard the vessel, and for each hookup: species hooked, result of hookup (fish kept, released, or dropped off), mark status, and size class (legal vs. sublegal). This method will be employed in all ports, and is the primary source of MSF data in the La Push and Neah Bay areas.
- 3) **Charter boat ride-along trips:** WDFW observers will ride along aboard charter boats, collecting the following data for each encounter on the boat: date, area fished, species hooked, result of hookup (fish kept, released, or dropped off), mark status, and size class (legal vs. sublegal). DNA, length, and scale samples will be collected from as many Chinook as possible, with sublegal Chinook taking priority over legal sized Chinook. Any non-salmon by-catch encountered will also be documented. This method will be employed in Ilwaco and Westport, and possibly in Neah Bay during the selective sport fisheries.
- 4) **Non-selective fisheries:** Ratios of marked to unmarked coho and Chinook from non-selective fisheries could be applied to concurrent selective fisheries, when appropriate. These could include Treaty and non-Treaty troll fisheries and any non-selective recreational fisheries.

Voluntary trip reports will be issued to and collected from as many recreational private boat anglers as possible and to charter boat operators in Area 3 (La Push). Three staff coast-wide will be dedicated specifically to VTR distribution, splitting their between Ilwaco, Westport, La Push, and Neah Bay dependent on effort and need. In La Push and Neah Bay, one sampler will be dedicated 5 days per week to handing out and explaining VTRs beginning at 5:00 AM as boats prepare to exit port. In Westport and Ilwaco, samplers will begin handing out and explaining VTRs at 5:00 AM on an average of one weekend day and 2 weekdays per week. In all ports, salmon anglers will be asked for completed VTRs as they are sampled upon return, and will be offered a blank VTR if they plan to fish for salmon the following day.

One dedicated charter on-board observer will be stationed in each of Area 2 (Westport), and Area 1 (Ilwaco). Two to four ride-along trips per week will be conducted, depending on encounter levels and need, with observers collecting data as described above. Ride-along trips may also occur in Area 4 (Neah Bay) if sizeable charter vessels are available.

ANALYSIS

Mark selective fishery data will be analyzed post-season and compared to the PFMC Chinook Fishery Regulation Assessment Model (FRAM) assumptions used pre-season. Specifically, the combination of dockside data, observer data, and voluntary trip reports will be used to estimate the following:

- actual mark rate in the fishery,
- the number of fish retained or landed by mark status,

- the number of fish released by size class and mark status,
- the MSF compliance rate (proportion of unmarked Chinook landed) ,
- the total number of Chinook encounters by size class and mark status,
- the total number of Chinook mortalities by size class and mark status,
- the stock composition of mortalities by mark status using CWT recoveries, and
- the number of double-index tagged mortalities by mark status.

Total Chinook encounters in the Area 1-4 Chinook mark-selective fishery will be estimated using the bias-corrected approach developed by Conrad and McHugh (2008). Briefly, with the Conrad and McHugh (2008) method, Chinook encounters are estimated by dividing the estimate of legal-marked Chinook harvest by the estimated proportion of the fishable Chinook population that is of legal size and marked –this constitutes our former “Method 2” approach (WDFW 2008a). The former “Method 2” approach produces a negatively biased estimate if anglers release any of the legal-marked Chinook they encounter, Conrad and McHugh estimated a “correction” factor to account for this phenomenon and incorporated it into their estimator.

April 12, 2013

**Summer Mark-Selective Chinook Sport Fishery
Strait of Juan de Fuca, Areas 5 & 6
2013**

The Northwest Treaty Tribes and the Washington Department of Fish and Wildlife (WDFW) have reached agreement to continue mark-selective sport fishing in the Strait of Juan de Fuca (Areas 5&6) for the 2013 season. The fishery will be implemented consistent with management objectives defined by the co-managers' Puget Sound Chinook Harvest Management Plan and established principles concerning the allocation of harvestable salmon and the exercise of treaty rights. The co-managers will seek to minimize or eliminate any unintended effects of this fishery on individual treaty fisheries, including dislocation and/or disruption. Therefore, treaty fisheries will not be modified in order to accommodate this mark-selective fishery.

For 2013, while the Area 5&6 Mark-Selective Chinook Fishery is in progress:

- the mark-selective fishing will be limited to the period from July 1 to August 15;
- fishing in Areas 5 and 6 will be restricted as follows:
 1. The portion of Area 6, east and south of the Ediz Hook No.2 Buoy, including Port Angeles Harbor, shall be closed to the taking of Chinook salmon.
 2. Freshwater Bay, inshore of a line from Angeles Pt. to Observatory Pt. shall be closed to fishing through August 31.
 3. Hoko Bay, inshore of a line from Kydaka Pt. due west to Shipwreck Pt. (Area 4B) shall be closed to fishing; and,
- fishing in Area 4B will be restricted as follows:
 1. The eastern portion of Area 4B from the mouth of the Sekiu R. west to Sail Rock shall be closed to the taking of Chinook salmon.

The Fishery Intent

This fishery has been implemented as a mark-selective fishery to provide season stability and increased harvest opportunity for marked Chinook while reducing fishing mortality on unmarked Chinook. Prior to the 2014 season, WDFW and the tribes will jointly review and analyze results of the previous year's sampling and monitoring program to evaluate the effectiveness of this fishery program at achieving the intended objectives.

Data Needs for Evaluating the Fishery

Monitoring, sampling and reporting programs are being implemented by WDFW for the purpose of providing data necessary to estimate the impact of these mark-selective fisheries on un-marked Chinook and to support the evaluation of future mark-selective fisheries.

WDFW will carry out the monitoring and sampling program described in Attachment A, employing shore-based surveys and sampling techniques, as well as an intensive voluntary trip report program, with the intention of collecting data that will form the basis of post-season analyses and evaluation of performance. This monitoring and sampling program will be a part of the co-managers' preseason fishing plan document.

Preliminary catch and effort estimates for the Area 5 mark-selective Chinook fishery will be produced and shared between the co-managers by August 31, 2013 (per Attachment A). To facilitate co-manager discussions, WDFW will provide the tribes with weekly in-season catch and effort estimates with the initial estimates available the week ending Friday, July 19.

These monitoring and sampling programs are designed to provide data to estimate, with acceptable levels of accuracy and precision, the following parameters:

- the mark rate in the fishery - marked and unmarked encounters will be estimated by both shore-based programs and the intensive voluntary trip report program;
- the number of fish retained or landed - marked and unmarked fish will be estimated using a shore-based program, including CWT and scale-age sampling;
- the number of unmarked fish released - estimated by shore-based and intensive voluntary trip report programs;
- the number of unmarked fish retained - estimated by a shore-based program and compared to enforcement program estimates;
- the number of marked fish released - estimated by a shore-based program in conjunction with mark rate encounter estimates obtained from voluntary trip reports;
- the number of the Chinook encounters that are of sub-legal size - estimated by shore based and voluntary trip report programs;
- the stock composition of the marked and unmarked mortalities - estimated by CWT data.

Post-Season Report

WDFW will provide a preliminary post-season report by February 1, 2014 to be considered for the 2014-15 fisheries. The post-season report will include the estimates described above together with the supporting information collected from monitoring and sampling program. In addition, the report will include estimates of marked and unmarked mortalities of double index-tagged (DIT) and other CWT stocks as described in the section below. The post-season report will include an evaluation of possible bias in parameters with independent shore-based and voluntary trip report-based estimates.

A post-season WDFW Enforcement Report of monitoring activities related to compliance with the Area 5&6 mark-selective fishery will be provided in a timely manner to be considered for planning the 2014 fisheries.

Data Needs for Post-Season Estimation of Stock-Specific Unmarked Fish Mortalities

The co-managers agree to implement this fishery with the understanding that the capability to estimate stock-specific unmarked fish mortalities is preserved. WDFW will be responsible for reporting the necessary fishery information and data to the PSMFC that allows these estimates to be generated.

In the postseason report (see previous section), WDFW will provide estimates of unmarked mortalities, by DIT group (by stock and age), in each year's Area 5&6 mark-selective fishery.

Information or assumptions needed for providing these estimates include (1) estimated recoveries of marked DIT fish from the selective fisheries; (2) the assumption that the DIT release numbers provide a reasonable estimate of the unmarked to marked fish ratio; and, (3) an assumption for the mortality rate for chinook caught and released in the fishery (*sfm*).

Estimates of total fishery related mortalities, including the total exploitation rate or the Southern US exploitation rate, that represents the management objective for Puget Sound chinook management units under the co-managers' Harvest Management Plan, will be made by combining the mortality estimate for the Area 5&6 mark-selective fishery with mortality estimates in other selective and non-selective fisheries. To ensure that all information necessary to make these estimates is collected, plans for sampling and monitoring of all selective fisheries will be included as a component of the co-managers' annual pre-season agreement.

Attachment A

MONITORING THE SELECTIVE CHINOOK AND COHO FISHERIES IN AREAS 5 AND 6, JULY 1 THROUGH SEPTEMBER 30 2013

Overview

The WDFW Puget Sound Sampling Program will monitor the mark-selective Chinook and coho fisheries in Areas 5 and 6 for the entire 46-day season of the mark-selective Chinook fishery (July 1 through August 15, 2013). In addition, following the Chinook selective fishery period, we will continue to sample the coho selective and non-selective fisheries in Areas 5 and 6 through September 30, 2013.

The Areas 5 and 6 monitoring plans (depicted in **Figure 5/6-1** and **Figure 5/6-2**, respectively) will enable us to estimate the critical data parameters necessary for evaluating pilot mark-selective fisheries as previously identified by the co-managers (e.g., WDFW and NWIFC 2009), including: *i*) the mark rate of the targeted Chinook population (based on data from our enhanced voluntary trip report [VTR] program and dockside sampling data), *ii*) fishery-total angling effort and Chinook salmon encounters (harvest + releases) and mortalities (by size/mark-status class) (e.g., from a combination of VTR encounter rate data, creel survey estimates in Area 5, and Catch Record Card [CRC] estimates in Area 6), *iii*) the coded-wire tag (CWT)-based stock composition of marked and unmarked Chinook mortalities (from dockside sampling data), and *iv*) fishery-total mortality of marked and unmarked double index tag (DIT) CWT stocks (once post-season CWT sample rates are estimated). In both areas, we will acquire and analyze relevant data characterizing other aspects of the pilot fishery, including descriptors of fishing success (catch [landed Chinook] per unit effort, CPUE), the length and age composition of encountered and/or landed Chinook, and the overall intensity of our sampling efforts.

Area 5 Overview

A modified (i.e., scaled back relative to the full Murthy design employed during the 2003-2007 seasons) version of the Murthy estimator method (Murthy 1957, Cochran 1977), will be used to produce total-Area estimates of catch and effort in Area 5 with accompanying estimates of variance (**Figure 5/6-1**). Our modified-Murthy approach, as detailed below, will incorporate data from intensive dockside sampling days in the summer 2013 season, combined with site size measures obtained from on-the-water surveys conducted last season (for corresponding time intervals) to produce total-Area catch and effort estimates. For the 2013 creel survey design two access sites will be sampled on each sample day; this approach will allow for all components of variance (e.g., including site-to-site variance) to be estimated. Catch and effort estimates will be available at the end of August, immediately following the 1.5 month selective Chinook fishery, unless the co-managers deem it necessary to provide timelier in-season estimates as the fishery progresses.

Area 6 Overview

We will employ a baseline-level sampling program (**Figure 5/6-2**), which will include sampling for the estimation of: *i*) mark rates (based on VTRs), *ii*) indices of Chinook encounters and angling effort (i.e., sample frame-observations, not fishery totals), and *iii*) the CWT composition of landed catch. Baseline sampling is opportunistic in nature, with overall sampling effort

allocated across space and time in a manner that maximizes the number of angler interviews obtained per sampling event. Baseline sampling data are not used to produce in-season creel survey estimates, in contrast to the Murthy estimator approach applied in Area 6 during the 2003 through 2007 seasons. Rather, in-sample catch and effort data (e.g., catch per unit effort [CPUE] and species composition data) are used in conjunction with the Catch Record Card (CRC) system to compute post-season (available approximately 1 to 1.5 years from the close of the fishery) catch estimates by species and area.

Enhanced VTR Program

We will collect mark rate and encounter rate information in Areas 5 and 6 using dockside sampling and voluntary trip reports (**Figures 5/6-1 and 5/6-2**), as detailed below. From the Areas 5 and 6 VTR data, we will calculate the proportions of Chinook that were legal-size and marked (LM), legal-size and unmarked (LU), sublegal-size and marked (SM), and sublegal-size and unmarked (SU) in each Area.

An “enhanced” Voluntary Trip Report (VTR) program will be implemented, in which an additional WDFW technician will be hired to work exclusively on distributing and collecting VTRs from the angling public. This enhanced VTR program has been very successful in recent seasons, substantially increasing the VTR sample size (e.g., WDFW 2009a and WDFW 2010) relative to the VTR sample size from the 2003 through 2007 seasons in Areas 5 and 6 (e.g., WDFW 2008). In addition, the proportion of legal size and marked Chinook encounters obtained from VTRs will be compared with dockside angler interview-based data on Chinook legal-size marked encounters (retained and released).

Total Encounter Estimates

To estimate total Chinook encounters in Areas 5 and 6, we will apply Conrad and McHugh’s (2008) bias-corrected method, which incorporates an estimate of the proportion of legal-marked Chinook encountered in the fishery (we will obtain this estimate via VTR results in Areas 5 and 6 in 2013) along with the estimate of retained Chinook catch (e.g., from post-season creel survey estimates in Area 5 and Catch Record Card estimates in Area 6). The Conrad and McHugh approach applies a “correction factor” to account for bias in dockside angler interview reported Chinook releases (see further explanation below).

Dockside Sampling

Dockside sampling designs are described separately for Areas 5 and 6 below. In each Area, dockside samplers will interview anglers exiting the fishery at selected access sites. Samplers will collect data on: 1) angler effort (i.e., boats and angler counts, trip duration, etc.); 2) encounter (fish retained and/or released) composition, by species (all fish species) and mark status (unmarked vs. adipose-clipped; Chinook and coho salmon only); and 3) landed Chinook size (fork and total lengths) and age composition (i.e., scale samples are collected and subsequently read).

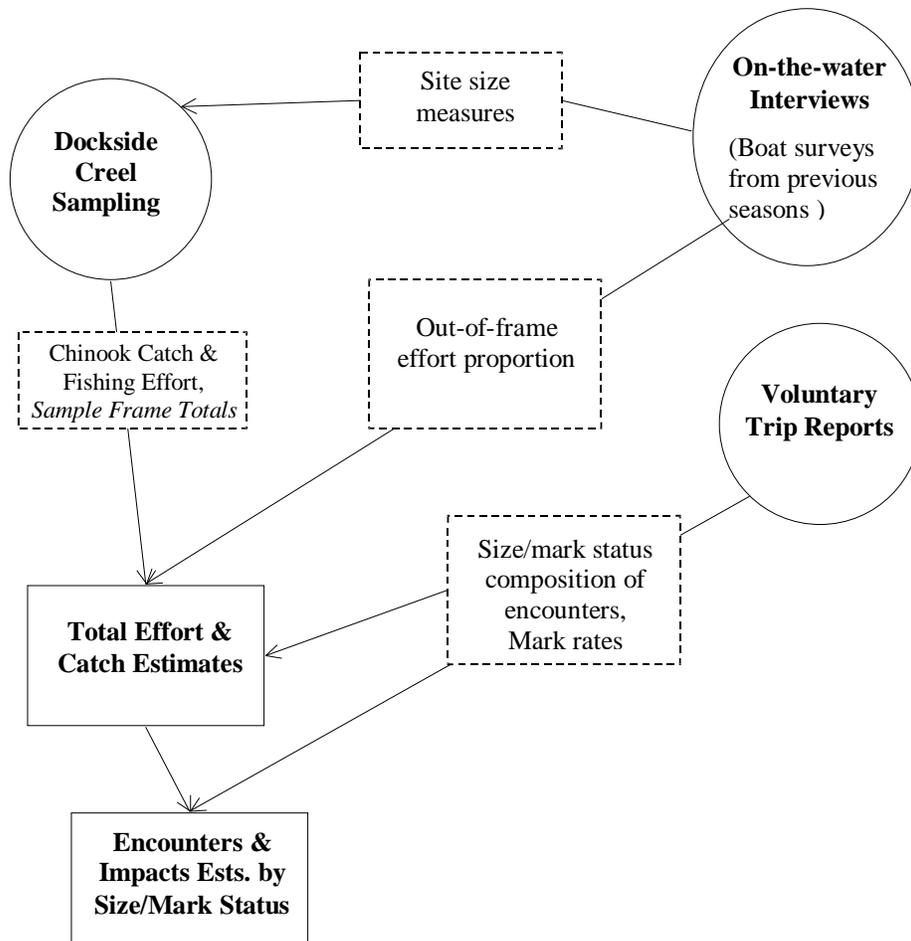


Figure 5/6-1. Conceptual diagram of the monitoring plan proposed for the **Area 5 summer** mark-selective Chinook season. Circles represent discrete sampling activities, dashed boxes represent parameters that are estimated using data from a given activity, and solid boxes depict key quantities estimated from the comprehensive plan. ‘Encounters’ includes both harvested and released Chinook salmon.

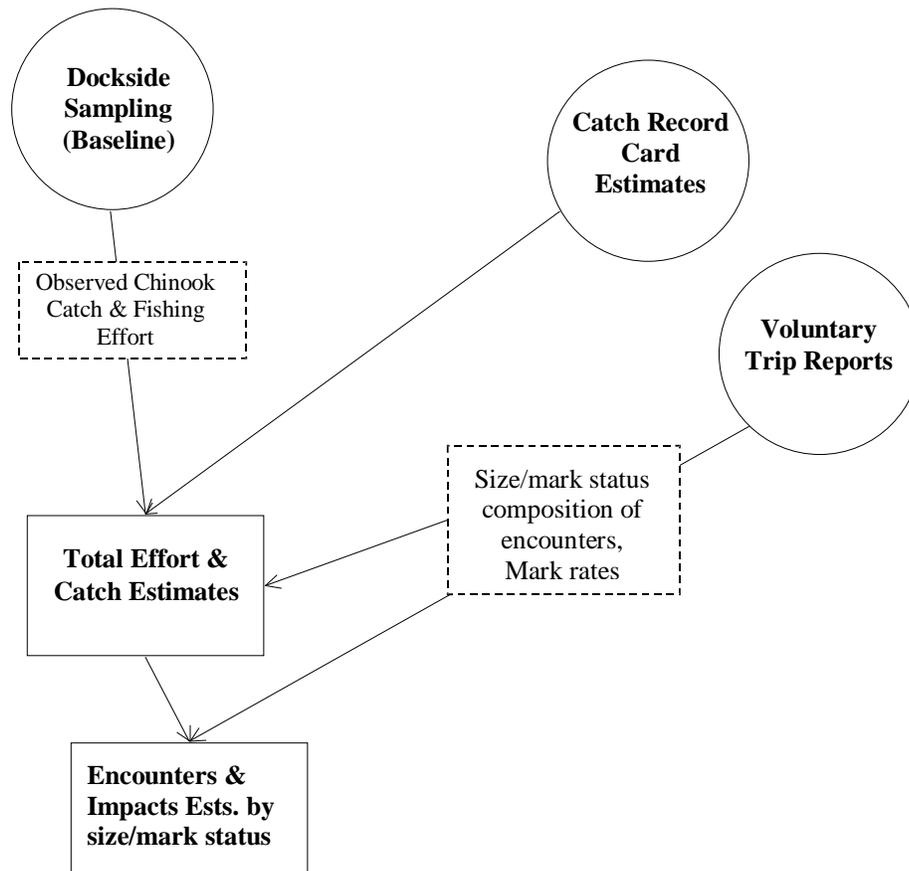


Figure 5/6-2. Conceptual diagram of the monitoring plan proposed for the **Area 6 summer** mark-selective Chinook season. Circles represent discrete sampling activities, dashed boxes represent parameters that are estimated using data from a given activity, and solid boxes depict key quantities estimated from the comprehensive plan. ‘Encounters’ includes both harvested and released Chinook salmon.

Area 5

Dockside Sample Design

Sampling strata will be divided into ‘weekday’ (Monday through Thursday) and ‘weekend’ (Friday, Saturday, and Sunday) days. For each two-week period of the fishery, we will randomly select $n=2$ sample days from the $N=8$ possible weekday stratum days (distributed so there is at least one weekday sampled in each of the two weeks). For the weekend stratum (Friday through Sunday), and we will select $n=2$ sample days out of the $N=3$ possible weekend days each week. In total, we will sample 12 site-days every two weeks using the reduced Murthy creel survey design. Samplers will be stationed at two ramps on each of the selected sampling days. Sites in our sample frame will be selected for sampling via our weighted-random site selection process (e.g., probability proportional to size, using site size measures from the previous 2012 season). Samplers will achieve 100% sampling coverage at the assigned ramps. All anglers and fish exiting the fishery through the sampled site will be counted. Any boats that are missed at the sampled site will be counted and recorded on the sampling forms.

In addition, we will sample multiple ramps in Area 5 on the remaining days in the weekday stratum, using baseline-level sampling to ensure that we achieve the 20% sample rate goal.

On-the-water Surveys

On-the-water surveys were conducted in Area 5 during the previous 2003-2012 seasons, to estimate the percent of effort from sites in our sample frame (versus out-of-frame sites) and the proportion of angler effort at each sampled site. These boat surveys covered the entire area to pick up effort from all launch sites. Boat occupants were asked where they intend to tie up or exit the fishery rather than where they launched. We calculated the weights (or size measures) of Area 5 sites based on the boat survey data. In summer 2013, we intend to use the most recently available boat survey data (from the previous season, for corresponding time strata) to compute the site size measures needed to estimate in-season catch and effort for the entire Area 5. If anything occurs in-season that could potentially shift proportions of effort at access sites (e.g., if access sites in Area 5 open or close), we will conduct boat surveys in Area 5 to update the site size measures.

Harvest and Effort Estimates

The harvest and effort observed at the Murthy-based sampled sites in Area 5 will be expanded to all access sites (based on estimated site size measures) to estimate total harvest for the day. Sample data will be combined and expanded to create stratum estimates of harvest and effort with variances.

To generate weekly catch and effort estimates for the Area 5 summer fishery, the four-day “weekday stratum” estimate for Monday-Thursday of each week (based on $n=2$ days sampled out of $N=8$ available weekdays per two-week period) will be added to the “weekend stratum” (Friday-Sunday) estimate for the particular week (based on $n=2$ days sampled out of $N=3$ available weekend days per week). The eight-day weekday estimates for each two-week period will be split evenly between individual weeks in the two-week block to enable weekly estimates, with variances computed using the $n=2$ days sampled out of $N=8$ available weekdays in the appropriate variance equation.

Assumptions

Harvest and effort estimates are based on the following assumptions:

- Boat surveys from previous seasons (e.g., 2013 site size measures) provide an unbiased estimate of the proportion of anglers accessing fisheries from sites in our sample site frame and sites outside the frame.
- The proportion of total effort accessing the fishery at site A represents the proportion of total catch landed at site A.
- All anglers exiting at a sampled site are interviewed and all anglers accurately report their harvest. If any boats are missed they are counted and catch and effort estimates are expanded appropriately.
- CPUE does not differ significantly between sites in our sample frame and sites outside our sample frame.

Area 6

Dockside Sample Design

For the 2013 Area 6 mark-selective Chinook fishery, we will conduct dockside angler interviews at selected boat ramps via our Baseline sampling program, to obtain observed data on angler effort (boats and angler counts, trip duration, etc.) and composition of salmon encounters (retained and/or released), by species and mark status. Baseline sampling is opportunistic in nature, with overall sampling effort allocated across space and time in a manner that maximizes the number of angler interviews obtained per sampling event. Baseline sampling data are not used to produce in-season creel survey estimates, in contrast to the Murthy estimator approach applied in Area 6 during the 2003 through 2007 seasons. Rather, in-sample catch and effort data (e.g., catch per unit effort [CPUE] and species composition data) are used in conjunction with the Catch Record Card (CRC) system to compute post-season (available approximately 1 to 1.5 years from the close of the fishery) catch estimates by species and area.

Dockside samplers will interview anglers exiting the fishery at several selected access sites in Area 6, approximately five days per week. Samplers will collect data on: 1) angler effort (i.e., boats and angler counts, trip duration, etc.); 2) encounter (fish retained and/or released) composition, by species (all fish species) and mark status (adipose fin-clipped [marked] or unclipped [unmarked]) for Chinook and coho salmon only); and 3) landed Chinook size (fork and total lengths) as well as age composition (i.e., scale samples are collected and subsequently read). Sampling size is set at 120 fish per stratum for estimation of species composition and 100 boats per stratum for the estimation of CPUE.

CWT Sampling

We will sample for coded wire tags (CWT) in the Areas 5 and 6 mark-selective Chinook fisheries as part of our dockside angler interviews. The objective is to provide stock specific estimation (by hatchery and brood year) of population parameters, such as fishery contribution and marine survival, as part of the coast-wide CWT program. The sample rate goal for CWT recovery is 20% in mark-selective Chinook fisheries. During dockside interviews samplers will inspect landed Chinook and coho salmon for the presence of coded-wire tags using wand CWT detectors, and snouts will be collected from all fish containing CWTs. For post-season analyses and reporting, CWT data will be used to estimate stock composition by hatchery and brood year. Total unmarked double index tagged (DIT) mortality estimates will be produced post-season (note: in Area 6, DIT mortality estimates cannot be produced until post-season CRC estimates are available because sample-rate estimates are needed for tag expansions).

Voluntary Trip Reports

Information on adipose mark rates and the percentage of Chinook that are legal size (22 inches [56 cm] and larger total length) versus sublegal size (less than 22 inches total length) will be obtained from Voluntary Trip Reports (VTRs) that are submitted by private-boat anglers during the mark selective Chinook fisheries in Areas 5 and 6 during 2013. We will also contact known salmon charter operators (if any are operating in these Areas) to submit VTR forms.

Anglers will be asked to record on the VTR forms the date, number of anglers, target species, CRC Area, each Chinook or coho hooked, whether the fish was kept or released, species (if they positively identified the fish), total length to the nearest 1/8th inch, and whether the fish was

adipose fin-clipped or not clipped.

An enhanced Voluntary Trip Report (VTR) program will be implemented to increase the VTR sample size relative to the sample size in the 2003-2007 seasons. The enhanced VTR program for the 2013 season will include several key elements. First, we will assign a dedicated sampler the duty of distributing forms to every possible angling party at the start of their trip throughout the mark-selective Chinook season, to recruit participants on site. Also, the Areas 5 and 6 VTR samplers will distribute our new and improved, user-friendly VTR form that is easier for anglers to complete compared to the old VTR form. The VTR samplers will focus their attention on high-use access sites only and begin their shifts early (typically 0500 hours) in order to intercept as many anglers as possible. Additionally, samplers will provide participants with a brochure describing the intent of VTRs and their significance to fishery monitoring, and answer VTR-related questions. To increase the response rate, participants are given three options for returning completed VTRs to WDFW: hand-delivering them to samplers, placing them in on-site drop boxes, or sending them via U.S. mail (pre-paid); if they are unsuccessful (i.e., no encounters occurred [harvested or released]) on their trip, the VTR samplers will request that participants keep their forms for future trips.

From the Areas 5 and 6 VTR data, we will calculate the proportions of Chinook that were legal-size and marked, legal-size and unmarked, sublegal-size and marked, and sublegal-size and unmarked in each Area. These VTR data will be compared with dockside creel survey data, from which we can also obtain Chinook legal-size marked encounter information (retained and released).

Estimates of Total Encounters

We will estimate total Chinook encounters in the Areas 5 and 6 selective Chinook fisheries using the bias-corrected approach developed by Conrad and McHugh (2008). Briefly, with the Conrad and McHugh (2008) method, Chinook encounters are estimated by dividing the estimate of legal-marked Chinook harvest by the estimated proportion of the fishable Chinook population that is of legal size and marked. Given that our former "Method 2" approach (e.g., WDFW 2008a) yields negatively biased estimates if anglers release any of the legal-marked Chinook they encounter, Conrad and McHugh estimated a "correction" factor to account for this phenomenon and incorporated it into their estimator. Applying Conrad and McHugh's (2008) approach within the designs proposed in **Figure 5/6-1** and **Figure 5/6-2**, we would estimate total Chinook encounters by dividing the estimate of legal-marked Chinook harvest by the estimated proportion of the fishable Chinook population that is of legal size and marked (obtained via VTR's). Estimates of legal-marked Chinook harvest will be obtained via creel surveys in Area 5 and via post-season CRC estimates in Area 6.

Reporting Schedule

Preliminary catch and effort estimates for the Area 5 mark-selective Chinook fishery will be produced and shared between the co-managers by August 31, 2013. A final report will be written and distributed by February 1, 2014.

Sampling Rates and Staffing Levels

WDFW will continue to meet or exceed the 20% sampling rate goal for the selective Chinook fisheries in Areas 5 and 6. **Table 5/6-1** shows the additional staffing levels (compared to baseline levels used for non-selective fisheries) needed to implement the proposed monitoring plan for the selective Chinook fisheries in Areas 5 and 6.

Table 5/6-1: Number of Additional Staff Required for Monitoring the 2013 Summer Selective Chinook Fisheries in Areas 5 and 6.

Month	Area 5 Dockside Samplers	VTR Dockside Position	Area 6 Dockside Samplers
July	4	1	2
Aug	4	1	2
Sept	4	--	--

April 9, 2013

2013-2014 Area 6 Winter Period Mark-Selective Sport Fishery

The Northwest Treaty Tribes and the Washington Department of Fish and Wildlife (WDFW) have reached agreement to implement a Chinook salmon mark-selective fishery in Area 6, during the winter period from December 1, 2013 to April 10, 2014. This fishery will be implemented consistent with management objectives defined by the co-managers' Puget Sound Chinook Harvest Management Plan (April, 2010), the WDFW-Tulalip management plan for hatchery origin fish (2005 Memorandum of Understanding), and established principles concerning the allocation of harvestable salmon and the exercise of treaty rights. The co-managers will seek to minimize or eliminate any unintended effects of this fishery on individual treaty fisheries, including dislocation and/or disruption. Therefore, treaty fisheries will not be modified in order to accommodate this mark-selective fishery.

Fishery Intent

The winter period mark-selective fishery in Area 6 has been implemented to provide recreational fishing opportunity directed at hatchery Chinook salmon. Sampling and monitoring programs implemented with this fishery are intended to provide information necessary to evaluate and plan potential future Chinook mark-selective fisheries. The sampling program will provide a basis for determining if the data needed to estimate critical management and analysis parameters can be collected and if the sample sizes needed to produce these estimates with agreed levels of precision can be realistically obtained. Prior to the 2014-15 season, WDFW and the tribes will jointly review and analyze results of the sampling and monitoring program for these fisheries to evaluate the effectiveness at achieving the intended objectives.

Data Needs for Evaluating the Fishery

Monitoring, sampling and reporting programs are being implemented by WDFW for the purpose of providing data necessary to estimate the impact of these mark-selective fisheries and to support the evaluation of future mark-selective fisheries.

WDFW will carry out the monitoring, sampling and reporting program described for the Area 6 winter Chinook mark-selective fishery in Attachment A. On-water as well as shore-based surveys and sampling techniques will be employed, in addition to an intensive voluntary trip report program, with the intention of collecting data that will form the basis of post-season analyses and evaluation of performance. During the conduct of these fisheries WDFW will maintain sampling rates in areas 5-13 at levels equivalent to or greater than rates achieved in the most recent two-years. This monitoring, sampling and reporting program is part of the WDFW Puget Sound monitoring and sampling operational plan documented with the co-managers' preseason fishing plan.

These monitoring and sampling programs are designed to provide data to estimate the following parameters:

- the mark rate in the fishery - marked and unmarked encounters will be estimated by both on-water and shore-based programs;
- the number of fish retained or landed - marked and unmarked fish will be estimated using a shore-based program, including CWT and scale-age sampling;
- the number of unmarked fish released - estimated by shore-based and on-water programs;
- the number of unmarked fish retained - estimated by a shore-based program;
- the number of marked fish released - estimated by a shore-based program in conjunction with on-water mark rate encounter estimates;
- the number of the Chinook encounters that are of sub legal size - estimated by shore-based and on-water programs;

- the stock composition of the mortalities – estimated by CWT data collected in the shore-based sampling program;
- estimates of marked and unmarked mortalities of double-index tagged and other CWT stocks.

Post-Season Report

A preliminary post-season report will be written and distributed by November 30, 2014, containing a full post-season analysis of all data collected in the 2013-14 Area 6 winter selective Chinook fishery.

Data Needs for Post-Season Estimation of Stock-Specific Unmarked Fish Mortalities

The co-managers agree to implement these fisheries with the understanding that the capability to estimate stock-specific unmarked fish mortalities is preserved. Methods for estimating unmarked mortalities of double-index tagged CWT stocks within this mark-selective chinook fishery will be determined jointly by co-managers, considering recommendations of the Selective Fisheries Evaluation Committee of the Pacific Salmon Commission. WDFW will be responsible for reporting the necessary fishery information and data to the Pacific States Marine Fishery Commission that allows these estimates to be generated.

In the postseason report (see previous section), WDFW will provide estimates of unmarked mortalities, by DIT group (by stock and age) and area. Unmarked DIT recoveries will be estimated based on estimated recoveries of marked DIT fish and assuming:

1. DIT release numbers provide a reasonable estimate of the unmarked to marked fish ratio; and,
2. the mortality rate for Chinook caught and released in the fishery (sfm) is known.

The assumption that the DIT release numbers provide a reasonable estimate of the unmarked to marked fish ratio will be evaluated through post-season comparisons of DIT tag groups. A design for these comparisons will be developed jointly by the co-managers following the method used in analyzing coho DIT groups.¹ All information from this fishery necessary for making these comparisons is assumed to be included in the sampling design and will be included in the post-season report.

Estimates of total fishery related mortalities, including the total exploitation rate or the southern US exploitation rate, that represent the co-managers' management objectives for Puget Sound chinook management units, are made by combining mortality estimates in mark-selective fisheries with mortality estimates in non-selective fisheries. To ensure that all information necessary to make these estimates is collected, plans for sampling and monitoring of the winter selective fishery in Area 6, as well as other mark-selective and non-selective fisheries will be included as a component of the co-managers' annual pre-season agreement.

¹ *Analysis of coho salmon double-index tag (DIT) data. 2003*

MONITORING THE WINTER AREA 6 SELECTIVE CHINOOK FISHERY, DECEMBER 1, 2013 THROUGH APRIL 10, 2014

Overview

The WDFW Puget Sound Sampling Program will intensively monitor the proposed mark-selective Chinook fishery in Area 6 during the period from December 1, 2013 through April 10, 2014, using comprehensive data collection strategies consisting of dockside sampling, aerial surveys, and voluntary trip reports, as detailed below. The proposed sample design is an aerial-access site design that was effective in producing in-season estimates during the previous four seasons in Areas 7 and 9 (e.g., WDFW 2010a and 2010c).

The aerial-based design differs from our usual Murthy estimator method (Murthy 1957; Cochran 1977) primarily in terms of the approach used for assessing fishery-wide effort. The design is a "Modified Murthy" approach that will incorporate aerial survey-based total effort counts, rather than the approach in which on-the-water surveys are conducted to assess proportions of effort accessing the fishery from sampled and non-sampled sites. Due to the large geographic expanse of the marine areas of Puget Sound, and because of expected adverse conditions on the water during winter time, we determined that the usual boat-based approach for assessing proportions of effort (site size measures) would be riskier (to both the success of the study and safety of field personnel) and far more costly than the aerial-based Modified Murthy approach described below.

Sampling Objectives

We will implement the comprehensive monitoring plan depicted in **Figure 6-1** to estimate total *i*) Chinook encounters (C ; retained and released by mark status) and *ii*) angler effort (E) due to pilot Area-6 winter mark-selective Chinook fishery, and to evaluate additional key selective fishery sampling objectives, including: *iii*) quantify fishery-total angling effort and Chinook salmon encounters (harvest + releases) and mortalities (by size/mark-status class) (e.g., from a combination of dockside sampling data and VTRs); *iv*) recover CWTs and assessing the impact of the selective fishery on DIT groups; *v*) estimate the age composition of and test fishery- and landed dockside-sampled Chinook; and *vi*) estimate total fishery impacts (encounters and mortality) and comparing these values to pre-season modeling (FRAM) expectations.

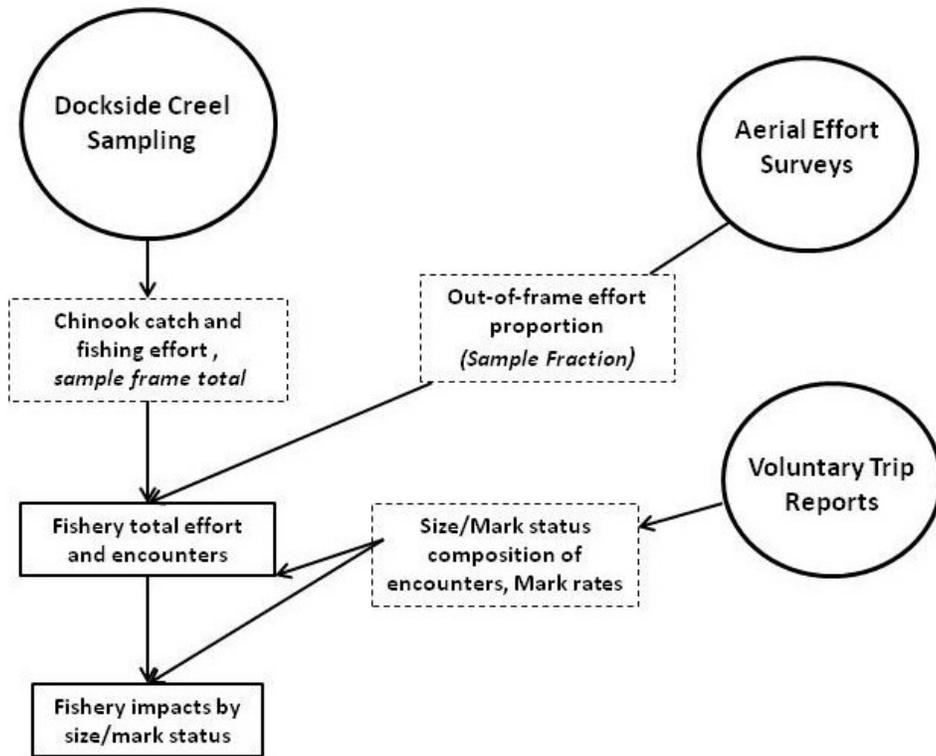


Figure 6-1. Conceptual diagram of the monitoring plan proposed for the **Area 6 winter** mark-selective Chinook season. Circles represent discrete sampling activities, dashed boxes represent parameters that are estimated using data from a given activity, and solid boxes depict key quantities estimated from the comprehensive plan. ‘Encounters’ includes both harvested and released Chinook salmon.

Design Overview

We will achieve our Area-6 objectives using a complemented aerial–access design (**Figure 6-1** and **6-2**), whereby:

- i) Total encounters (C_{ds} , separate estimates for landed and released) and effort (E_{ds}) will be estimated for all anglers at sampled access sites (e.g., sites in our docksider sample frame; see below) using completed-trip interview data collected through a multistage sample design.
- ii) A sampling fraction (f) for expanding sample-frame estimates of encounters and effort (C_{ds} and E_{ds}) to fishery-wide totals (C_{tot} and E_{tot}) will be estimated using data from paired aerial and docksider effort-sampling events.

Docksider sampling— Completed-trip interview data will be collected using a stratified three-stage cluster sample design. For each two-week temporal stratum throughout the fishery, the three-stage cluster sample design will be implemented as follows,

- Sample days will be selected (randomly) from weekday (Mon-Thurs, $n = 2$ out of 8 possible weekday days for each two week interval) and weekend (Fri-Sun, $n = 2$ out of 3 possible weekend days for each week) strata at the first stage.

- At the second stage, all access sites in the sample site frame ($n = 4$ sites) will be selected for sampling (i.e., this will be a census of the four dockside sample-frame sites; probability proportional to 1 for site selection),
- All anglers accessing the fishery at a particular site (the clusters) will be interviewed at the third stage.

As in other selective fishery surveys, we will acquire information on fishing trip duration (start and end times), the number of anglers and boats fishing, and total salmon encounters (retained and released) by species and mark status, during post-trip dockside interviews. These data, in conjunction with site size measures determined for the sites in the dockside sample frame, will allow us to estimate C_{ds} and E_{ds} for the entire dockside sample frame using the Murthy total estimator (Murthy 1957; Cochran 1977).

The sites included in the Area-6 dockside sample frame will be the four assumed highest-use access sites for Area 6 anglers; e.g., Ediz Hook and John Wayne Marina, Port Angeles Boat Haven, plus Cornet Ramp that is already included in the Area 7 winter dockside sample frame. Size measures will be estimated for each site in our sample frame via complete daily effort counts recorded by samplers stationed at each of the four sampled sites on a subset of sample days (i.e., number of boats and anglers returning to the ramp from dawn to dark). From these dockside effort data, we will determine the proportion of anglers accessing the fishery at each of the four sampled sites relative to the total number of anglers summed across the four sampled sites (size measures will sum to 1 across the four sites in the sample frame). Following an adjustment to scale sample-frame estimates of catch and effort to fishery-total estimates (described below), parameter values will be expanded to stratum totals. Depending on the proportion of effort contained in the sample frame (as determined through sampling early in the fishery), the variability in size measures observed for the sample frame, and the availability of resources, we may opt to staff all sample-frame sites for all selected sample days during the season (i.e., *we will obtain a census of catch and effort for sites in our sample frame on scheduled sample days*).

Aerial surveys.—In order to obtain fishery-wide parameter values, we will collect the data necessary to expand sample-frame estimates to “never-sampled” (i.e., out of the frame) access sites and thus the total fishery. Thus, on a subset of randomly selected days where dockside sampling is scheduled ($n = 5$ target per month), we will also conduct an aerial survey to estimate total fishing effort for the entire CRC area (i.e., including effort originating from never-sampled sites and those that are in our dockside frame). While survey days will be randomly chosen, flight times will be scheduled in order to coincide with peak (and relatively stable) periods of angler activity. This flight will provide an instantaneous aerial effort count (i.e., number of boats, b_i) that can then be expanded to a fishery-wide total (E_i^{tot}) based on the activity profile estimated for that particular day; i.e., aerial counts will be expanded based on the proportion of anglers fishing on a given day that were active during the aerial survey, P_i .

$$(1) \quad E_i^{tot} = b_i / P_i$$

where,

E_i^{tot} = the total fishing effort on day i ;

b_i = the number of boats enumerated in the aerial survey on day i ;

P_i = the proportion of anglers that were active during the aerial survey on day i ,

and where P_i is estimated number of anglers active in the aerial survey area divided by the total number of anglers interviewed as follows,

$$P_i = \frac{a_i}{A_i},$$

where,

a_i = the number of anglers that were active in the aerial survey area on day i and;

A_i = the total number of anglers surveyed on day i .

Although dockside *CPUE* estimates for a particular day could be used in conjunction with this total effort estimate to estimate C_{tot} for that same day (e.g., as was used for the aerial-access design approach implemented in Volstad *et al.* 2006), we will focus aerial surveys only on obtaining an accurate estimate of season-wide sampling fraction, f , due to reasons discussed in WDFW 2008b. We will fly on fewer occasions (than the previously-discussed aerial-access method would require) and instead use aerial effort estimates (E_i^{tot}) in conjunction with dockside effort estimates (E_i^{ds}) to estimate a season-wide sampling fraction, f , for converting dockside Chinook encounters and effort estimates into fishery-wide totals (C_{tot} and E_{tot}). The ratio of total effort to sample-frame estimate, f , is as follows,

$$(2) \quad f = \frac{\sum_{i=1}^n E_i^{ds}}{\sum_{i=1}^n E_i^{tot}},$$

Accordingly, for days when no aerial survey is conducted, the daily dockside estimates of catch (C_j^{tot}) and effort (E_j^{tot}) will be expanded to fishery total values by f as follows, respectively,

$$(3) \quad C_j^{tot} = \frac{C_j^{ds}}{f} \text{ and } E_j^{tot} = \frac{E_j^{ds}}{f}$$

and then the usual stratum- and season-total estimation procedure will be followed. Thus, the design relies on both dockside sampling (the primary emphasis) aerial effort surveys (auxiliary information) to achieve total-fishery parameter estimation. This approach is similar to Canada-DFO's use of aerial-access sampling to estimate recreational fishery statistics in the Strait of Georgia to the north of Area 7 (this survey and its estimators has undergone rigorous theoretical review in recent years; see Dauk 2001 for details).

Assumptions

For this approach to yield unbiased estimates of catch and effort, a number of assumptions must be met. First, the usual Murthy-design assumptions apply and are,

- For sites contained in the sample, access-site size measures are accurately estimated and reflect proportional differences in catch landed across sites.
- *CPUE* does not differ between sampled and non-sampled sites.
- All anglers are interviewed and accurately report catch and encounters.

Second, by adding the aerial-access based sampling fraction to our calculations, we also assume the following:

- The relative proportion of effort originating from sites within and outside of our sample frame does not differ between fair weather (i.e., when flight is possible) and poor weather days (i.e., when aerial surveys cannot be done).
- All boats that are actively fishing are accurately counted (e.g., boats are neither missed nor double counted)
- Boat ingress and egress rates are equal.
- Anglers accurately report their periods of fishing activity.

- The relative proportion of effort originating from sampled and un-sampled sites does not differ between weekday and weekend days.

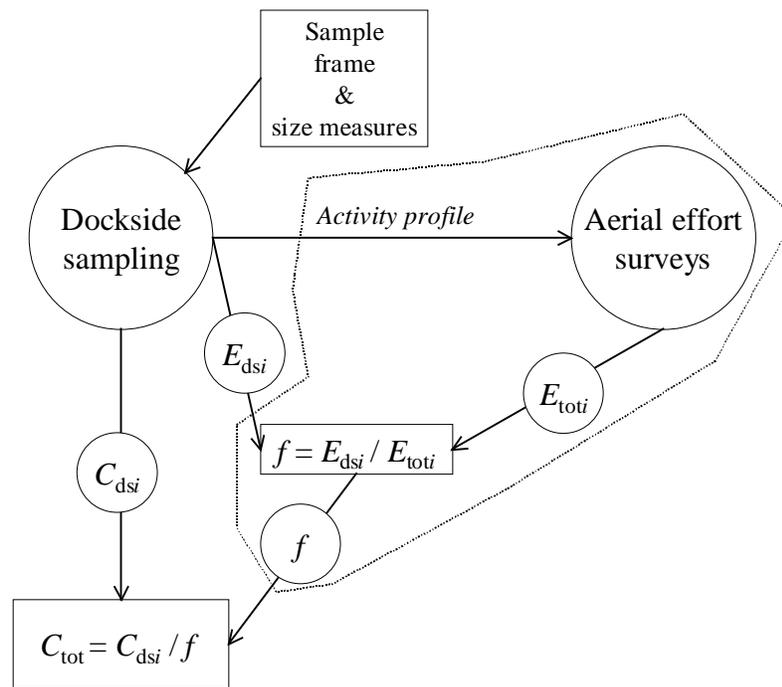


Figure 6-2. A schematic of the Area-6 sampling plan demonstrating the relationship among sampling components and estimators. Note that the dockside interview element used to expand instantaneous aerial boat counts to daily totals (i.e., the ‘*Activity profile*’, based on trip start and end time reports) is not used in sample frame-only catch and effort estimation. Features contained in the dashed polygon are estimated for paired aerial–access sample days only; dockside sampling will occur on all scheduled sample days.

Estimates of Total Encounters

We will estimate total Chinook encounters in the Area 6 winter selective Chinook fishery using the bias-corrected approach developed by Conrad and McHugh (2008). Briefly, with the Conrad and McHugh (2008) method, Chinook encounters are estimated by dividing the estimate of legal-marked Chinook harvest by the estimated proportion of the fishable Chinook population that is of legal size and marked. Given that our former “Method 2” approach (e.g., WDFW 2008a) yields negatively biased estimates if anglers release any of the legal-marked Chinook they encounter, Conrad and McHugh estimated a “correction” factor to account for this phenomenon and incorporated it into their estimator. Applying Conrad and McHugh’s (2008) approach within the design proposed in **Figure 6-1**, we would estimate total Chinook encounters by dividing the estimate of legal-marked Chinook harvest (obtained via aerial-access creel surveys) by the estimated proportion of the fishable Chinook population that is of legal size and marked (obtained via VTR data).

CWT Sampling

We will sample for coded wire tags (CWT) in the Area 6 winter mark-selective Chinook fishery as part of our dockside angler interviews. The objective is to provide stock specific estimation (by hatchery and brood year) of population parameters, such as fishery contribution and marine survival, as part of the coast-wide CWT program. The sample rate goal for CWT recovery is 20% in mark-selective Chinook fisheries. During dockside interviews samplers will inspect landed Chinook and coho salmon for the presence of coded-wire tags using wand CWT detectors, and snouts will be collected from all fish containing CWTs. For post-season analyses and reporting, CWT data will be used to estimate stock composition by hatchery and brood year. Total unmarked double index tagged (DIT) mortality estimates will be produced post-season.

Voluntary Trip Reports

Additional information on adipose mark rates and the percentage of Chinook that are legal size (22 inches [56 cm] total length and larger) versus sublegal size (less than 22 inches) will be obtained from Voluntary Trip Reports (VTR's) submitted by private-boat anglers during the mark selective Chinook fishery in Area 6. Anglers will be asked to record on the VTR forms the date, number of anglers, target species, CRC Area, each Chinook or coho hooked, whether the fish was kept or released, species (if they positively identified the fish), total length to the nearest 1/8th inch, and whether the fish was adipose fin-clipped or not clipped.

We will take several measures to expand and help ensure the success of our VTR program. First, samplers will distribute our new and improved, user-friendly VTR form that is easier for anglers to complete compared to the old VTR form. Samplers will maximize the distribution of VTRs by handing out VTRs as anglers launch, and collecting the VTRs as anglers exit the fishery. Additionally, samplers will provide participants with a brochure describing the intent of VTRs and their significance to fishery monitoring, and answer VTR-related questions. To increase the response rate, participants are given three options for returning completed VTRs to WDFW: hand-delivering them to samplers, placing them in on-site drop boxes, or sending them via U.S. mail (pre-paid); if they are unsuccessful (i.e., no encounters occurred [harvested or released]) on their trip, the VTR samplers will request that participants keep their forms for future trips.

We will estimate the mark rates of legal-size and sublegal-size Chinook via calculating the season average mark rate from VTR's. We will calculate the proportion of Chinook that were legal-size and marked, legal-size and unmarked, sublegal-size and marked, and sublegal-size and unmarked.

Reporting Schedule

A final report will be written and distributed by November 30, 2014, with a full post-season analysis of all data collected in the 2013-14 Area 6 winter selective Chinook fishery.

Sampling Rates and Staffing Levels

WDFW will meet or exceed the sampling rate goal of 20% during the selective Chinook fishery time period via increased staffing levels as compared to non-selective fisheries. **Table 6W-1** shows staffing levels needed to implement the intensive monitoring of the winter selective Chinook fishery in Area 6.

Table 6W-1: Number of Additional Staff Required for Monitoring the Winter Selective Chinook Fishery in Area 6, December 1, 2013 through April 10, 2014.

Month	Area 6 Dockside Samplers
Dec	2
Jan	2
Feb	2
Mar	2
Apr(10)	2

April 11, 2013
2013-2014 Area 7 Winter Period Mark-Selective Sport Fishery

The Northwest Treaty Tribes and the Washington Department of Fish and Wildlife (WDFW) have reached agreement to implement a Chinook salmon mark-selective fishery in Area 7 from December 1, 2013, through April 30, 2014. This fishery will be implemented consistent with management objectives defined by the co-managers' Puget Sound Chinook Harvest Management Plan (April, 2010), the WDFW-Tulalip management plan for hatchery origin fish (2005 Memorandum of Understanding), and established principles concerning the allocation of harvestable salmon and the exercise of treaty rights. The co-managers will seek to minimize or eliminate any unintended effects of this fishery on individual treaty fisheries, including dislocation and/or disruption. Therefore, treaty fisheries will not be modified in order to accommodate this mark-selective fishery.

The co-managers further agree that:

- Total encounters of marked and unmarked, legal and sub legal-size Chinook will be estimated through a sampling and monitoring program (Attachment A). If in-season estimates indicate the estimated total legal-sized encounters for the fishery will significantly exceed the preseason forecasted level of 4,888 Chinook (FRAM 1213), the fishery will be modified to control impacts on stocks of concern: and
- All subarea closures that are part of the co-managers' 2013-14 fisheries agreement will be in effect in Area 7 and during the timeperiod that the agreed Chinook mark-selective fishery is being conducted.

Fishery Intent

The mark-selective fishery in Area 7 has been implemented to provide recreational fishing opportunity directed at hatchery Chinook salmon. Sampling and monitoring programs implemented with this fishery are intended to provide information necessary to evaluate and plan potential future Chinook mark-selective fisheries. The sampling program will provide a basis for determining if the data needed to estimate critical management and analysis parameters can be collected. Prior to the 2014-15 season, WDFW and the tribes will jointly review and analyze results of the sampling and monitoring program for these fisheries to evaluate the effectiveness at achieving the intended objectives.

Data Needs for Evaluating the Fishery

WDFW will carry out the monitoring, sampling and reporting program described for the Area 7 winter Chinook mark-selective fishery in Attachment A. On-water as well as shore-based surveys and sampling techniques will be employed, in addition to an intensive voluntary trip report program, with the intention of collecting data that will form the basis of post-season analyses and evaluation of performance. During the conduct of this fishery WDFW will maintain sampling rates in areas 5-13 at levels equivalent to those in the most recent two-years. This monitoring, sampling and reporting program is part of the WDFW monitoring and sampling operational plan documented with the co-managers' preseason fishing plan.

These monitoring and sampling programs are designed to provide data to estimate the following parameters:

- the mark rate in the fishery - marked and unmarked encounters will be estimated for legal and sub-legal size fish by both on-water and shore-based programs;
- the number of fish retained or landed - marked and unmarked fish will be estimated using a shore-based program, including CWT and scale-age sampling;
- the number of unmarked fish released - estimated by shore-based and on-water programs;
- the number of unmarked fish retained - estimated by a shore-based program;
- the number of marked fish released - estimated by a shore-based program in conjunction with on-water mark rate encounter estimates;
- the number of the chinook encounters that are of sub legal size - estimated by shore-based and on-water programs;
- the stock composition of the mortalities – estimated by CWT and DNA;
- estimates of marked and unmarked mortalities of double-index tagged (DIT) and other CWT stocks.

Post Season report.

A preliminary post-season report will be written and distributed by November 30, 2014, containing a full post-season analysis of all data collected in the 2013-14 Area 7 winter selective Chinook fishery.

Data Needs for Post-Season Estimation of Stock-Specific Unmarked Fish Mortalities

The co-managers agree to implement these fisheries with the understanding that the capability to estimate stock-specific unmarked fish mortalities is preserved. Methods for estimating unmarked mortalities of double-index tagged CWT stocks within this mark-selective chinook fishery will be determined jointly by co-managers, considering recommendations of the Selective Fisheries Evaluation Committee of the Pacific Salmon Commission. WDFW will be responsible for reporting the necessary fishery information and data to the Pacific States Marine Fisheries Commission that allows these estimates to be generated.

In the postseason report (see previous section), WDFW will provide estimates of unmarked mortalities, by DIT group (by stock and age) and area. Unmarked DIT recoveries will be estimated based on estimated recoveries of marked DIT fish and assuming:

1. DIT release numbers provide a reasonable estimate of the unmarked to marked fish ratio; and,
2. the mortality rate for chinook caught and released in the fishery (sfm) is known.

The assumption that the DIT release numbers provide a reasonable estimate of the unmarked to marked fish ratio will be evaluated through post-season comparisons of DIT tag groups. A design for these comparisons will be developed jointly by the co-managers following the method used in analyzing coho DIT groups.¹ All information from this fishery necessary for making these comparisons is assumed to be included in the sampling design and will be included in the post-season report.

Estimates of total fishery related mortalities, including the total exploitation rate or the Southern US exploitation rate, that represent the co-managers' management objectives for Puget Sound Chinook management units, will be made by combining the mortality estimate for the Area 7 mark-selective fishery with mortality estimates in non-selective fisheries and other mark-selective fisheries. To ensure that all information necessary to make these estimates is collected, plans for sampling and monitoring of this selective fishery will be included as a component of the co-managers' pre-season agreement.

¹ *Analysis of coho salmon double-index tag (DIT) data. 2003*

MONITORING THE WINTER AREA 7 SELECTIVE CHINOOK FISHERY, DECEMBER 1, 2013 THROUGH APRIL 30, 2014

Overview

The WDFW Puget Sound Sampling Program will intensively monitor the proposed mark-selective Chinook fishery in Area 7 from December 1, 2013 through April 30, 2014, using comprehensive data collection strategies consisting of dockside sampling, aerial surveys, test fishing, and voluntary trip reports, as detailed below. The proposed sample design is an aerial-access site design that was effective in producing in-season estimates during the previous winter seasons in Areas 7 and 9 (e.g., WDFW 2009b and 2009c).

The aerial-based design differs from our usual Murthy estimator method (Murthy 1957; Cochran 1977) primarily in terms of the approach used for assessing fishery-wide effort. This design is particularly suited for large geographic areas such as Area 7 during the winter season. The design is a “Modified Murthy” approach that will incorporate aerial survey-based total effort counts, rather than the approach in which on-the-water surveys are conducted to assess proportions of effort accessing the fishery from sampled and non-sampled sites. Due to the large geographic expanse of Area 7, and because of expected adverse conditions on the water during winter time, we determined that the usual boat-based approach for assessing proportions of effort (site size measures) would be riskier (to both the success of the study and safety of field personnel) and far more costly than the aerial-based Modified Murthy approach described below.

Sampling Objectives

We will implement the comprehensive monitoring plan depicted in **Figure 7-1** to estimate total *i*) Chinook encounters (C ; retained and released by mark status) and *ii*) angler effort (E) due to pilot Area 7 winter mark-selective Chinook fishery, and to evaluate additional key selective fishery sampling objectives, including: *iii*) quantify the size and mark-status composition of the fishable Chinook population via test fishing; *iv*) recover CWTs and assessing the impact of the selective fishery on DIT groups; *v*) estimate the age composition of and test fishery- and landed dockside-sampled Chinook; and *vi*) estimate total fishery impacts (encounters and mortality) and comparing these values to pre-season modeling (FRAM) expectations.

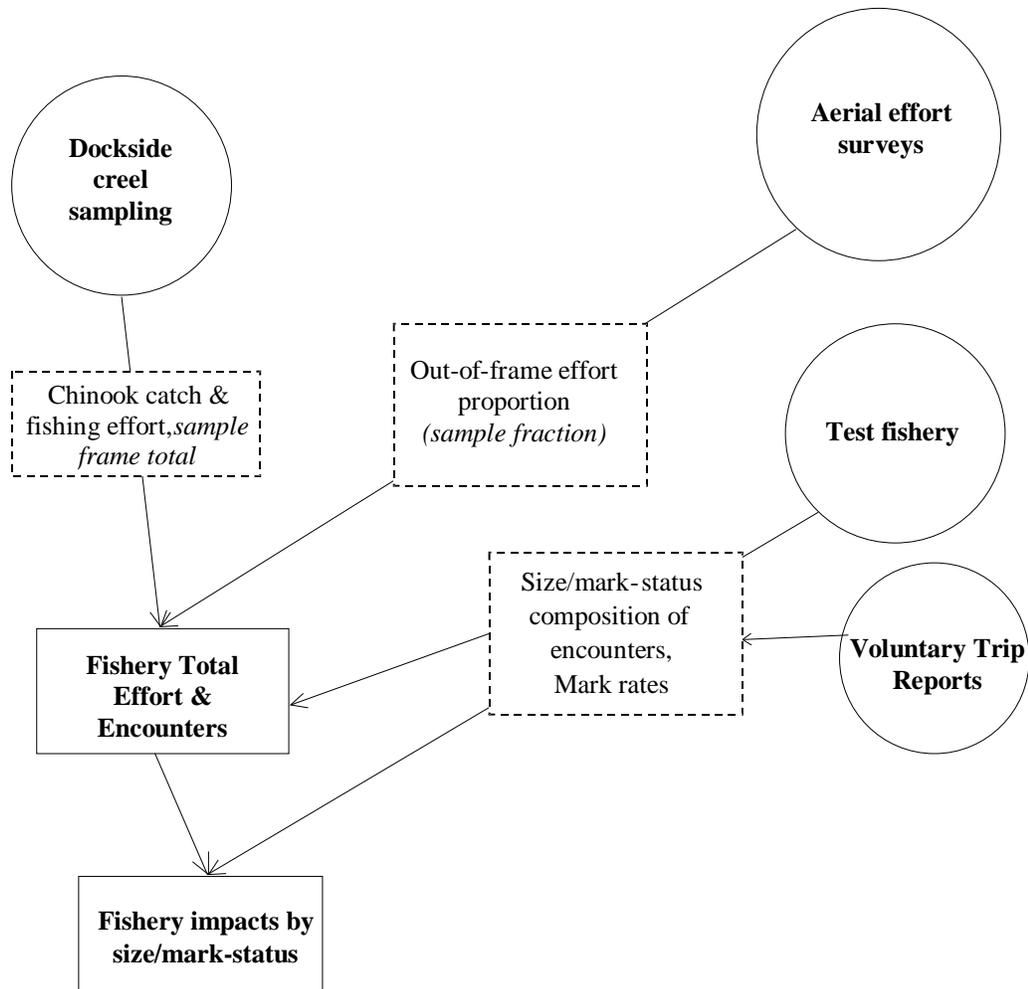


Figure 7-1. Conceptual diagram of the monitoring plan proposed for the **Area 7 winter** mark-selective Chinook fishery season. Circles represent discrete sampling activities, dashed boxes represent parameters that are estimated using data from a given activity, and solid boxes depict key quantities estimated from the comprehensive plan. ‘Encounters’ includes both harvested and released Chinook salmon.

Design Overview

We will achieve our Area 7 objectives using a complemented aerial–access design (**Figure 7-1** and **7-2**), whereby:

- i) Total encounters (C_{ds} , separate estimates for landed and released) and effort (E_{ds}) will be estimated for all anglers at sampled access sites (e.g., sites in our dockside sample frame; see below) using completed-trip interview data collected through a multistage sample design.
- ii) A sampling fraction (f) for expanding sample-frame estimates of encounters and effort (C_{ds} and E_{ds}) to fishery-wide totals (C_{tot} and E_{tot}) will be estimated using data from paired aerial and dockside effort-sampling events.

Dockside sampling— Completed-trip interview data will be collected using a stratified three-stage cluster sample design. For each two-week temporal stratum throughout the fishery, the three-stage cluster sample design will be implemented as follows,

- Sample days will be selected (randomly) from weekday (Mon-Thurs, $n = 2$ out of 8 possible weekday days for each two week interval) and weekend (Fri-Sun, $n = 2$ out of 3 possible weekend days each week) strata at the first stage.
- At the second stage, all access sites in the sample site frame ($n = 4$ sites) will be selected for sampling (i.e., this will be a census of the four dockside sample-frame sites; probability proportional to 1 for site selection),
- All anglers accessing the fishery at a particular site (the clusters) will be interviewed at the third stage.

As in other selective fishery surveys, we will acquire information on fishing trip duration (start and end times), the number of anglers and boats fishing, and total salmon encounters (retained and released) by species and mark status, during post-trip dockside interviews. These data, in conjunction with site size measures determined for the sites in the dockside sample frame, will allow us to estimate C_{ds} and E_{ds} for the entire dockside sample frame using the Murthy total estimator (Murthy 1957; Cochran 1977).

The sites included in the Area-7 dockside sample frame will be the four assumed highest-use access sites, based on dockside interview data collected during the previous four seasons in Area 7. The sites will also represent diverse access locations throughout Area 7. Based on these criteria, the four sample-frame sites will consist of the following access locations: Washington Park Ramp, Bellingham Ramp, Cornet Ramp, and Friday Harbor Marina on San Juan Island.

Size measures will be estimated for each site in our sample frame via complete daily effort counts recorded by samplers stationed at each of the four sampled sites on a subset of sample days (i.e., number of boats and anglers returning to the ramp from dawn to dark). From these dockside effort data, we will determine the proportion of anglers accessing the fishery at each of the four sampled sites relative to the total number of anglers summed across the four sampled sites (size measures will sum to 1 across the four sites in the sample frame). Following an adjustment to scale sample-frame estimates of catch and effort to fishery-total estimates (described below), parameter values will be expanded to stratum totals. Depending on the proportion of effort contained in the sample frame (as determined through sampling early in the fishery), the variability in size measures observed for the sample frame, and the availability of resources, we may opt to staff all sample-frame sites for all selected sample days during the season (i.e., we will obtain a census of catch and effort for sites in our sample frame on scheduled sample days).

Aerial surveys.—In order to obtain fishery-wide parameter values, we will collect the data necessary to expand sample-frame estimates to “never-sampled” (i.e., out of the frame) access sites and thus the total fishery. Thus, on a subset of randomly selected days where dockside sampling is scheduled ($n = 4$ target per month), we will also conduct an aerial survey to estimate total fishing effort for the entire CRC area (i.e., including effort originating from never-sampled sites and those that are in our dockside frame). While survey days will be randomly chosen, flight times will be scheduled in order to coincide with peak (and relatively stable) periods of angler activity. This flight will provide an instantaneous aerial effort count (i.e., number of boats, b_i) that can then be expanded to a fishery-wide total (E_i^{tot}) based on the activity profile estimated for that particular day; i.e., aerial counts will be expanded based on the proportion of anglers fishing on a given day that were active during the aerial survey, P .

$$(1) \quad E_i^{tot} = b_i / P_i$$

where,

E_i^{tot} = the total fishing effort on day i ;

b_i = the number of boats enumerated in the aerial survey on day i ;

P_i = the proportion of anglers that were active during the aerial survey on day i ,

and where P_i is estimated number of anglers active in the aerial survey area divided by the total number

of anglers interviewed as follows,

$$P_i = \frac{a_i}{A_i},$$

where,

a_i = the number of anglers that were active in the aerial survey area on day i and;

A_i = the total number of anglers surveyed on day i .

Although dockside $CPUE$ estimates for a particular day could be used in conjunction with this total effort estimate to estimate C_{tot} for that same day (e.g., as was used for the aerial-access design approach implemented in Volstad *et al.* 2006), we will focus aerial surveys only on obtaining an accurate estimate of season-wide sampling fraction, f , due to reasons discussed in WDFW 2008b. We will fly on fewer occasions (than the previously-discussed aerial-access method would require) and instead use aerial effort estimates (E_i^{tot}) in conjunction with dockside effort estimates (E_i^{ds}) to estimate a season-wide sampling fraction, f , for converting dockside Chinook encounters and effort estimates into fishery-wide totals (C_{tot} and E_{tot}). The ratio of total effort to sample-frame estimate, f , is as follows:

$$(2) \quad f = \frac{\sum_{i=1}^n E_i^{ds}}{\sum_{i=1}^n E_i^{tot}},$$

Accordingly, for days when no aerial survey is conducted, the daily dockside estimates of catch (C_j^{tot}) and effort (E_j^{tot}) will be expanded to fishery total values by f as follows, respectively,

$$(3) \quad C_j^{tot} = \frac{C_j^{ds}}{f} \text{ and } E_j^{tot} = \frac{E_j^{ds}}{f}.$$

and then the usual stratum- and season-total estimation procedure will be followed. Thus, the design relies on both dockside sampling (the primary emphasis) aerial effort surveys (auxiliary information) to achieve total-fishery parameter estimation. This approach is similar to Canada-DFO's use of aerial-access sampling to estimate recreational fishery statistics in the Strait of Georgia to the north of Area 7 (this survey and its estimators has undergone rigorous theoretical review in recent years; see Dauk 2001 for details).

Assumptions

For this approach to yield unbiased estimates of catch and effort, a number of assumptions must be met. First, the usual Murthy-design assumptions apply and are,

- For sites contained in the sample, access-site size measures are accurately estimated and reflect proportional differences in catch landed across sites.
- $CPUE$ does not differ between sampled and non-sampled sites.
- All anglers are interviewed and accurately report catch and encounters.

Second, by adding the aerial-access based sampling fraction to our calculations, we also assume the following:

- The relative proportion of effort originating from sites within and outside of our sample frame does not differ between fair weather (i.e., when flight is possible) and poor weather days (i.e., when aerial surveys cannot be done).
- All boats that are actively fishing are accurately counted (e.g., boats are neither missed nor double counted)
- Boat ingress and egress rates are equal.
- Anglers accurately report their periods of fishing activity.
- The relative proportion of effort originating from sampled and un-sampled sites does not differ between weekday and weekend days.

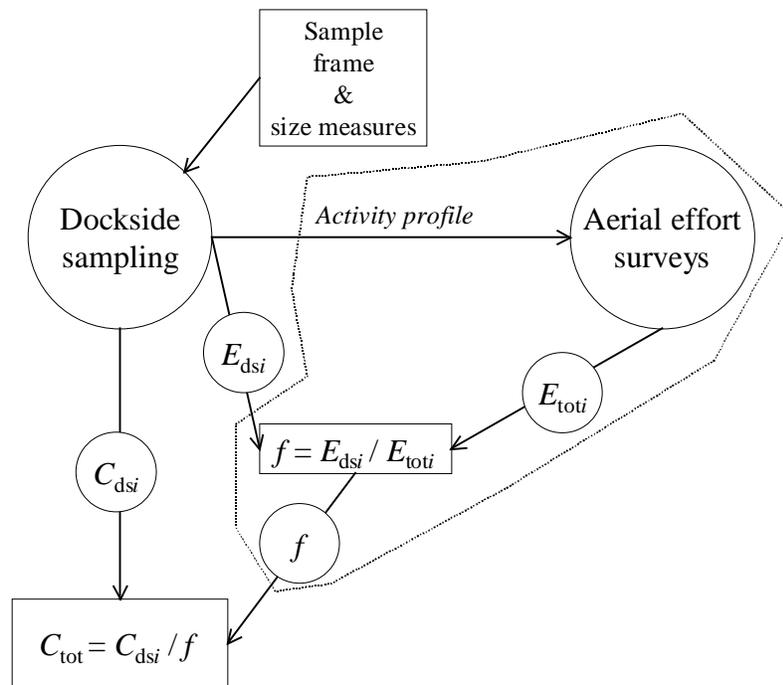


Figure 7-2. A schematic of the Area-7 sampling plan demonstrating the relationship among sampling components and estimators. Note that the dockside interview element used to expand instantaneous aerial boat counts to daily totals (i.e., the ‘*Activity profile*’, based on trip start and end time reports) is not used in sample frame-only catch and effort estimation. Features contained in the dashed polygon are estimated for paired aerial-access sample days only; dockside sampling will occur on all scheduled sample days.

Estimates of Total Encounters

We will estimate total Chinook encounters in the Area 7 winter selective Chinook fishery using the bias-corrected approach developed by Conrad and McHugh (2008). Briefly, with the Conrad and McHugh (2008) method, Chinook encounters are estimated by dividing the estimate of legal-marked Chinook harvest by the estimated proportion of the fishable Chinook population that is of legal size and marked. Given that our former “Method 2” approach (e.g., WDFW 2008a) yields negatively biased estimates if anglers release any of the legal-marked Chinook they encounter, Conrad and McHugh estimated a “correction” factor to account for this phenomenon and incorporated it into their estimator. Applying

Conrad and McHugh's (2008) approach within the design proposed in **Figure 7-1**, we would estimate total Chinook encounters by dividing the estimate of legal-marked Chinook harvest (obtained via aerial-access creel surveys) by the estimated proportion of the fishable Chinook population that is of legal size and marked (obtained via test fishing data).

Test Fishing

WDFW will operate one test boat in Area 7 to collect encounter rate and mark rate information during the winter selective Chinook fishery. The crew will consist of two WDFW technicians fishing with one rod each. The test boat will fish approximately five days per week (weather permitting). For each hook-up, the encounter number, time sampled, species, mark status, and DNA vial number (if applicable) will be recorded. Samplers will collect scales, fork lengths, and total lengths on all Chinook brought on board. Legal-size Chinook are 22 inches (56 cm) total length and larger, while sublegal-size Chinook are less than 22 inches total length. Samplers also will use scissors to remove a 1-cm² piece of the dorsal fin for DNA analysis. All fish will be handled carefully and immediately released. The test boat will operate in areas where sport and test catches would be high enough to warrant test fishing. Based on the input of the WDFW and NWIFC biometricians, we will work to achieve recommended sample sizes of Chinook encounters and acceptable precision levels for the mark rate estimates.

Charter Vessels

We will include charter vessels in our aerial-access creel estimates for the Area 7 winter mark-selective Chinook fishery. The combination of charter effort proportions (very small) and CPUE ratios (relatively high) in Area 7 suggests that pooling causes negligible (<3%) bias (McHugh 2009).

Voluntary Trip Reports from Private Vessels

Additional information on adipose mark rates and the percentage of Chinook that are legal size (22 inches and larger) versus sublegal size (less than 22 inches) will be obtained from Voluntary Trip Reports (VTR's) submitted by private-boat anglers during the mark selective Chinook fishery in Area 7.

Anglers will be asked to record on the VTR forms the date, number of anglers, target species, CRC Area, each Chinook or coho hooked, whether the fish was kept or released, species (if they positively identified the fish), total length to the nearest 1/8th inch, and whether the fish was adipose fin-clipped or not clipped.

We will estimate the mark rates of legal-size and sublegal-size Chinook via calculating the average mark rate from VTR's. We will calculate the proportion of Chinook that were legal-size and marked, legal-size and unmarked, sublegal-size and marked, and sublegal-size and unmarked. We will then compare VTR results with results from the test fishery in Area 7.

We will take several measures to help ensure the success of our VTR program. First, samplers will distribute our new and improved, user-friendly VTR form that is easier for anglers to complete compared to the old VTR form. Samplers will maximize the distribution of VTRs by handing out VTRs as anglers launch, and collecting the VTRs as anglers exit the fishery. Additionally, samplers will provide participants with a brochure describing the intent of VTRs and their significance to fishery monitoring, and answer VTR-related questions. To increase the response rate, participants are given three options for returning completed VTRs to WDFW: hand-delivering them to samplers, placing them in on-site drop boxes, or sending them via U.S. mail (pre-paid); if they are unsuccessful (i.e., no encounters occurred [harvested or released]) on their trip, the VTR samplers will request that participants keep their forms for future trips.

Reporting Schedule

A final report will be written and distributed by November 30, 2014, with a full post-season analysis of all data collected in the 2013-14 Area 7 winter selective Chinook fishery.

Sampling Rates and Staffing Levels

WDFW intends to meet or exceed the 20% sample rate goal defined for all selective Chinook fisheries via increased staffing levels as compared to non-selective fisheries. **Table 7-1** shows staffing levels needed to implement the proposed intensive monitoring of the selective Chinook fishery in Area 7.

Table 7-1: Number of Additional Staff Required for Monitoring the Selective Chinook Fishery in Area 7, December 1, 2013 through April 30, 2014.

Month	Area 7 Dockside Samplers	Area 7 Test Boat Staff (1 Boat)
Dec	4	2
Jan	4	2
Feb	4	2
Mar	4	2
April	4	2

April 11, 2013

**Winter Mark-Selective Sport Fishery
Areas 8.1 & 8.2
2013-2014**

The Northwest Treaty Tribes and the Washington Department of Fish and Wildlife (WDFW) have reached agreement to implement mark-selective recreational fishing in Areas 8.1 and 8.2 during the period November 1, 2013, through April 30, 2014. The fishery will be implemented consistent with management objectives defined by the co-managers' Puget Sound Chinook Harvest Management Plan (March, 2004), the WDFW-Tulalip management plan for hatchery origin fish (2005 Memorandum of Understanding), and established principles concerning the allocation of harvestable salmon and the exercise of treaty rights. The co-managers will seek to minimize or eliminate any unintended effects of this fishery on individual treaty fisheries, including dislocation and/or disruption. Therefore, treaty fisheries will not be modified in order to accommodate this mark-selective fishery.

The co-managers further agree that:

- Total encounters of legal-sized Chinook will be estimated through a sampling and monitoring program (Attachment A). If at any time during the fishery total legal-sized encounters estimated from this program are expected to exceed the preseason forecasted level of 3,456 Chinook (FRAM 1213) by more than 10%, the parties will consider modification of the fishery to control impacts;
- Mark-selective fishing will be limited to the period from November 1 through April 30; and
- Fishing will remain closed in that portion of Area 8.2 in Tulalip Bay east of a line from Mission Point to Hermosa Point.

Fishery Intent

This fishery represents the seventh year of experience using mark-selective Chinook regulations in these marine waters during the winter recreational fishery. The purpose of the fishery is to provide recreational fishing opportunity directed at hatchery Chinook salmon.

Data Needs for Evaluating the Fishery

Sampling and monitoring programs implemented with this fishery are intended to provide information necessary to maintain current estimates of the encounter rates and stock composition of marked and unmarked Chinook salmon so that future projections of the impacts of this fishery will be as accurate as possible. The sampling program also is necessary to comply with obligations under the Pacific Salmon Treaty, including the obligation to sample for coded-wire tags (CWT). Prior to the 2014-2015 season, WDFW and the tribes will jointly review and analyze available results of the sampling and monitoring program for this fishery and make any necessary changes to the calibration of the fishery assessment model.

WDFW will carry out the monitoring and sampling program described in Attachment A, employing on-the water as well as shore-based surveys and sampling techniques, with the intention of collecting data that will form the basis of post-season analyses and evaluation of performance. During the conduct of this fishery WDFW will maintain sampling rates in areas 5-13 at levels sufficient to meet the obligation to adequately sample for CWT and other biological information. This monitoring, sampling and program will be a part of the co-managers' preseason fishing plan document.

These monitoring and sampling programs are designed to provide data to estimate the following parameters:

- the mark rate in the fishery - marked and unmarked encounters will be estimated by both on-water and shore-based programs;

- the incidence of partial adipose clips - estimated by both shore-based and on-water programs.
- the number of fish retained or landed - marked and unmarked fish will be estimated using a shore-based program, including CWT and scale-age sampling;
- the number of unmarked fish released - estimated by shore-based and on-water programs;
- the number of unmarked fish retained - estimated by a shore-based program and compared to enforcement program estimates;
- the number of marked fish released - estimated by a shore-based program in conjunction with on-water mark rate encounter estimates;
- the number of the chinook encounters that are of sub legal size – estimated by shore-based and on-water programs;
- the stock composition of the mortalities – estimated by CWT and DNA;
- estimates of marked and unmarked mortalities of double-index tagged (DIT) and other CWT stocks.

Reports

A preliminary post-season report will be written and distributed by November 30, 2014, with a full post-season analysis of all data collected in the 2013-14 Areas 8-1 and 8-2 winter selective Chinook fishery.

Data Needs for Post-Season Estimation of Stock-Specific Unmarked Fish Mortalities

The co-managers agree to implement this fishery with the understanding that the capability to estimate stock-specific unmarked fish mortalities is preserved. Methods for estimating unmarked mortalities of DIT CWT stocks in each catch reporting area within the Area 8.1 & 8.2 mark-selective Chinook fishery will conform to the recommendations of the Selective Fisheries Evaluation Committee of the Pacific Salmon Commission unless the co-managers agree to use alternative methods. WDFW will be responsible for reporting the necessary fishery information and data to the Pacific States Marine Fisheries Commission that allows these estimates to be generated.

In the postseason report (see previous section), WDFW will provide estimates of unmarked mortalities, by DIT group (by stock and age), in each year's Area 8.1 & 8.2 mark-selective fishery. Unmarked DIT recoveries will be estimated based on estimated recoveries of marked DIT fish and assuming:

1. DIT release numbers provide a reasonable estimate of the unmarked to marked fish ratio (it is assumed that the marked to unmarked ratio in this fishery is not affected by other selective fisheries); and,
2. the mortality rate for Chinook caught and released in the fishery (sfm) is known.

The assumption that the DIT release numbers provide a reasonable estimate of the unmarked to marked fish ratio will be evaluated through post-season comparisons of DIT tag groups. A design for these comparisons will be developed jointly by the co-managers following the method used in analyzing coho DIT groups.¹ All information from this fishery necessary for making these comparisons will be included in the post-season report.

Estimates of total fishery related mortalities, including the total exploitation rate or the Southern US exploitation rate, that represent the co-managers' management objectives for Puget Sound Chinook management units, will be made by combining the mortality estimate for the Area 8.1 & 8.2 mark-selective fishery with mortality estimates in non-selective and other mark-selective fisheries. To ensure that all information necessary to make these estimates is collected, plans for sampling and monitoring of this selective fishery, as well as other mark-selective fisheries, will be included as a component of the co-

¹ *Analysis of coho salmon double-index tag (DIT) data.* 2003

managers' annual pre-season agreement.

Attachment A

MONITORING THE AREAS 8-1 AND 8-2 WINTER SELECTIVE CHINOOK FISHERY, NOVEMBER 1, 2013 THROUGH APRIL 30, 2014

The WDFW Puget Sound Sampling Program will monitor the mark-selective Chinook fishery in Areas 8-1 and 8-2 from November 1, 2013 through April 30, 2014 via comprehensive data collection strategies consisting of dockside creel surveys, on-the-water surveys, and voluntary trip reports, as shown in **Figure 8-1** and detailed below.

The monitoring plan shown in **Figure 8-1** will enable us to estimate the critical data parameters necessary for evaluating pilot mark-selective fisheries as previously identified by the co-managers (e.g., WDFW and NWIFC 2009), including: *i*) the mark rate of the targeted Chinook population (based on VTR and dockside angler interview data), *ii*) fishery-total angling effort and Chinook salmon encounters (harvest + releases) and mortalities (by size/mark-status class) (e.g., from a combination of dockside sampling data and VTRs), *iii*) the coded-wire tag (CWT)-based stock composition of marked and unmarked Chinook mortalities (from dockside sampling data), and *iv*) fishery-total mortality of marked and unmarked double index tag (DIT) CWT stocks (once post-season CWT sample rates are estimated). In addition, we will acquire and analyze relevant data characterizing other aspects of the pilot fishery, including descriptors of fishing success (catch [landed Chinook] per unit effort, CPUE), the length and age composition of encountered and/or landed Chinook, and the overall intensity of our sampling efforts.

Dockside Sampling

We will implement creel surveys during the winter mark-selective Chinook fishery in Areas 8-1 and 8-2 using a modified (scaled back) version of the Murthy estimator method (Murthy 1957, Cochran 1977), in order to produce total-Area estimates of catch and effort with accompanying estimates of variance. Our modified-Murthy approach, as detailed below, will incorporate data from intensive dockside sampling days, combined with site size measures obtained from on-the-water surveys, to produce total-Area catch and effort estimates with variances.

Dockside Sample Design

Sampling strata will be divided into 'weekday' (Monday through Thursday) and 'weekend' (Friday, Saturday, and Sunday) days. For each two-week period of the fishery, we will randomly select $n=2$ sample days from the $N=8$ possible weekday stratum days (distributed so there is at least one weekday sampled in each of the two weeks). For the weekend stratum (Friday through Sunday), and we will select $n=2$ sample days out of the $N=3$ possible weekend days each week. In total, we will sample 12 site-days every two weeks using the reduced Murthy creel survey design.

Samplers will be stationed at two ramps on each of the selected sampling days. Sites in our sample frame will be selected for sampling via our weighted-random site selection process (e.g., probability proportional to size, using the most current boat survey data). At the beginning of the season, sites will be selected based on the site size measures determined last year for the equivalent period in the fishery. Thereafter, we will determine the weights of Areas 8-1 and 8-2 sites based on the most recently available in-season boat survey data to enable the weighted random site selection process.

Samplers will achieve 100% sampling coverage at the assigned ramps, with shifts lasting approximately from dawn until dusk (will be adjusted as needed according to changing day lengths throughout the season), in order to intercept all boats. All anglers and fish exiting the fishery through the sampled site will be counted. Any boats that are missed at the sampled site will be counted and recorded on the sampling forms.

In addition, we will sample multiple ramps in Areas 8-1 and 8-2 on the remaining days in the weekday stratum, using baseline-level sampling to ensure that we achieve the 20% sample rate goal.

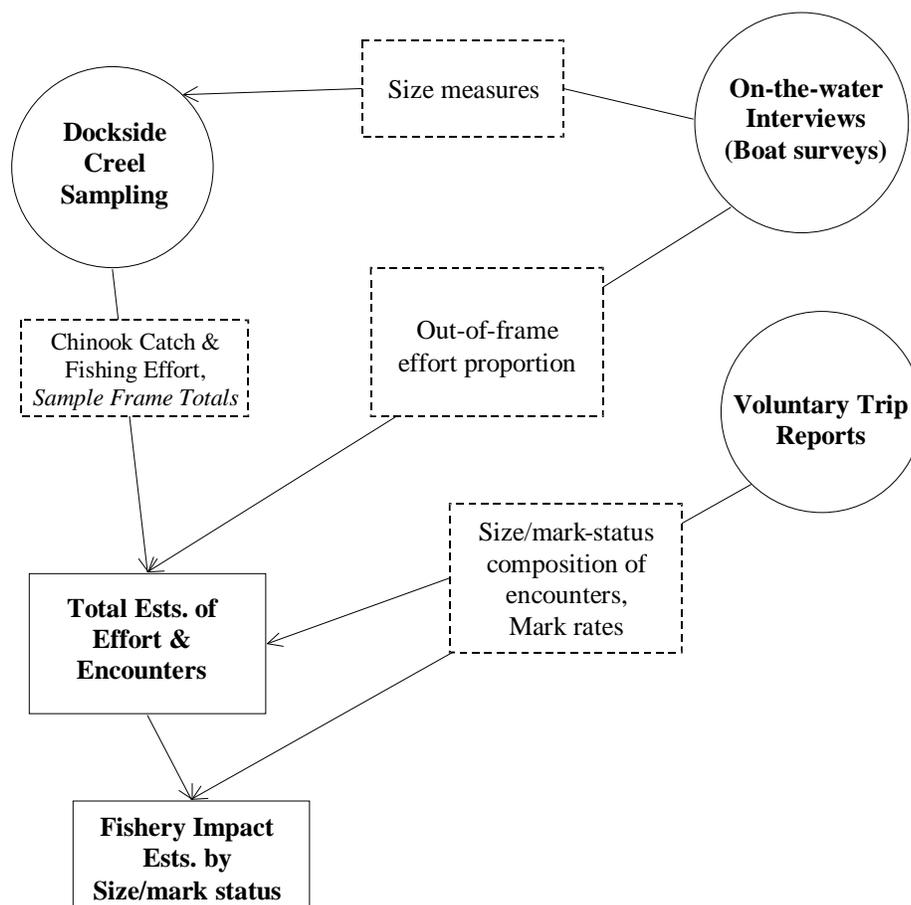


Figure 8-1. Conceptual diagram of the monitoring plan proposed for the **Areas 8-1 and 8-2 winter** mark-selective Chinook season. Circles represent discrete sampling activities, dashed boxes represent parameters that are estimated using data from a given activity, and solid boxes depict key quantities estimated from the comprehensive plan. ‘Encounters’ includes both harvested and released Chinook salmon.

On-the-water Surveys

On-the-water surveys (boat surveys) will be employed to estimate the percent of effort from sites in our sample frame versus sites outside of the frame (e.g., never-sampled sites). Boat surveys will cover the entire area to pick up effort from all launch sites. We will ask boat occupants where they will tie up or exit the fishery rather than where they launched. We will calculate the size measures of Areas 8-1 and 8-2 sites based on the most recently available boat survey data.

We will conduct boat surveys in Areas 8-1 and 8-2 to update site size measures throughout the season. In addition, on-the-water surveys will be conducted whenever anything changes in the fishery that could affect effort patterns (e.g., if launch sites open or close or if adjacent catch areas open or close).

Harvest and Effort Estimates

The harvest and effort observed at the Murthy-based sampled sites in Areas 8-1 and 8-2 will be expanded to all access sites (based on estimated site size measures) to estimate total harvest for the day. Sample data will be combined and expanded to create stratum estimates of harvest and effort with variances.

To generate weekly catch and effort estimates for Areas 8-1 and 8-2, the four-day “weekday stratum” estimate for Monday-Thursday of each week (based on $n=2$ days sampled out of $N=8$ available weekdays per two-week period) will be added to the “weekend stratum” (Friday-Sunday) estimate for the particular week (based on $n=2$ days sampled out of $N=3$ available weekend days per week). The eight-day weekday estimates for each two-week period will be split evenly between individual weeks in the two-week block to enable weekly estimates, with variances computed using the $n=2$ days sampled out of $N=8$ available weekdays in the appropriate variance equation.

Assumptions

Harvest and effort estimates are based on the following assumptions:

- Boat surveys provide an unbiased estimate of the proportion of anglers accessing fisheries from sites in our sample site frame and sites outside the frame.
- The proportion of total effort accessing the fishery at site A represents the proportion of total catch landed at site A.
- All anglers exiting at a sampled site are interviewed and all anglers accurately report their harvest. If any boats are missed they are counted and catch and effort estimates are expanded appropriately.
- CPUE does not differ significantly between sites in our sample frame and sites outside our sample frame.

Estimates of Total Encounters

We will estimate total Chinook encounters in the Areas 8-1 and 8-2 winter selective Chinook fishery using the bias-corrected approach developed by Conrad and McHugh (2008). Briefly, with the Conrad and McHugh (2008) method, Chinook encounters are estimated by dividing the estimate of legal-marked Chinook harvest by the estimated proportion of the fishable Chinook population that is of legal size and marked. Given that our former “Method 2” approach (e.g., WDFW 2008a) yields negatively biased estimates if anglers release any of the legal-marked Chinook they encounter, Conrad and McHugh estimated a “correction” factor to account for this phenomenon and incorporated it into their estimator. Applying Conrad and McHugh’s (2008) approach within the design proposed in **Figure 8-1**, we would estimate total Chinook encounters by dividing the estimate of legal-marked Chinook harvest (obtained via creel surveys) by the estimated proportion of the fishable Chinook population that is of legal size and marked (obtained via VTRs).

CWT Sampling

We will sample for coded wire tags (CWT) in the Areas 8-1 and 8-2 winter mark-selective Chinook fishery as part of our dockside angler interviews. The objective is to provide stock specific estimation (by hatchery and brood year) of population parameters, such as fishery contribution and marine survival, as part of the coast-wide CWT program. The sample rate goal for CWT recovery is 20% in mark-selective Chinook fisheries. During dockside interviews samplers will inspect landed Chinook and coho salmon for the presence of coded-wire tags using wand CWT detectors, and snouts will be collected from all fish containing CWTs. For post-season analyses and reporting, CWT data will be used to estimate stock composition by hatchery and brood year. Total unmarked double index tagged (DIT) mortality estimates will be produced post-season.

Voluntary Trip Reports

Information on adipose mark rates and the percentage of Chinook that are legal size (22 inches [56 cm])

total length and larger) versus sublegal size (less than 22 inches) will be obtained from Voluntary Trip Reports (VTR's) submitted by private-boat anglers during the mark selective Chinook fishery in Areas 8-1 and 8-2. Anglers will be asked to record on the VTR forms the date, number of anglers, target species, CRC Area, each Chinook or coho hooked, whether the fish was kept or released, species (if they positively identified the fish), total length to the nearest 1/8th inch, and whether the fish was adipose fin-clipped or not clipped.

Several measures will be taken to expand and ensure the success of our VTR program in Areas 8-1 and 8-2. First, samplers will distribute our new and improved, user-friendly VTR form that is easier for anglers to complete compared to the old VTR form. Samplers will maximize the distribution of VTRs by handing out VTRs as anglers launch, and collecting the VTRs as anglers exit the fishery. Additionally, samplers will provide participants with a brochure describing the intent of VTRs and their significance to fishery monitoring, and answer VTR-related questions. To increase the response rate, participants are given three options for returning completed VTRs to WDFW: hand-delivering them to samplers, placing them in on-site drop boxes, or sending them via U.S. mail (pre-paid); if they are unsuccessful (i.e., no encounters occurred [harvested or released]) on their trip, the VTR samplers will request that participants keep their forms for future trips.

We will estimate the mark rates of legal-size and sublegal-size Chinook via calculating the season average mark rate from VTR's. We will calculate the proportion of Chinook that were legal-size and marked, legal-size and unmarked, sublegal-size and marked, and sublegal-size and unmarked.

Reporting Schedule

A final report will be written and distributed by November 30, 2014, with a full post-season analysis of all data collected in the 2013-13 Areas 8-1 and 8-2 winter selective Chinook fishery.

Sampling Rates and Staffing Levels

Similar to the previous four years of the pilot study in Areas 8-1 and 8-2, WDFW will continue to meet or exceed sampling rates for Chinook (sample rate goal of 20%) during the Areas 8-1 and 8-2 winter fishery time period. We will maintain increased staffing levels as compared to non-selective fisheries. **Table 8-1** shows staffing levels needed to implement the 2013-14 monitoring plan for the winter selective Chinook fishery in Areas 8-1 and 8-2.

Table 8-1: Number of Additional Staff Required for Monitoring the Winter Selective Chinook Fishery in Areas 8-1 and 8-2, November 1, 2013 through April 30, 2014.

Month	Area 8-1 Dockside Samplers	Area 8-2 Dockside Samplers
Nov	2	2
Dec	2	2
Jan	2	2
Feb	2	2
Mar	2	2
April	2	2

April 11, 2013

2013-2014 Area 9 Winter Period Mark-Selective Sport Fishery

The Northwest Treaty Tribes and the Washington Department of Fish and Wildlife (WDFW) have reached agreement to implement a Chinook salmon mark-selective fishery in Area 9, during the winter period from November 1 -30, 2013, and January 16 to April 15, 2014. This fishery will be implemented consistent with management objectives defined by the co-managers' Puget Sound Chinook Harvest Management Plan (April, 2010), the WDFW-Tulalip management plan for hatchery origin fish (2005 Memorandum of Understanding), and established principles concerning the allocation of harvestable salmon and the exercise of treaty rights. The co-managers will seek to minimize or eliminate any unintended effects of this fishery on individual treaty fisheries, including dislocation and/or disruption. Therefore, treaty fisheries will not be modified in order to accommodate this mark-selective fishery.

For the 2013-14 season, the co-managers further agree that:

- Total encounters of marked and unmarked, legal and sub-legal-sized Chinook will be estimated through a sampling and monitoring program (Attachment A). If at any time during the fishery total legal-sized encounters estimated from this program are expected to exceed the preseason forecasted level of 1,842 Chinook (FRAM 1213) by more than 10%, then the fishery will be modified to control impacts on stocks of concern; and
- All subarea closures that are part of the co-managers' 2013-14 fisheries agreement will be in effect in Area 9 and during the time period that the agreed Chinook mark-selective fishery is being conducted.

Fishery Intent

The winter period mark-selective fishery in Area 9 has been implemented to provide recreational fishing opportunity directed at hatchery Chinook salmon. Sampling and monitoring programs implemented with this fishery are intended to provide information necessary to evaluate and plan potential future Chinook mark-selective fisheries. The sampling program will provide a basis for determining if the data needed to estimate critical management and analysis parameters can be collected and if the sample sizes needed to produce these estimates with agreed levels of precision can be realistically obtained. Prior to the 2014-15 season, WDFW and the tribes will jointly review and analyze results of the sampling and monitoring program for these fisheries to evaluate the effectiveness at achieving the intended objectives.

Data Needs for Evaluating the Fishery

Monitoring, sampling and reporting programs are being implemented by WDFW for the purpose of providing data necessary to estimate the impact of these mark-selective fisheries and to support the evaluation of future mark-selective fisheries.

WDFW will carry out the monitoring, sampling and reporting program described for the Area 9 winter Chinook mark-selective fishery in Attachment A. On-water as well as shore-based surveys and sampling techniques will be employed, in addition to an intensive voluntary trip report program, with the intention of collecting data that will form the basis of post-season analyses and evaluation of performance. During the conduct of these fisheries WDFW will maintain sampling rates in areas 5-13 at levels equivalent to or greater than rates achieved in the most recent two-years. This monitoring, sampling and reporting program is part of the WDFW Puget Sound monitoring and sampling operational plan documented with the co-managers' preseason fishing plan.

These monitoring and sampling programs are designed to provide data to estimate the following parameters:

- the mark rate in the fishery - marked and unmarked encounters will be estimated by both on-water and shore-based programs;
- the number of fish retained or landed - marked and unmarked fish will be estimated using a shore-based program, including CWT and scale-age sampling;
- the number of unmarked fish released - estimated by shore-based and on-water programs;
- the number of unmarked fish retained - estimated by a shore-based program;
- the number of marked fish released - estimated by a shore-based program in conjunction with on-water mark rate encounter estimates;
- the number of the chinook encounters that are of sub legal size - estimated by shore-based and on-water programs;
- the stock composition of the mortalities – estimated by CWT data collected in the shore-based sampling program;
- estimates of marked and unmarked mortalities of double-index tagged and other CWT stocks.

Post season report

A preliminary post-season report will be written and distributed by November 30, 2014, containing a full post-season analysis of all data collected in the 2013-14 Area 9 winter selective Chinook fishery.

Data Needs for Post-Season Estimation of Stock-Specific Unmarked Fish Mortalities

The co-managers agree to implement these fisheries with the understanding that the capability to estimate stock-specific unmarked fish mortalities is preserved. Methods for estimating unmarked mortalities of double-index tagged CWT stocks within this mark-selective chinook fishery will be determined jointly by co-managers, considering recommendations of the Selective Fisheries Evaluation Committee of the Pacific Salmon Commission. WDFW will be responsible for reporting the necessary fishery information and data to the Pacific States Marine Fishery Commission that allows these estimates to be generated.

In the postseason report (see previous section), WDFW will provide estimates of unmarked mortalities, by DIT group (by stock and age) and area. Unmarked DIT recoveries will be estimated based on estimated recoveries of marked DIT fish and assuming:

1. DIT release numbers provide a reasonable estimate of the unmarked to marked fish ratio; and,
2. the mortality rate for Chinook caught and released in the fishery (sfm) is known.

The assumption that the DIT release numbers provide a reasonable estimate of the unmarked to marked fish ratio will be evaluated through post-season comparisons of DIT tag groups. A design for these comparisons will be developed jointly by the co-managers following the method used in analyzing coho DIT groups.¹ All information from this fishery necessary for making these comparisons is assumed to be included in the sampling design and will be included in the post-season report.

Estimates of total fishery related mortalities, including the total exploitation rate or the southern US exploitation rate, that represent the co-managers' management objectives for Puget Sound chinook management units, are made by combining mortality estimates in mark-selective fisheries with mortality estimates in non-selective fisheries. To ensure that all information necessary to make these estimates is collected, plans for sampling and monitoring of the winter selective fishery in Area 9, as well as other mark-selective and non-selective fisheries will be included as a component of the co-managers' annual pre-season agreement.

¹ *Analysis of coho salmon double-index tag (DIT) data. 2003*

MONITORING THE WINTER AREA 9 SELECTIVE CHINOOK FISHERY, NOVEMBER 2013 AND JANUARY 16 THROUGH APRIL 15, 2014

Overview

The WDFW Puget Sound Sampling Program will intensively monitor the proposed mark-selective Chinook fishery in Area 9 during November 2013 and from January 16 through April 15, 2014, using comprehensive data collection strategies consisting of dockside sampling, aerial surveys, test fishing, and voluntary trip reports, as detailed below. The proposed sample design is an aerial-access site design that was effective in producing in-season estimates during the previous three seasons in Areas 7 and 9 (e.g., WDFW 2009a and 2009b).

The aerial-based design differs from our usual Murthy estimator method (Murthy 1957; Cochran 1977) primarily in terms of the approach used for assessing fishery-wide effort. This design is particularly suited for large geographic areas such as Area 9 during the winter season. The design is a "Modified Murthy" approach that will incorporate aerial survey-based total effort counts, rather than the approach in which on-the-water surveys are conducted to assess proportions of effort accessing the fishery from sampled and non-sampled sites. Due to the large geographic expanse of Area 9, and because of expected adverse conditions on the water during winter time, we determined that the usual boat-based approach for assessing proportions of effort (site size measures) would be riskier (to both the success of the study and safety of field personnel) and far more costly than the aerial-based Modified Murthy approach described below.

Sampling Objectives

We will implement the comprehensive monitoring plan depicted in **Figure 9-1** to estimate total *i*) Chinook encounters (*C*; retained and released by mark status) and *ii*) angler effort (*E*) due to pilot Area-9 winter mark-selective Chinook fishery, and to evaluate additional key selective fishery sampling objectives, including: *iii*) quantify the size and mark-status composition of the fishable Chinook population via test fishing; *iv*) recover CWTs and assessing the impact of the selective fishery on DIT groups; *v*) estimate the age composition of and test fishery- and landed dockside-sampled Chinook; and *vi*) estimate total fishery impacts (encounters and mortality) and comparing these values to pre-season modeling (FRAM) expectations.

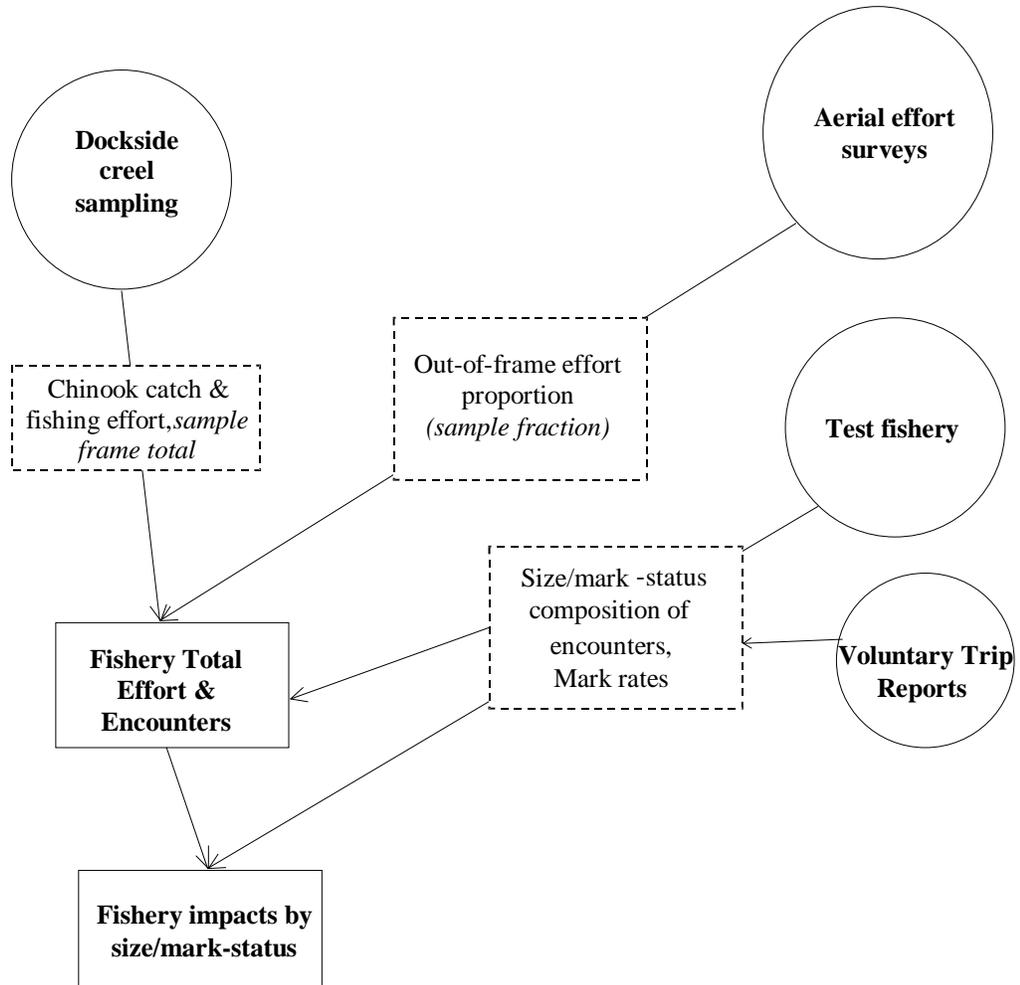


Figure 9-1. Conceptual diagram of the monitoring plan proposed for the **Area 9 winter** mark-selective Chinook fishery season. Circles represent discrete sampling activities, dashed boxes represent parameters that are estimated using data from a given activity, and solid boxes depict key quantities estimated from the comprehensive plan. ‘Encounters’ includes both harvested and released Chinook salmon.

Design Overview

We will achieve our Area-9 objectives using a complemented aerial–access design (**Figure 9-1** and **9-2**), whereby:

- i) Total encounters (C_{ds} , separate estimates for landed and released) and effort (E_{ds}) will be estimated for all anglers at sampled access sites (e.g., sites in our dockside sample frame; see below) using completed-trip interview data collected through a multistage sample design.
- ii) A sampling fraction (f) for expanding sample-frame estimates of encounters and effort (C_{ds} and E_{ds}) to fishery-wide totals (C_{tot} and E_{tot}) will be estimated using data from paired aerial and dockside effort-sampling events.

Dockside sampling— Completed-trip interview data will be collected using a stratified three-stage cluster sample design. For each two-week temporal stratum throughout the fishery, the three-stage cluster sample design will be implemented as follows,

- Sample days will be selected (randomly) from weekday (Mon-Thurs, $n = 2$ out of 8 possible weekday days for each two week interval) and weekend (Fri-Sun, $n = 2$ out of 3 possible weekend days for each week) strata at the first stage.

- At the second stage, all access sites in the sample site frame ($n = 4$ sites) will be selected for sampling (i.e., this will be a census of the four dockside sample-frame sites; probability proportional to 1 for site selection),
- All anglers accessing the fishery at a particular site (the clusters) will be interviewed at the third stage.

As in other selective fishery surveys, on fishing trip duration information (start and end times), the number of anglers and boats fishing, and total salmon encounters (retained and released) by species and mark status, will be collected during post-trip dockside interviews. These data, in conjunction with site size measures determined for the sites in the dockside sample frame, will allow estimation of C_{ds} and E_{ds} for the entire dockside sample frame using the Murthy total estimator (Murthy 1957; Cochran 1977).

The sites included in the Area-9 dockside sample frame will be the four assumed highest-use access sites (two in northern Area 9 and two in southern Area 9), based on site size measure data collected during the previous season of the Area 9 winter selective Chinook fishery. The four sample-frame sites will likely consist of Port Townsend Ramp, Kingston Ramp, Everett Ramp, and Edmonds Ramp (or Mukilteo Ramp).

Size measures will be estimated for each site in our sample frame via complete daily effort counts recorded by samplers stationed at each of the four sampled sites on a subset of sample days (i.e., number of boats and anglers returning to the ramp from dawn to dark). These dockside effort data will be used to determine the proportion of anglers accessing the fishery at each of the four sampled sites relative to the total number of anglers summed across the four sampled sites (size measures will sum to 1 across the four sites in the sample frame). Following an adjustment to scale sample-frame estimates of catch and effort to fishery-total estimates (described below), parameter values will be expanded to stratum totals. Depending on the proportion of effort contained in the sample frame (as determined through sampling early in the fishery), the variability in size measures observed for the sample frame, and the availability of resources, we may opt to staff all sample-frame sites for all selected sample days during the season (i.e., *we will obtain a census of catch and effort for sites in our sample frame on scheduled sample days*).

Aerial surveys.—In order to obtain fishery-wide parameter values, we will collect the data necessary to expand sample-frame estimates to “never-sampled” (i.e., out of the frame) access sites and thus the total fishery. Thus, on a subset of randomly selected days where dockside sampling is scheduled ($n = 5$ target per month), we will also conduct an aerial survey to estimate total fishing effort for the entire CRC area (i.e., including effort originating from never-sampled sites and those that are in our dockside frame). While survey days will be randomly chosen, flight times will be scheduled in order to coincide with peak (and relatively stable) periods of angler activity. This flight will provide an instantaneous aerial effort count (i.e., number of boats, b_i) that can then be expanded to a fishery-wide total (E_i^{tot}) based on the activity profile estimated for that particular day; i.e., aerial counts will be expanded based on the proportion of anglers fishing on a given day that were active during the aerial survey, P_i .

$$(1) \quad E_i^{tot} = b_i / P_i$$

where,

E_i^{tot} = the total fishing effort on day i ,

b_i = the number of boats enumerated in the aerial survey on day i ,

P_i = the proportion of anglers that were active during the aerial survey on day i ,

and where P_i is estimated number of anglers active in the aerial survey area divided by the total number of anglers interviewed as follows,

$$P_i = \frac{a_i}{A_i},$$

where,

a_i = the number of anglers that were active in the aerial survey area on day i and;

A_i = the total number of anglers surveyed on day i .

Although dockside *CPUE* estimates for a particular day could be used in conjunction with this total effort estimate to estimate C_{tot} for that same day (e.g., as was used for the aerial-access design approach implemented in Volstad *et al.* 2006), we will focus aerial surveys only on obtaining an accurate estimate of season-wide sampling fraction, f , due to reasons discussed in WDFW 2008b. We will fly on fewer occasions (than the previously-discussed aerial-access method would require) and instead use aerial effort estimates (E_i^{tot}) in conjunction with dockside effort estimates (E_i^{ds}) to estimate a season-wide sampling fraction, f , for converting dockside Chinook encounters and effort estimates into fishery-wide totals (C_{tot} and E_{tot}). The ratio of total effort to sample-frame estimate, f , is as follows:

$$(2) \quad f = \frac{\sum_{i=1}^n E_i^{ds}}{\sum_{i=1}^n E_i^{tot}},$$

Accordingly, for days when no aerial survey is conducted, the daily dockside estimates of catch (C_j^{tot}) and effort (E_j^{tot}) will be expanded to fishery total values by f as follows, respectively,

$$(3) \quad C_j^{tot} = \frac{C_j^{ds}}{f} \text{ and } E_j^{tot} = \frac{E_j^{ds}}{f}$$

and then the usual stratum- and season-total estimation procedure will be followed. Thus, the design relies on both dockside sampling (the primary emphasis) aerial effort surveys (auxiliary information) to achieve total-fishery parameter estimation. This approach is similar to Canada-DFO's use of aerial-access sampling to estimate recreational fishery statistics in the Strait of Georgia to the north of Area 7 (this survey and its estimators has undergone rigorous theoretical review in recent years; see Dauk 2001 for details).

Assumptions

For this approach to yield unbiased estimates of catch and effort, a number of assumptions must be met. First, the usual Murthy-design assumptions apply and are,

- For sites contained in the sample, access-site size measures are accurately estimated and reflect proportional differences in catch landed across sites.
- CPUE does not differ between sampled and non-sampled sites.
- All anglers are interviewed and accurately report catch and encounters.

Second, by adding the aerial-access based sampling fraction to our calculations, we also assume the following:

- The relative proportion of effort originating from sites within and outside of our sample frame does not differ between fair weather (i.e., when flight is possible) and poor weather days (i.e., when aerial surveys cannot be done).
- All boats that are actively fishing are accurately counted (e.g., boats are neither missed nor double counted)
- Boat ingress and egress rates are equal.
- Anglers accurately report their periods of fishing activity.
- The relative proportion of effort originating from sampled and un-sampled sites does not differ between weekday and weekend days.

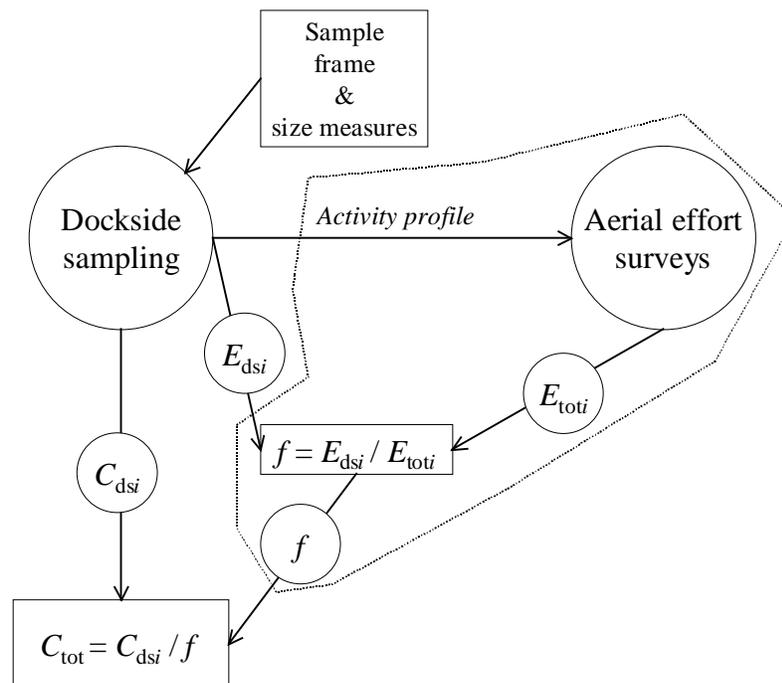


Figure 9-2. A schematic of the Area-9 sampling plan demonstrating the relationship among sampling components and estimators. Note that the dockside interview element used to expand instantaneous aerial boat counts to daily totals (i.e., the ‘*Activity profile*’, based on trip start and end time reports) is not used in sample frame-only catch and effort estimation. Features contained in the dashed polygon are estimated for paired aerial–access sample days only; dockside sampling will occur on all scheduled sample days.

Estimates of Total Encounters

We will estimate total Chinook encounters in the Area 9 winter selective Chinook fishery using the bias-corrected approach developed by Conrad and McHugh (2008). Briefly, with the Conrad and McHugh (2008) method, Chinook encounters are estimated by dividing the estimate of legal-marked Chinook harvest by the estimated proportion of the fishable Chinook population that is of legal size and marked. Given that our former “Method 2” approach (e.g., WDFW 2008a) yields negatively biased estimates if anglers release any of the legal-marked Chinook they encounter, Conrad and McHugh estimated a “correction” factor to account for this phenomenon and incorporated it into their estimator. Applying Conrad and McHugh’s (2008) approach within the design proposed in **Figure 9-1**, we would estimate total Chinook encounters by dividing the estimate of legal-marked Chinook harvest (obtained via aerial-access creel surveys) by the estimated proportion of the fishable Chinook population that is of legal size

and marked (obtained via test fishing data).

Dockside Fishing Method Question

During dockside interviews, samplers will record the predominant (based on time) angling method employed by the boat being interviewed, for the boats that successfully encountered Chinook. Responses will be recorded on the sampling form according to the following five fishing method categories:

1. Weight & Bait (W): Mooching or slow trolling with lead and herring/anchovy.
2. Downrigger Trolling (DR): Using either hardware or bait or any combination.
3. Jigging (J): Drifting, jerking pole up and down; for example using Buzz Bombs, Point Wilson Darts, or Crippled Herring.
4. Diver Trolling (DV): For example trolling with a Deep Six or a Pink Lady, using either hardware or bait or any combination.
5. Other (O): For example fly fishing, or trolling bucktails with or without weight.

The sampling supervisor will summarize the above information for anglers encountering Chinook and instruct the test boat samplers on which method to employ in order to adequately represent the fishing methods used by the recreational fleet.

Test Fishing

WDFW will operate one test boat in Area 9 to collect encounter rate and mark rate information during the winter selective Chinook fishery. The crew will consist of two WDFW technicians fishing with one rod each. The test boat will fish approximately five days per week (weather permitting). For each hook-up, the encounter number, time sampled, species, mark status, and DNA vial number (if applicable) will be recorded. Samplers will collect scales, fork lengths, and total lengths on all Chinook brought on board. Legal-size Chinook are 22 inches (56 cm) total length and larger, while sublegal-size Chinook are less than 22 inches total length. Samplers also will use scissors to remove a 1-cm² piece of the dorsal fin for DNA analysis. All fish will be handled carefully and immediately released. The test boat will operate in areas where sport and test catches would be high enough to warrant test fishing. Based on the input of the WDFW and NWIFC biometricians, we will work to achieve recommended sample sizes of Chinook encounters and acceptable precision levels for the mark rate estimates.

Charter Vessels

Similar to our approach applied during the winter 2011-12 season, charter vessel data will be included in Murthy estimates for the 2013-14 Area 9 winter mark-selective fishery. In a previous analysis of catch and effort data from the first two winter seasons in Area 9 (shared with NWIFC Biometrician, Bob Conrad), we determined that pooling charter and fleet data in the Murthy estimates will not significantly compromise estimate integrity in the Area 9 winter mark-selective fishery. In our analysis, the combination of charter effort proportions (very small) and CPUE ratios (relatively high) suggested that pooling will cause negligible (<3%) bias; therefore, we elected to include charter vessels in our Murthy estimate for the Area 9 winter fishery.

Voluntary Trip Reports

Information on adipose mark rates and the percentage of Chinook that are legal size (22 inches [56 cm] total length and larger) versus sublegal size (less than 22 inches) will be obtained from Voluntary Trip Reports (VTR's) submitted by private-boat anglers during the mark selective Chinook fishery in Area 9.

Anglers will be asked to record on the VTR forms the date, number of anglers, target species, CRC Area, each Chinook or coho hooked, whether the fish was kept or released, species (if they positively identified the fish), total length to the nearest 1/8th inch, and whether the fish was adipose fin-clipped or not clipped.

We will estimate the mark rates of legal-size and sublegal-size Chinook via calculating the average mark rate from VTR's. We will calculate the proportion of Chinook that were legal-size and marked, legal-size and unmarked, sublegal-size and marked, and sublegal-size and unmarked. We will then compare VTR results with results from the test fishery in Area 9.

We will take several measures to help ensure the success of our VTR program. First, samplers will distribute our new and improved, user-friendly VTR form that is easier for anglers to complete compared to the old VTR form. Samplers will maximize the distribution of VTRs by handing out VTRs as anglers launch, and collecting the VTRs as anglers exit the fishery. Additionally, samplers will provide participants with a brochure describing the intent of VTRs and their significance to fishery monitoring, and answer VTR-related questions. To increase the response rate, participants are given three options for returning completed VTRs to WDFW: hand-delivering them to samplers, placing them in on-site drop boxes, or sending them via U.S. mail (pre-paid); if they are unsuccessful (i.e., no encounters occurred [harvested or released]) on their trip, the VTR samplers will request that participants keep their forms for future trips.

Reporting Schedule

A final report will be written and distributed by November 30, 2014, with a full post-season analysis of all data collected in the 2013-14 Area 9 winter selective Chinook fishery.

Sampling Rates and Staffing Levels

WDFW intends to meet or exceed the 20% sample rate goal defined for all selective Chinook fisheries via increased staffing levels as compared to non-selective fisheries. **Table 9-1** shows staffing levels needed to implement the proposed intensive monitoring of the selective Chinook fishery in Area 9.

Table 9-1: Number of Additional Staff Required for Monitoring the Selective Chinook Fishery in Area 9, November 2013 and January 16 through April 15, 2014.

Month	Area 9 Dockside Samplers	Area 9 Test Boat Staff (1 Boat)
Nov	4	2
Jan (16-31)	4	2
Feb	4	2
Mar	4	2
April (1-15)	4	2

April 12, 2013

2013 Areas 9 & 10 Summer Period Mark-Selective Sport Fishery

The Northwest Treaty Tribes and the Washington Department of Fish and Wildlife (WDFW) have reached agreement to implement Chinook salmon mark-selective fisheries (MSFs) in Areas 9 and 10, for the period July 16 to August 31, 2013. These fisheries will be implemented consistent with management objectives defined by the co-managers' Puget Sound Chinook Harvest Management Plan (April, 2010), the WDFW-Tulalip management plan for hatchery origin fish (2012 Memorandum of Understanding), and established principles concerning the allocation of harvestable salmon and the exercise of treaty rights. The co-managers will seek to minimize or eliminate any unintended effects of this fishery on individual treaty fisheries, including dislocation and/or disruption. Therefore, treaty fisheries will not be modified in order to accommodate this mark-selective fishery.

The co-managers further agree that:

- WDFW will manage this fishery as a season, however, if in-season estimates indicate the estimated total encounters of legal-sized Chinook will exceed the forecast level of 6,528 in Area 9, and 3,872 in Area 10 (FRAM 1213) by more than 10%, then the fishery will be modified to control impacts on stocks of concern;
- Total encounters of mark and unmarked, legal and sub legal-size Chinook will be estimated through a sampling and monitoring program (Attachment A);
- The two areas will be managed to run concurrently. Any modification to the season structure for the mark-selective fishery in these two areas will be made only by co-manager agreement and without increasing the total impact on stocks of concern;
- WDFW will provide the Tribes with weekly in-season catch and effort estimates with estimates of the variance. In-season estimates will be distributed electronically within the week following the week being reported;
- A conference call between the affected co-managers is scheduled for Wednesday, August 7, 2013, to review fishery information, discuss any need for modification of the remaining fishing schedule, ensure that impacts are consistent with pre-season intent, and to assess the need to schedule additional in-season co-manager discussions; and
- All subarea closures that are part of the co-managers' 2013-2014 fisheries agreement will be in effect in the areas and during the time periods that the agreed Chinook mark-selective fisheries are being conducted.

Fishery Intent

The summer period mark-selective fisheries in Areas 9 and 10 have been implemented for the purpose of collecting information necessary to enable evaluation and planning of potential future Chinook mark-selective fisheries, and to determine whether data needed to estimate critical management and analysis parameters can be collected. The sampling program for the Area 9 & 10 mark-selective fishery will provide a basis for determining if the data needed to estimate critical parameters can be collected and if the sample sizes needed to produce these estimates with agreed levels of precision can be realistically obtained. Prior to the 2014 season, WDFW and the tribes will jointly review and analyze results of the sampling and monitoring program for these fisheries to evaluate the effectiveness at achieving the intended objectives.

Data Needs for Evaluating the Fishery

Monitoring, sampling and reporting programs are being implemented by WDFW for the purpose of providing data necessary to estimate the impact of these mark-selective fisheries and to support the evaluation of future mark-selective fisheries.

WDFW will carry out the monitoring, sampling and reporting program for the Areas 9 & 10 summer Chinook mark-selective fisheries as described in Attachment A. On-water as well as shore-based surveys and sampling techniques will be employed, with the intention of collecting data that will form the basis of post-season analyses and evaluation of performance. During the conduct of these fisheries WDFW will maintain sampling rates in areas 5-13 at levels equivalent to or greater than rates achieved in the most recent two-years. This monitoring, sampling and reporting program is part of the WDFW Puget Sound monitoring and sampling operational plan documented with the co-managers' preseason fishing plan.

These monitoring and sampling programs are designed to provide data to estimate the following parameters:

- the mark rate in the fishery - marked and unmarked encounters will be estimated for legal and sub legal fish by both on-water and shore-based programs;
- the number of fish retained or landed - marked and unmarked fish will be estimated using a shore-based program, including CWT and scale-age sampling;
- the number of unmarked fish released - estimated by shore-based and on-water programs;
- the number of unmarked fish retained - estimated by a shore-based program;
- the number of marked fish released - estimated by a shore-based program in conjunction with on-water mark rate encounter estimates;
- the number of the Chinook encounters that are of sub legal size - estimated by shore-based and on-water programs;
- the stock composition of the mortalities – estimated by CWT and DNA
- estimates of marked and unmarked mortalities of double-index tagged (DIT) and other CWT stocks.

Post-Season Report

WDFW will provide a preliminary post-season report with results of monitoring and sampling programs for the Areas 9 & 10 summer period Chinook mark-selective fishery to the Tribes no later than February 1, 2014 to be considered for planning the 2014 fisheries. The post-season report will include the estimates described above together with the supporting information collected from monitoring and sampling programs. In addition, the report will include estimates of marked and unmarked mortalities of (DIT) and other CWT stocks as described in the section below. The post-season report will include a comparison of independent on-water and shore-based estimates of mark rate, unmarked fish released and sublegal size fish encountered.

Data Needs for Post-Season Estimation of Stock-Specific Unmarked Fish Mortalities

The co-managers agree to implement these fisheries with the understanding that the capability to estimate stock-specific unmarked fish mortalities is preserved. Methods for estimating unmarked mortalities of double-index tagged CWT stocks within the Area 9 & 10 mark-selective chinook fishery will be determined jointly by co-managers, considering recommendations of the Selective Fisheries Evaluation Committee of the Pacific Salmon Commission. WDFW will be responsible for reporting the necessary fishery information and data to the Pacific States Marine Fisheries Commission that allows these estimates to be generated.

In the post-season report (see previous section), WDFW will provide estimates of unmarked mortalities, by DIT group (by stock and age) and area. Unmarked DIT recoveries will be estimated based on estimated recoveries of marked DIT fish and assuming:

1. DIT release numbers provide a reasonable estimate of the unmarked to marked fish ratio; and,
2. the mortality rate for Chinook caught and released in the fishery (sfm) is known.

The assumption that the DIT release numbers provide a reasonable estimate of the unmarked to marked fish ratio will be evaluated through post-season comparisons of DIT tag groups. A design for these comparisons will be developed jointly by the co-managers following the method used in analyzing coho DIT groups.¹ All information from this fishery necessary for making these comparisons is assumed to be included in the sampling design and will be included in the post-season report.

Estimates of total fishery related mortalities, including the total exploitation rate or the southern US exploitation rate, that represent the co-managers' management objectives for Puget Sound Chinook management units, are made by combining mortality estimates in mark-selective fisheries with mortality estimates in non-selective fisheries. To ensure that all information necessary to make these estimates is collected, plans for sampling and monitoring of the summer selective fishery in Areas 9 and 10, as well as other mark-selective and non-selective fisheries will be included as a component of the co-managers' annual pre-season agreement.

¹ *Analysis of coho salmon double-index tag (DIT) data. 2003*

MONITORING THE SELECTIVE CHINOOK FISHERIES IN AREAS 9 AND 10, JULY 16 THROUGH AUGUST 31 2013

Overview

The WDFW Puget Sound Sampling Program will intensively monitor the mark-selective Chinook fishery in Areas 9 and 10 during the summer period from July 16 through August 31, 2013. We will incorporate comprehensive data collection strategies consisting of dockside sampling, on-the-water surveys, test fishing, and voluntary trip reports from charter boats and private boats, as shown in **Figure 9/10-1** and detailed below.

The monitoring plan shown in **Figure 9/10-1** will enable us to estimate the critical data parameters necessary for evaluating pilot mark-selective fisheries as previously identified by the co-managers (e.g., WDFW and NWIFC 2009), including: *i*) the mark rate of the targeted Chinook population (based on test fishery and dockside angler interview data), *ii*) fishery-total angling effort and Chinook salmon encounters (harvest + releases) and mortalities (by size/mark-status class) (e.g., from a combination of test fishery encounter rate data, dockside sampling, and voluntary trip reports), *iii*) the coded-wire tag (CWT)-based stock composition of marked and unmarked Chinook mortalities (from dockside sampling data), and *iv*) fishery-total mortality of marked and unmarked double index tag (DIT) CWT stocks (once post-season CWT sample rates are estimated). In addition, we will acquire and analyze relevant data characterizing other aspects of the pilot fishery, including descriptors of fishing success (catch [landed Chinook] per unit effort, CPUE), the length and age composition of encountered and/or landed Chinook, and the overall intensity of our sampling efforts.

Dockside Sampling

We will implement creel surveys during the summer mark-selective Chinook fishery in Areas 9 and 10 using the Murthy estimator method (Murthy 1957, Cochran 1977) in order to produce total-Area estimates of catch and effort with accompanying estimates of variance. The Murthy estimate approach, as detailed below, will incorporate data from intensive dockside sampling days, combined with site size measures obtained from on-the-water surveys, to produce total-Area catch and effort estimates with variances.

Dockside Sample Design

Sampling strata will be divided into weekday (Monday through Thursday) and 'weekend' (Friday, Saturday, and Sunday) strata. Each week we will randomly select two days from the Monday through Thursday stratum for dockside sampling. In addition, we will sample every Friday, Saturday, and Sunday. Samplers will be stationed at two ramps on each of the selected sampling days. Sites from our sample frame will be selected for sampling via our weighted-random site selection process (e.g., probability proportional to size). Initially, site selection will be based on site size measures calculated from boat survey data obtained during the equivalent time period in summer 2012. Once the initial 2013 boat surveys are completed in Areas 9 and 10, we will calculate the updated size measures of sites in our sample frame based on the most recently available boat survey data.

Samplers will achieve 100% sampling coverage at the assigned ramps (i.e., individual samplers will cover early-, mid-, and late-shifts) from approximately from dawn until dark in order to intercept all boats. All anglers and fish exiting the fishery through the sampled sites will be counted. Any boats that are missed at the sampled sites will be counted and recorded on the sampling forms.

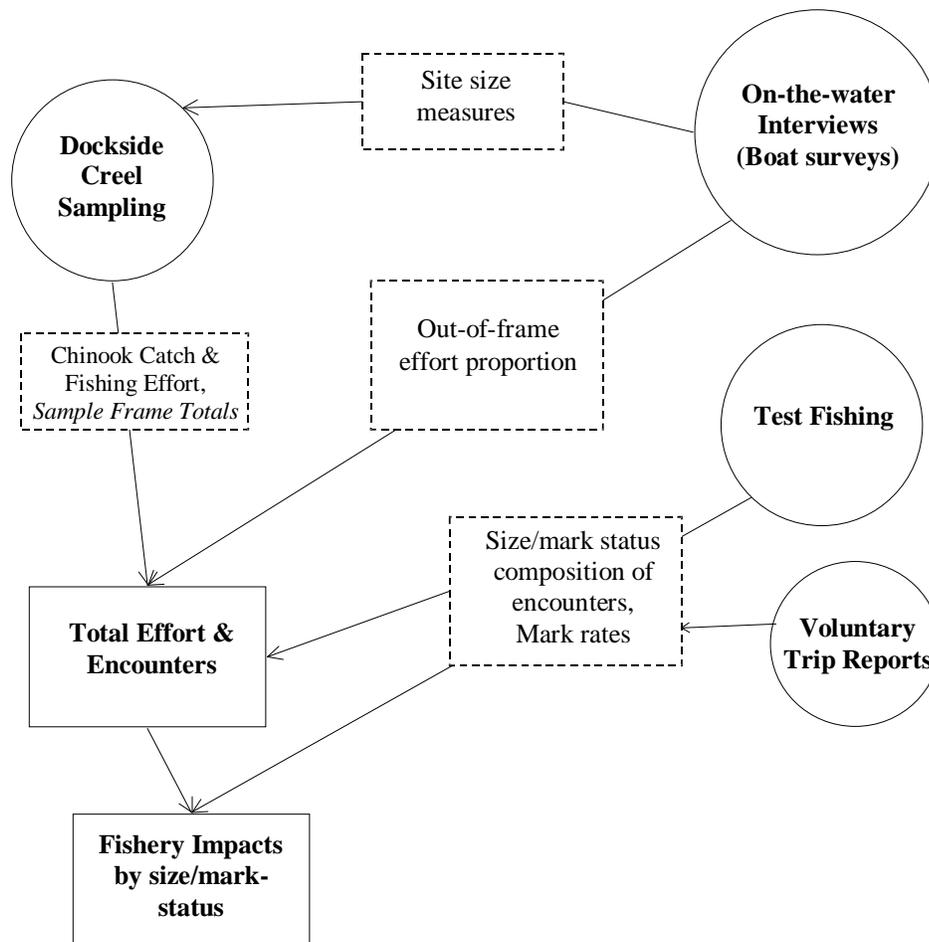


Figure 9/10-1. Conceptual diagram of the monitoring plan proposed for the **Areas 9 and 10 summer** mark-selective Chinook season. Circles represent discrete sampling activities, dashed boxes represent parameters that are estimated using data from a given activity, and solid boxes depict key quantities estimated from the comprehensive plan. ‘Encounters’ includes both harvested and released Chinook salmon.

The sites in our sample frame in Areas 9 and 10 will likely include the following sites:

Southern Area 9:

- Everett Ramp
- Edmonds Ramp
- Shilshole Ramp
- Mukilteo Ramp
- Kingston Ramp

Northern/Mid Area 9:

- Salsbury Ramp
- Point No Point
- Port Townsend Boat Haven
- Fort Worden Ramp
- Fort Casey

Area 10:

- Shilshole Ramp
- Armeni Ramp
- Manchester Ramp
- Everett Ramp
- Edmonds Ramp
- Kingston Ramp

On-the-water Surveys

On-the-water surveys (boat surveys) will be employed to estimate the percent of effort from sites in our sample frame versus sites outside of the frame (e.g., never-sampled sites). Boat surveys will cover the entire area to pick up effort from all launch sites. We will ask boat occupants where they will tie up or exit the fishery rather than where they launched. We will calculate the size measures of Areas 9 and 10 sites based on the most recently available boat survey data.

We will strive for a minimum sample size of one hundred boats per time period stratum (weekday and weekend strata), or as many boats as possible. In addition, boat surveys will be conducted whenever anything changes in the fishery that could affect effort patterns (e.g., if launch sites open or close or if adjacent catch areas open or close). The boat survey data will be used to expand site estimates to all sites accessing the fishery.

Harvest and Effort Estimates

The harvest and effort observed at the Murthy-based sampled sites in Areas 9 and 10 will be expanded to all access sites (based on estimated site size measures) to estimate total harvest for the day. Sample data will be combined and expanded to create stratum estimates of harvest and effort with variances.

Assumptions

Harvest and effort estimates are based on the following assumptions:

- Boat surveys provide an unbiased estimate of the proportion of anglers accessing fisheries from sites in our sample site frame and sites outside the frame.
- The proportion of total effort accessing the fishery at site A represents the proportion of total catch landed at site A.
- All anglers exiting at a sampled site are interviewed and all anglers accurately report their harvest. If any boats are missed they are counted and catch and effort estimates are expanded appropriately.
- CPUE does not differ significantly between sites in our sample frame and sites outside our sample frame.

Estimates of Total Encounters

We will estimate total Chinook encounters in the Areas 9 and 10 summer selective Chinook fishery using the bias-corrected approach developed by Conrad and McHugh (2008). Briefly, with the Conrad and McHugh (2008) method, Chinook encounters are estimated by dividing the estimate of legal-marked Chinook harvest by the estimated proportion of the fishable Chinook population that is of legal size and marked. Given that our former "Method 2" approach (e.g., WDFW 2008a) yields negatively biased estimates if anglers release any of the legal-marked Chinook they encounter, Conrad and McHugh estimated a "correction" factor to account for this phenomenon and incorporated it into their estimator.

Applying Conrad and McHugh's (2008) approach within the design proposed in **Figure 9/10-1**, we would estimate total Chinook encounters by dividing the estimate of legal-marked Chinook harvest (obtained via creel surveys) by the estimated proportion of the fishable Chinook population that is of legal size and marked (obtained via test fishing data), and we would apply their recommended bias correction factor.

CWT Sampling

We will sample for coded wire tags (CWT) in the Areas 9 and 10 summer mark-selective Chinook fisheries as part of our dockside angler interviews. The objective is to provide stock specific estimation (by hatchery and brood year) of population parameters, such as fishery contribution and marine survival, as part of the coast-wide CWT program. The sample rate goal for CWT recovery is 20% in mark-selective Chinook fisheries. During dockside interviews samplers will inspect landed Chinook and coho salmon for the presence of coded-wire tags using wand CWT detectors, and snouts will be collected from all fish containing CWTs. For post-season analyses and reporting, CWT data will be used to estimate stock composition by hatchery and brood year. Total unmarked double index tagged (DIT) mortality estimates will be produced post-season.

Test Fishing

WDFW will operate one test boat in each area (one in Area 9 and another in Area 10) to collect encounter rate and mark rate information during the 2013 summer selective Chinook fishery in Areas 9 and 10. The crew in each boat will consist of two WDFW technicians fishing with one rod each. The test boats will fish approximately five days per week (weather permitting). For each hook-up, the encounter number, time sampled, species, mark status, and DNA vial number (if applicable) will be recorded. Samplers will collect scales, fork lengths, and total lengths on all Chinook brought on board. Legal-size Chinook are 22 inches total length (56 cm) and larger, while sublegal-size Chinook are less than 22 inches total length. Samplers also will use scissors to remove a 1-cm² piece of the dorsal fin for DNA analysis. All fish will be handled carefully and immediately released. The test boat will operate in areas where sport and test catches would be high enough to warrant test fishing. Based on the input of the WDFW and NWIFC biometricians, we will work to achieve recommended sample sizes of Chinook encounters and acceptable precision levels for the mark rate estimates.

Charter Vessels

We plan to separate charter vessels from private (non-charter) boats in generating the catch estimates for Areas 9 and 10, to reduce potential bias and improve the precision in our estimates. Charter boats will be treated separately and excluded from our Murthy estimate due to their high catch per unit of effort compared to private boats, and because charter boats do not necessarily exit the fishery via our sampled sites. We will rely on the Murthy estimator method to estimate total salmon encounters for private boats in Areas 9 and 10, while a complete census approach will be used for charter boats.

To obtain the complete census of Chinook encounters and angler trips from charter boat operators, we will call all possible charter operators that fished in Areas 9 and 10 during the summer selective Chinook fishery period. We will ask charter operators to report complete counts of salmon encounters and number of trips via Voluntary Trip Report (VTR) forms. VTR data included the date of the fishing trip, number of anglers, target species, CRC Area, each Chinook or coho hooked, whether the fish was kept or released, species (if they positively identified the fish), total length to the nearest 1/8th inch, and whether the fish was adipose fin-clipped or not clipped.

Voluntary Trip Reports from Private Vessels

Additional information on adipose mark rates and the percentage of Chinook that are legal size (22 inches [56 cm] total length and larger) versus sublegal size (less than 22 inches) will be obtained from Voluntary Trip Reports (VTR's) submitted by private-boat anglers during the Areas 9 and 10 mark selective Chinook

fishery. Anglers will be asked to record on the VTR forms the date, number of anglers, target species, CRC Area, each Chinook or coho hooked, whether the fish was kept or released, species (if they positively identified the fish), total length to the nearest 1/8th inch, and whether the fish was adipose fin-clipped or not clipped.

We will take several measures to help ensure the success of our VTR program. First, samplers will distribute our new and improved, user-friendly VTR form that is easier for anglers to complete compared to the old VTR form. Samplers will maximize the distribution of VTRs by handing out VTRs as anglers launch, and collecting the VTRs as anglers exit the fishery. Additionally, samplers will provide participants with a brochure describing the intent of VTRs and their significance to fishery monitoring, and answer VTR-related questions. To increase the response rate, participants are given three options for returning completed VTRs to WDFW: hand-delivering them to samplers, placing them in on-site drop boxes, or sending them via U.S. mail (pre-paid); if they are unsuccessful (i.e., no encounters occurred [harvested or released]) on their trip, the VTR samplers will request that participants keep their forms for future trips.

We will estimate the mark rates of legal-size and sublegal-size Chinook via calculating the season average mark rate from VTR's. We will calculate the proportion of Chinook that were legal-size and marked, legal-size and unmarked, sublegal-size and marked, and sublegal-size and unmarked. We will then compare VTR results with results from the test fishery in Areas 9 and 10.

Reporting Schedule

Weekly in-season catch and effort estimates with variances will be distributed electronically, within the week following the week being reported. A final report will be written and distributed by February 1, 2014, with a post-season analysis of all data collected in the 2013 Area 9 and 10 summer selective Chinook fishery.

Sampling Rates and Staffing Levels

WDFW will meet or exceed the sampling rate goal of 20% during the selective Chinook fishery time period via increased staffing levels as compared to non-selective fisheries. **Table 9/10-1** shows staffing levels needed to implement the intensive monitoring plan for the summer selective Chinook fisheries in Areas 9 and 10.

Table 9/10-1: Number of Additional Staff Required for Monitoring the 2013 Summer Selective Chinook Fisheries in Areas 9 and 10.

Month	Area 9	Area 10	Test Fishing Boat Staff
July (7/16-7/31)	6	4	4
August	6	4	4

April 12, 2013

2013-2014 Area 10 Winter Period Mark-Selective Sport Fishery

The Northwest Treaty Tribes and the Washington Department of Fish and Wildlife (WDFW) have reached agreement to implement a Chinook salmon mark-selective fishery in Area 10, during the winter period from October 1, 2013 to January 31, 2014. This fishery will be implemented consistent with management objectives defined by the co-managers' Puget Sound Chinook Harvest Management Plan (April, 2010), the WDFW-Tulalip management plan for hatchery origin fish (2005 Memorandum of Understanding), and established principles concerning the allocation of harvestable salmon and the exercise of treaty rights. The co-managers will seek to minimize or eliminate any unintended effects of this fishery on individual treaty fisheries, including dislocation and/or disruption. Therefore, treaty fisheries will not be modified in order to accommodate this mark-selective fishery.

For 2013-2014, the co-managers further agree:

- Total encounters of marked and unmarked, legal and sub-legal-sized Chinook will be estimated through a sampling and monitoring program (Attachment A). If at any time during the fishery total legal size encounters estimated from this program are expected to exceed the preseason forecasted level of 3,181 Chinook (FRAM 1213) by more than 10%, then the fishery will be modified to control impacts on stocks of concern: and
- All subarea closures that are part of the co-managers' 2013-2014 fisheries agreement will be in effect in Area 10 and during the time period that the agreed Chinook mark-selective fishery is being conducted.

Fishery Intent

The winter period mark-selective fishery in Area 10 has been implemented to provide recreational fishing opportunity directed at hatchery Chinook salmon. Sampling and monitoring programs implemented with this fishery are intended to provide information necessary to evaluate and plan potential future Chinook mark-selective fisheries. The sampling program will provide a basis for determining if the data needed to estimate critical management and analysis parameters can be collected and if the sample sizes needed to produce these estimates with agreed levels of precision can be realistically obtained. Prior to the 2014-15 season, WDFW and the tribes will jointly review and analyze results of the sampling and monitoring program for these fisheries to evaluate the effectiveness at achieving the intended objectives.

Data Needs for Evaluating the Fishery

Monitoring, sampling and reporting programs are being implemented by WDFW for the purpose of providing data necessary to estimate the impact of these mark-selective fisheries and to support the evaluation of future mark-selective fisheries.

WDFW will carry out the monitoring, sampling and reporting program described for the Area 10 winter Chinook mark-selective fishery in Attachment A. On-water as well as shore-based surveys and sampling techniques will be employed, in addition to an intensive voluntary trip report program, with the intention of collecting data that will form the basis of post-season analyses and evaluation of performance. During the conduct of these fisheries WDFW will maintain sampling rates in areas 5-13 at levels equivalent to or greater than rates achieved in the most recent two-years. This monitoring, sampling and reporting program is part of the WDFW Puget Sound monitoring and sampling operational plan documented with the co-managers' preseason fishing plan.

These monitoring and sampling programs are designed to provide data to estimate the following parameters:

- the mark rate in the fishery - marked and unmarked encounters will be estimated by both on-water and

shore-based programs;

- the number of fish retained or landed - marked and unmarked fish will be estimated using a shore-based program, including CWT and scale-age sampling;
- the number of unmarked fish released - estimated by shore-based and on-water programs;
- the number of unmarked fish retained - estimated by a shore-based program;
- the number of marked fish released - estimated by a shore-based program in conjunction with on-water mark rate encounter estimates;
- the number of the Chinook encounters that are of sub legal size - estimated by shore-based and on-water programs;
- the stock composition of the mortalities – estimated by CWT and DNA;
- estimates of marked and unmarked mortalities of double-index tagged and other CWT stocks.

Post season report

A preliminary post-season report will be written and distributed by November 30, 2014, containing a full post-season analysis of all data collected in the 2013-14 Area 10 winter selective Chinook fishery.

Data Needs for Post-Season Estimation of Stock-Specific Unmarked Fish Mortalities

The co-managers agree to implement these fisheries with the understanding that the capability to estimate stock-specific unmarked fish mortalities is preserved. Methods for estimating unmarked mortalities of double-index tagged CWT stocks within this mark-selective chinook fishery will be determined jointly by co-managers, considering recommendations of the Selective Fisheries Evaluation Committee of the Pacific Salmon Commission. WDFW will be responsible for reporting the necessary fishery information and data to the Pacific States Marine Fishery Commission that allows these estimates to be generated.

In the postseason report (see previous section), WDFW will provide estimates of unmarked mortalities, by DIT group (by stock and age) and area. Unmarked DIT recoveries will be estimated based on estimated recoveries of marked DIT fish and assuming:

1. DIT release numbers provide a reasonable estimate of the unmarked to marked fish ratio; and,
2. the mortality rate for Chinook caught and released in the fishery (sfm) is known.

The assumption that the DIT release numbers provide a reasonable estimate of the unmarked to marked fish ratio will be evaluated through post-season comparisons of DIT tag groups. A design for these comparisons will be developed jointly by the co-managers following the method used in analyzing coho DIT groups.¹ All information from this fishery necessary for making these comparisons is assumed to be included in the sampling design and will be included in the post-season report.

Estimates of total fishery related mortalities, including the total exploitation rate or the southern US exploitation rate, that represent the co-managers' management objectives for Puget Sound chinook management units, are made by combining mortality estimates in mark-selective fisheries with mortality estimates in non-selective fisheries. To ensure that all information necessary to make these estimates is collected, plans for sampling and monitoring of the winter selective fishery in Area 10, as well as other mark-selective and non-selective fisheries will be included as a component of the co-managers' annual pre-season agreement.

¹ *Analysis of coho salmon double-index tag (DIT) data. 2003*

Attachment A

MONITORING THE AREA 10 WINTER SELECTIVE CHINOOK FISHERY, OCTOBER 1, 2013 THROUGH JANUARY 31, 2014

Overview

The Puget Sound Sampling Program will monitor the mark-selective Chinook fishery in Area 10 during the proposed winter season from October 1, 2013 through January 31, 2014 through comprehensive data collection strategies consisting of dockside sampling, on-the-water surveys, test fishing, and voluntary trip reports from charter boats and private boats, as shown in **Figure 10-1** and detailed below.

The monitoring plan shown in **Figure 10-1** will enable us to estimate the critical data parameters necessary for evaluating pilot mark-selective fisheries as previously identified by the co-managers (e.g., WDFW and NWIFC 2009), including: *i*) the mark rate of the targeted Chinook population (based on test fishery and dockside angler interview data), *ii*) fishery-total angling effort and Chinook salmon encounters (harvest + releases) and mortalities (by size/mark-status class) (e.g., from a combination of test fishery encounter rate data, dockside sampling, and voluntary trip reports), *iii*) the coded-wire tag (CWT)-based stock composition of marked and unmarked Chinook mortalities (from dockside sampling data), and *iv*) fishery-total mortality of marked and unmarked double index tag (DIT) CWT stocks (once post-season CWT sample rates are estimated). In addition, we will acquire and analyze relevant data characterizing other aspects of the pilot fishery, including descriptors of fishing success (catch [landed Chinook] per unit effort, CPUE), the length and age composition of encountered and/or landed Chinook, and the overall intensity of our sampling efforts.

Dockside Sampling

Creel surveys will be implemented during the winter mark-selective Chinook fishery in Area 10 using the modified (i.e., scaled back relative to the full Murthy design employed during the 2007-08 and 2008-09 winter seasons) version of the Murthy estimator method (Murthy 1957, Cochran 1977), in order to produce total-Area estimates of catch and effort with accompanying estimates of variance. Our modified-Murthy approach, as detailed below, will incorporate data from intensive dockside sampling days, combined with site size measures obtained from on-the-water surveys, to produce total-Area catch and effort estimates with variances.

Dockside Sample Design

Sampling strata will be divided into 'weekday' (Monday through Thursday) and 'weekend' (Friday, Saturday, and Sunday) days. For each two-week period of the fishery, we will randomly select $n=2$ sample days from the $N=8$ possible weekday stratum days (distributed so there is at least one weekday sampled in each of the two weeks). For the weekend stratum (Friday through Sunday), and we will select $n=2$ sample days out of the $N=3$ possible weekend days each week. In total, we will sample 12 site-days every two weeks using the reduced Murthy creel survey design.

Samplers will be stationed at two ramps on each of the selected sampling days. Sites in our sample frame will be selected for sampling via our weighted-random site selection process (e.g., probability proportional to size, using the most current boat survey data). Samplers will achieve 100% sampling coverage at the assigned ramps, with shifts lasting approximately from dawn until dusk (will be adjusted as needed according to changing day lengths throughout the season), in order to intercept all boats. All anglers and fish exiting the fishery through the sampled site will be counted. Any boats that are missed at the sampled site will be counted and recorded on the sampling forms.

In addition, we will sample multiple ramps in Area 10 on the remaining days in the weekday stratum, using baseline-level sampling to ensure that we achieve the 20% sample rate goal.

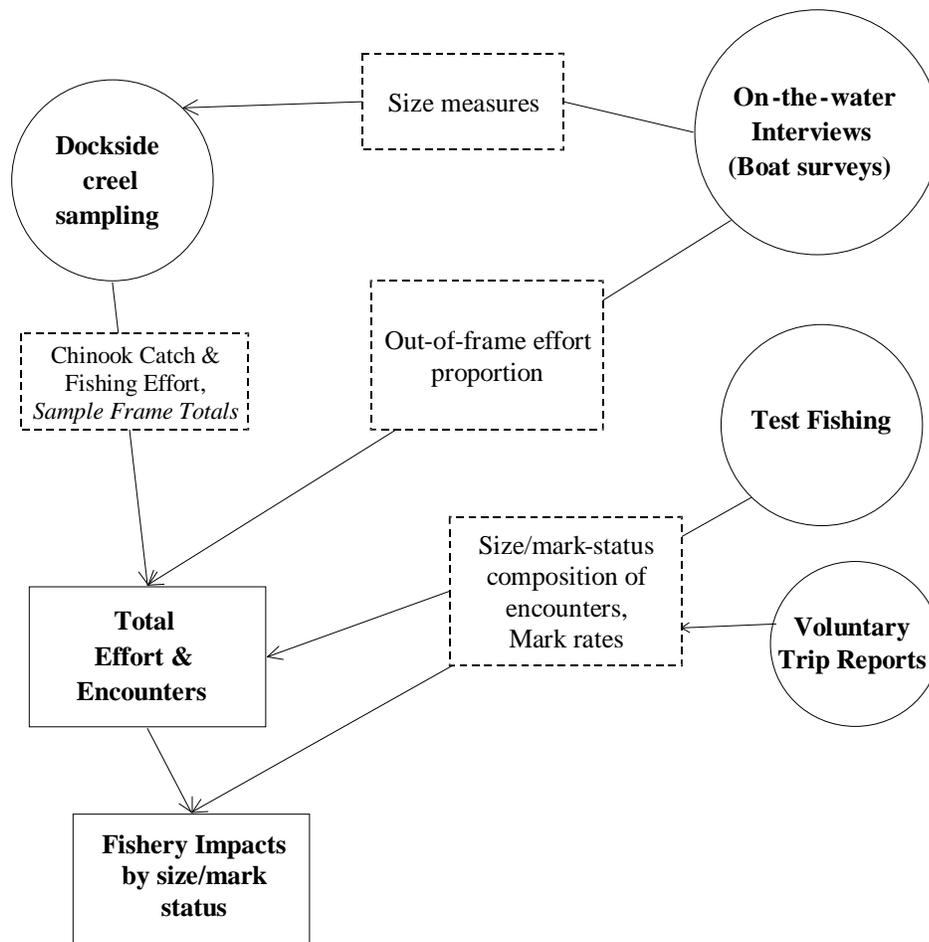


Figure 10-1. Conceptual diagram of the monitoring plan proposed for the **Area 10 winter** mark-selective Chinook season. Circles represent discrete sampling activities, dashed boxes represent parameters that are estimated using data from a given activity, and solid boxes depict key quantities estimated from the comprehensive plan. ‘Encounters’ includes both harvested and released Chinook salmon.

The sites in our sample frame in Area 10 will likely include the following sites:

- Shilshole Ramp
- Armeni Ramp
- Manchester Ramp
- Everett Ramp
- Edmonds Ramp
- Port Orchard Ramp
- Kingston Ramp

On-the-water Surveys

On-the-water surveys (boat surveys) will be employed to estimate the percent of effort from sites in our sample frame versus sites outside of the frame (e.g., never-sampled sites). Boat surveys will cover the entire area to pick up effort from all launch sites. We will ask boat occupants where they will tie up or exit the fishery rather than where they launched. We will calculate the size measures of Area 10 sites based

on the most recently available boat survey data.

We will conduct an appropriate number surveys in Area 10 throughout the season to update site size measures. In addition, on-the-water surveys will be conducted whenever anything changes in the fishery that could affect effort patterns (e.g., if launch sites open or close or if adjacent catch areas open or close).

We will strive for a minimum sample size of one hundred boats per time period stratum (e.g., using data lumped across one month strata, based on consultation with the WDFW biometrician), or as many samples as possible. Factors such as low angler effort and rough winter weather conditions may result in a lower sample size. The boat survey data will be used to expand site estimates to all sites accessing the fishery.

Harvest and Effort Estimates

The harvest and effort observed at the Murthy-based sampled sites in Area 10 will be expanded to all access sites (based on estimated site size measures) to estimate total harvest for the day. Sample data will be combined and expanded to create stratum estimates of harvest and effort with variances.

To generate weekly catch and effort estimates for Area 10, the four-day “weekday stratum” estimate for Monday-Thursday of each week (based on $n=2$ days sampled out of $N=8$ available weekdays per two-week period) will be added to the “weekend stratum” (Friday-Sunday) estimate for the particular week (based on $n=2$ days sampled out of $N=3$ available weekend days per week). The eight-day weekday estimates for each two-week period will be split evenly between individual weeks in the two-week block to enable weekly estimates, with variances computed using the $n=2$ days sampled out of $N=8$ available weekdays in the appropriate variance equation.

Assumptions

Harvest and effort estimates are based on the following assumptions:

- Boat surveys provide an unbiased estimate of the proportion of anglers accessing fisheries from sites in our sample site frame and sites outside the frame.
- The proportion of total effort accessing the fishery at site A represents the proportion of total catch landed at site A.
- All anglers exiting at a sampled site are interviewed and all anglers accurately report their harvest. If any boats are missed they are counted and catch and effort estimates are expanded appropriately.
- CPUE does not differ significantly between sites in our sample frame and sites outside our sample frame.

Estimates of Total Encounters

We will estimate total Chinook encounters in the Area 10 winter selective Chinook fishery using the bias-corrected approach developed by Conrad and McHugh (2008). Briefly, with the Conrad and McHugh (2008) method, Chinook encounters are estimated by dividing the estimate of legal-marked Chinook harvest by the estimated proportion of the fishable Chinook population that is of legal size and marked. Given that our former “Method 2” approach (e.g., WDFW 2008a) yields negatively biased estimates if anglers release any of the legal-marked Chinook they encounter, Conrad and McHugh estimated a “correction” factor to account for this phenomenon and incorporated it into their estimator. Applying Conrad and McHugh’s (2008) approach within the design proposed in **Figure 10-1**, we would estimate total Chinook encounters by dividing the estimate of legal-marked Chinook harvest (obtained via creel surveys) by the estimated proportion of the fishable Chinook population that is of legal size and marked (obtained via test fishing data).

CWT Sampling

We will sample for coded wire tags (CWT) in the Area 10 winter mark-selective Chinook fishery as part of our dockside angler interviews. The objective is to provide stock specific estimation (by hatchery and brood year) of population parameters, such as fishery contribution and marine survival, as part of the coast-wide CWT program. The sample rate goal for CWT recovery is 20% in mark-selective Chinook fisheries. During dockside interviews samplers will inspect landed Chinook and coho salmon for the presence of coded-wire tags using wand CWT detectors, and snouts will be collected from all fish containing CWTs. For post-season analyses and reporting, CWT data will be used to estimate stock composition by hatchery and brood year. Total unmarked double index tagged (DIT) mortality estimates will be produced post-season.

Test Fishing

WDFW will operate one test boat in Area 10 to collect encounter rate and mark rate information during the 2013-14 winter selective Chinook fishery. The crew will consist of two WDFW technicians fishing with one rod each. The test boat will fish approximately five days per week (weather permitting). For each hook-up, the encounter number, time sampled, species, mark status, and DNA vial number (if applicable) will be recorded. Samplers will collect scales, fork lengths, and total lengths on all Chinook brought on board. Legal-size Chinook are 22 inches total length (56 cm) and larger, while sublegal-size Chinook are less than 22 inches total length. Samplers also will use scissors to remove a 1-cm² piece of the dorsal fin for DNA analysis. All fish will be handled carefully and immediately released. The test boat will operate in areas where sport and test catches would be high enough to warrant test fishing. Based on the input of the WDFW and NWIFC biometricians, we will work to achieve recommended sample sizes of Chinook encounters and acceptable precision levels for the mark rate estimates.

Voluntary Trip Reports

Information on adipose mark rates and the percentage of Chinook that are legal size (22 inches [56 cm] total length and larger) versus sublegal size (less than 22 inches) will be obtained from Voluntary Trip Reports (VTRs) submitted by private-boat anglers during the mark selective Chinook fishery in Area 10. Anglers will be asked to record on the VTR forms the date, number of anglers, target species, CRC Area, each Chinook or coho hooked, whether the fish was kept or released, species (if they positively identified the fish), total length to the nearest 1/8th inch, and whether the fish was adipose fin-clipped or not clipped.

We will take several measures to help ensure the success of our VTR program. First, samplers will distribute our new and improved, user-friendly VTR form that is easier for anglers to complete compared to the old VTR form. Samplers will maximize the distribution of VTRs by handing out VTRs as anglers launch, and collecting the VTRs as anglers exit the fishery. Additionally, samplers will provide participants with a brochure describing the intent of VTRs and their significance to fishery monitoring, and answer VTR-related questions. To increase the response rate, participants are given three options for returning completed VTRs to WDFW: hand-delivering them to samplers, placing them in on-site drop boxes, or sending them via U.S. mail (pre-paid); if they are unsuccessful (i.e., no encounters occurred [harvested or released]) on their trip, the VTR samplers will request that participants keep their forms for future trips.

From the Area 10 VTR data, we will calculate the proportion of Chinook that were legal-size and marked, legal-size and unmarked, sublegal-size and marked, and sublegal-size and unmarked. We will then compare VTR results with results from the test fishery in Area 10.

Reporting Schedule

A final report will be written and distributed by November 30, 2014, with a full post-season analysis of all data collected in the 2013-14 Area 10 winter selective Chinook fishery.

Sampling Rates and Staffing Levels

WDFW will meet or exceed the sampling rate goal of 20% during the selective Chinook fishery time period via increased staffing levels as compared to non-selective fisheries. **Table 10-1** shows staffing levels needed to implement the intensive monitoring of the winter selective Chinook fishery in Area 10.

Table 10-1: Number of Additional Staff Required for Monitoring the Winter Selective Chinook Fishery in Area 10, October 1, 2013 through January 31, 2014.

Month	Area 10 Dockside Samplers	Area 10 Test Boat Staff (1 Boat)
Oct	2	2
Nov	2	2
Dec	2	2
Jan	2	2

April 12, 2013

2014 Area 11 Winter Period Mark-Selective Sport Fishery

The Northwest Treaty Tribes and the Washington Department of Fish and Wildlife (WDFW) have reached agreement to implement a Chinook salmon mark-selective fishery in Area 11, for the winter period February 1 to April 30, 2014. This fishery will be implemented consistent with management objectives defined by the co-managers' Puget Sound Chinook Harvest Management Plan (April, 2010), the WDFW-Tulalip management plan for hatchery origin fish (2005 Memorandum of Understanding), and established principles concerning the allocation of harvestable salmon and the exercise of treaty rights. The co-managers will seek to minimize or eliminate any unintended effects of this fishery on individual treaty fisheries, including dislocation and/or disruption. Therefore, treaty fisheries will not be modified in order to accommodate this mark-selective fishery.

Fishery Intent

The winter period mark-selective fishery in Area 11 has been implemented to provide recreational fishing opportunity directed at hatchery Chinook salmon. Sampling and monitoring programs implemented with this fishery are intended to provide information necessary to evaluate and plan potential future Chinook mark-selective fisheries. The sampling program will provide a basis for determining if the data needed to estimate critical management and analysis parameters can be collected and if the sample sizes needed to produce these estimates with agreed levels of precision can be realistically obtained. Prior to the 2014-15 season, WDFW and the tribes will jointly review and analyze results of the sampling and monitoring program for these fisheries to evaluate the effectiveness at achieving the intended objectives.

Data Needs for Evaluating the Fishery

Monitoring, sampling and reporting programs are being implemented by WDFW for the purpose of providing data necessary to estimate the impact of these mark-selective fisheries and to support the evaluation of future mark-selective fisheries.

WDFW will carry out the monitoring, sampling and reporting program described for the Area 11 winter Chinook mark-selective fishery in Attachment A. Shore-based surveys and sampling techniques will be employed, as well as an intensive voluntary trip report program, with the intention of collecting data that will form the basis of post-season analyses and evaluation of performance. During the conduct of these fisheries WDFW will maintain sampling rates in areas 5-13 at levels equivalent to or greater than rates achieved in the most recent two-years. This monitoring, sampling and reporting program is part of the WDFW Puget Sound monitoring and sampling operational plan documented with the co-managers' preseason fishing plan.

These monitoring and sampling programs are designed to provide data to estimate the following parameters:

- the mark rate in the fishery - marked and unmarked encounters will be estimated by shore-based and voluntary trip report programs;
- the number of fish retained or landed - marked and unmarked fish will be estimated using a shore-based program, including CWT and scale-age sampling;
- the number of unmarked fish released - estimated by shore-based and voluntary trip report programs;
- the number of unmarked fish retained - estimated by a shore-based program;
- the number of marked fish released - estimated by a shore-based program in conjunction with mark rate encounter estimates obtained from voluntary trip reports;
- the number of the chinook encounters that are of sub legal size - estimated by shore-based and voluntary trip report programs;
- the stock composition of the mortalities – estimated by CWT data collected in the shore-based sampling

program;

- estimates of marked and unmarked mortalities of double-index tagged and other CWT stocks.

Post season report

A preliminary post-season report will be written and distributed by November 30, 2014, containing a full post-season analysis of all data collected in the 2014 Area 11 winter selective Chinook fishery.

Data Needs for Post-Season Estimation of Stock-Specific Unmarked Fish Mortalities

The co-managers agree to implement these fisheries with the understanding that the capability to estimate stock-specific unmarked fish mortalities is preserved. Methods for estimating unmarked mortalities of double-index tagged CWT stocks within this mark-selective chinook fishery will be determined jointly by co-managers, considering recommendations of the Selective Fisheries Evaluation Committee of the Pacific Salmon Commission. WDFW will be responsible for reporting the necessary fishery information and data to the Pacific States Marine Fishery Commission that allows these estimates to be generated.

In the postseason report (see previous section), WDFW will provide estimates of unmarked mortalities, by DIT group (by stock and age) and area. Unmarked DIT recoveries will be estimated based on estimated recoveries of marked DIT fish and assuming:

1. DIT release numbers provide a reasonable estimate of the unmarked to marked fish ratio; and,
2. the mortality rate for chinook caught and released in the fishery (sfm) is known.

The assumption that the DIT release numbers provide a reasonable estimate of the unmarked to marked fish ratio will be evaluated through post-season comparisons of DIT tag groups. A design for these comparisons will be developed jointly by the co-managers following the method used in analyzing coho DIT groups.¹ All information from this fishery necessary for making these comparisons is assumed to be included in the sampling design and will be included in the post-season report.

Estimates of total fishery related mortalities, including the total exploitation rate or the southern US exploitation rate, that represent the co-managers' management objectives for Puget Sound chinook management units, are made by combining mortality estimates in mark-selective fisheries with mortality estimates in non-selective fisheries. To ensure that all information necessary to make these estimates is collected, plans for sampling and monitoring of the winter selective fishery in Areas 11 and 13, as well as other mark-selective and non-selective fisheries will be included as a component of the co-managers' annual pre-season agreement.

¹ *Analysis of coho salmon double-index tag (DIT) data. 2003*

MONITORING THE AREA 11 WINTER SELECTIVE CHINOOK FISHERY, FEBRUARY 1 THROUGH APRIL 30 2013

The Puget Sound Sampling Program will monitor the mark-selective Chinook fishery in Area 11 during the proposed winter season from February 1 through April 30, 2014 through comprehensive data collection strategies consisting of dockside creel surveys, on-the-water surveys, and voluntary trip reports, as shown in **Figure 11W-1** and detailed below.

The monitoring plan shown in **Figure 11W-1** will enable us to estimate the critical data parameters necessary for evaluating pilot mark-selective fisheries as previously identified by the co-managers (e.g., WDFW and NWIFC 2009), including: *i*) the mark rate of the targeted Chinook population (based on VTR and dockside angler interview data), *ii*) fishery-total angling effort and Chinook salmon encounters (harvest + releases) and mortalities (by size/mark-status class) (e.g., from a combination of dockside sampling data and VTRs), *iii*) the coded-wire tag (CWT)-based stock composition of marked and unmarked Chinook mortalities (from dockside sampling data), and *iv*) fishery-total mortality of marked and unmarked double index tag (DIT) CWT stocks (once post-season CWT sample rates are estimated). In addition, we will acquire and analyze relevant data characterizing other aspects of the pilot fishery, including descriptors of fishing success (catch [landed Chinook] per unit effort, CPUE), the length and age composition of encountered and/or landed Chinook, and the overall intensity of our sampling efforts.

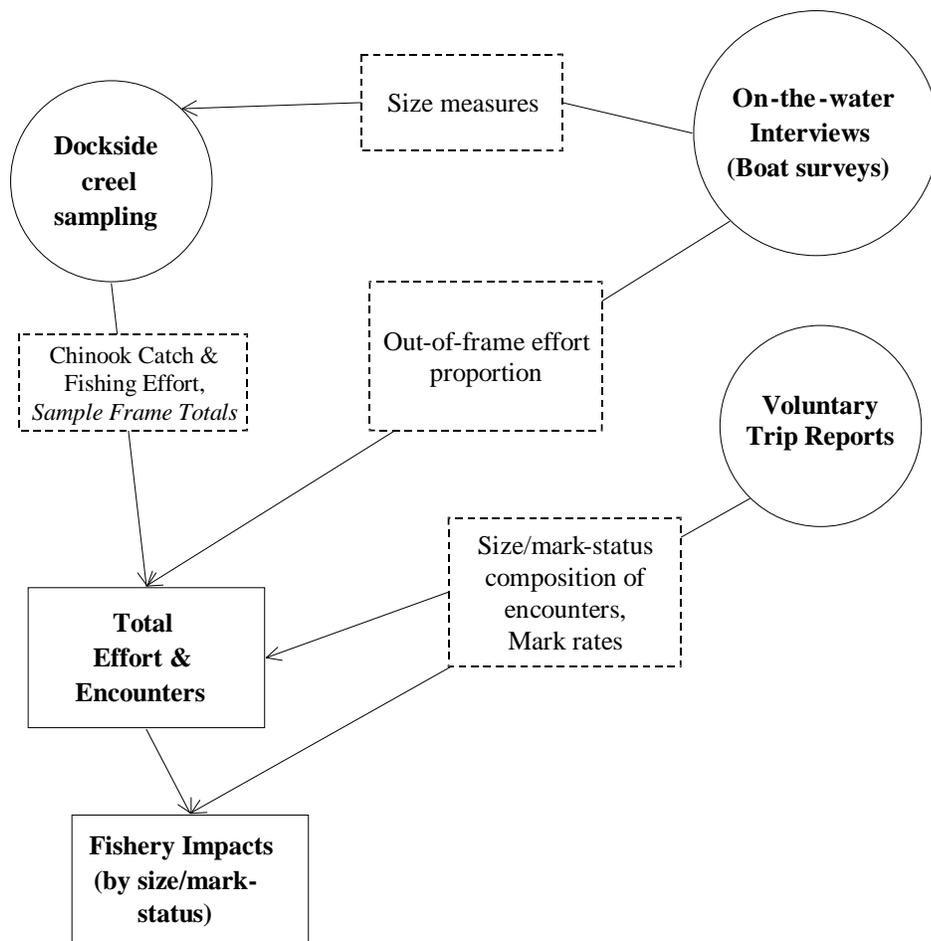


Figure 11W-1. Conceptual diagram of the monitoring plan proposed for the **Area 11 winter** mark-selective Chinook season. Circles represent discrete sampling activities, dashed boxes represent parameters that are estimated using data from a given activity, and solid boxes depict key quantities estimated from the comprehensive plan. ‘Encounters’ includes both harvested and released Chinook salmon.

Dockside Sampling

We will implement creel surveys during the 2014 winter mark-selective Chinook fishery in Area 11 using a modified (scaled back) version of the Murthy estimator method (Murthy 1957, Cochran 1977), in order to produce total-Area estimates of catch and effort with accompanying estimates of variance. Our modified-Murthy approach, as detailed below, will incorporate data from intensive dockside sampling days, combined with site size measures obtained from on-the-water surveys, to produce total-Area catch and effort estimates with variances.

Dockside Sample Design

Sampling strata will be divided into 'weekday' (Monday through Thursday) and 'weekend' (Friday, Saturday, and Sunday) days. For each two-week period of the fishery, we will randomly select $n=2$ sample days from the $N=8$ possible weekday stratum days (distributed so there is at least one weekday sampled in each of the two weeks). For the weekend stratum (Friday through Sunday), and we will select $n=2$ sample days out of the $N=3$ possible weekend days each week. In total, we will sample 12 site-days every two weeks using the reduced Murthy creel survey design.

Samplers will be stationed at two ramps on each of the selected sampling days. Sites in our sample frame will be selected for sampling via our weighted-random site selection process (e.g., probability proportional to size, using the most current boat survey data). Samplers will achieve 100% sampling coverage at the assigned ramps, with shifts lasting approximately from dawn until dusk (will be adjusted as needed according to changing day lengths throughout the season), in order to intercept all boats. All anglers and fish exiting the fishery through the sampled site will be counted. Any boats that are missed at the sampled site will be counted and recorded on the sampling forms.

In addition, we will sample multiple ramps in Area 11 on the remaining days in the weekday in the weekday stratum, using baseline-level sampling to ensure that we achieve the 20% sample rate goal.

The sites in our sample frame in Area 11 will likely include the following sites:

- Point Defiance Public Ramp
- Point Defiance Boathouse
- Redondo Ramp
- Gig Harbor Ramp
- Narrows
- Armeni Ramp

On-the-water Surveys

On-the-water surveys (boat surveys) will be employed to estimate the percent of effort from sites in our sample frame versus sites outside of the frame (e.g., never-sampled sites). Boat surveys will cover the entire area to pick up effort from all launch sites. We will ask boat occupants where they will tie up or exit the fishery rather than where they launched. We will calculate the size measures of Area 11 sites based on the most recently available boat survey data.

We will conduct an appropriate number surveys per month in Area 11 throughout the season to update site size measures. In addition, on-the-water surveys will be conducted whenever anything changes in the fishery that could affect effort patterns (e.g., if launch sites open or close or if adjacent catch areas open or close).

We will strive for a minimum sample size of one hundred boats per time period stratum (e.g., using data lumped across one month strata, based on consultation with the WDFW biometrician), or as many samples as possible. Factors such as low angler effort and rough winter weather conditions may result in

a lower sample size. The boat survey data will be used to expand site estimates to all sites accessing the fishery.

Harvest and Effort Estimates

The harvest and effort observed at the Murthy-based sampled sites in Area 11 will be expanded to all access sites (based on estimated site size measures) to estimate total harvest for the day. Sample data will be combined and expanded to create stratum estimates of harvest and effort with variances.

To generate weekly catch and effort estimates for Area 11, the four-day “weekday stratum” estimate for Monday-Thursday of each week (based on $n=2$ days sampled out of $N=8$ available weekdays per two-week period) will be added to the “weekend stratum” (Friday-Sunday) estimate for the particular week (based on $n=2$ days sampled out of $N=3$ available weekend days per week). The eight-day weekday estimates for each two-week period will be split evenly between individual weeks in the two-week block to enable weekly estimates, with variances computed using the $n=2$ days sampled out of $N=8$ available weekdays in the appropriate variance equation.

Assumptions

Harvest and effort estimates are based on the following assumptions:

- Boat surveys provide an unbiased estimate of the proportion of anglers accessing fisheries from sites in our sample site frame and sites outside the frame.
- The proportion of total effort accessing the fishery at site A represents the proportion of total catch landed at site A.
- All anglers exiting at a sampled site are interviewed and all anglers accurately report their harvest. If any boats are missed they are counted and catch and effort estimates are expanded appropriately.
- CPUE does not differ significantly between sites in our sample frame and sites outside our sample frame.

Estimates of Total Encounters

We will estimate total Chinook encounters in the Area 11 winter selective Chinook fishery using the bias-corrected approach developed by Conrad and McHugh (2008). Briefly, with the Conrad and McHugh (2008) method, Chinook encounters are estimated by dividing the estimate of legal-marked Chinook harvest by the estimated proportion of the fishable Chinook population that is of legal size and marked. Given that our former “Method 2” approach (e.g., WDFW 2008a) yields negatively biased estimates if anglers release any of the legal-marked Chinook they encounter, Conrad and McHugh estimated a “correction” factor to account for this phenomenon and incorporated it into their estimator. Applying Conrad and McHugh’s (2008) approach within the design proposed in **Figure 11W-1**, we would estimate total Chinook encounters by dividing the estimate of legal-marked Chinook harvest (obtained via creel surveys) by the estimated proportion of the fishable Chinook population that is of legal size and marked (obtained via VTRs).

CWT Sampling

We will sample for coded wire tags (CWT) in the Area 11 winter mark-selective Chinook fishery as part of our dockside angler interviews. The objective is to provide stock specific estimation (by hatchery and brood year) of population parameters, such as fishery contribution and marine survival, as part of the coast-wide CWT program. The sample rate goal for CWT recovery is 20% in mark-selective Chinook fisheries. During dockside interviews samplers will inspect landed Chinook and coho salmon for the presence of coded-wire tags using wand CWT detectors, and snouts will be collected from all fish containing CWTs. For post-season analyses and reporting, CWT data will be used to estimate stock composition by hatchery and brood year. Total unmarked double index tagged (DIT) mortality estimates will be produced post-season.

Voluntary Trip Reports

Additional information on adipose mark rates and the percentage of Chinook that are legal size (22 inches [56 cm] total length and larger) versus sublegal size (less than 22 inches) will be obtained from Voluntary Trip Reports (VTR's) submitted by private-boat anglers during the mark selective Chinook fishery in Area 11. Anglers will be asked to record on the VTR forms the date, number of anglers, target species, CRC Area, each Chinook or coho hooked, whether the fish was kept or released, species (if they positively identified the fish), total length to the nearest 1/8th inch, and whether the fish was adipose fin-clipped or not clipped.

We will take several measures to expand and help ensure the success of our VTR program. First, samplers will distribute our new and improved, user-friendly VTR form that is easier for anglers to complete compared to the old VTR form. Samplers will maximize the distribution of VTRs by handing out VTRs as anglers launch, and collecting the VTRs as anglers exit the fishery. Additionally, samplers will provide participants with a brochure describing the intent of VTRs and their significance to fishery monitoring, and answer VTR-related questions. To increase the response rate, participants are given three options for returning completed VTRs to WDFW: hand-delivering them to samplers, placing them in on-site drop boxes, or sending them via U.S. mail (pre-paid); if they are unsuccessful (i.e., no encounters occurred [harvested or released]) on their trip, the VTR samplers will request that participants keep their forms for future trips.

We will estimate the mark rates of legal-size and sublegal-size Chinook via calculating the season average mark rate from VTR's. We will calculate the proportion of Chinook that were legal-size and marked, legal-size and unmarked, sublegal-size and marked, and sublegal-size and unmarked.

Reporting Schedule

A final report will be written and distributed by November 30, 2014, with a full post-season analysis of all data collected in the 2014 Area 11 winter selective Chinook fishery.

Sampling Rates and Staffing Levels

WDFW will meet or exceed the sampling rate goal of 20% during the selective Chinook fishery time period via increased staffing levels as compared to non-selective fisheries. **Table 11W-1** shows staffing levels needed to implement the intensive monitoring of the winter selective Chinook fishery in Area 11.

Table 11W-1: Number of Additional Staff Required for Monitoring the Winter Selective Chinook Fishery in Area 11, February 1 through April 30, 2014.

Month	Area 11 Dockside Samplers
Feb	2
March	2
April	2

April 12, 2013

2013 Areas 11 & 13 Summer Period Mark-Selective Sport Fishery

The Northwest Treaty Tribes and the Washington Department of Fish and Wildlife (WDFW) have reached agreement to implement Chinook salmon mark-selective fisheries (MSFs) in Areas 11 and 13, for the period beginning June 1, 2013 (May 1 for Area 13 only) and extending no later than September 30, 2013. These fisheries will be implemented consistent with management objectives defined by the co-managers' Puget Sound Chinook Harvest Management Plan (April, 2010), the WDFW-Tulalip management plan for hatchery origin fish (2012 Memorandum of Understanding), and established principles concerning the allocation of harvestable salmon and the exercise of treaty rights. The co-managers will seek to minimize or eliminate any unintended effects of this fishery on individual treaty fisheries, including dislocation and/or disruption. Therefore, treaty fisheries will not be modified in order to accommodate this mark-selective fishery.

The co-managers further agree that:

- The total number of legal-size Chinook encountered by anglers fishing in the mark-selective summer period fishery in Area 11 will be estimated through a sampling and monitoring program (Attachment A). If in-season estimates indicate the estimated total legal-size encounters for the fishery will exceed the preseason forecasted level of 7,975 (FRAM 1213) by more than 10%, the fishery will be modified to control impacts on stocks of concern; and,
- All subarea closures that are part of the co-managers' 2012-2013 fisheries agreement will be in effect in the areas and during the time periods that the agreed Chinook mark-selective fisheries are being conducted.

Fishery Intent

The summer period mark-selective fisheries in Areas 11 and 13 have been implemented for the purpose of collecting information necessary to enable evaluation and planning of potential future Chinook mark-selective fisheries, and to determine whether data needed to estimate critical management and analysis parameters can be collected. The sampling program for the Area 11 & 13 mark-selective fishery will provide a basis for determining if the data needed to estimate critical parameters can be collected and if the sample sizes needed to produce these estimates with agreed levels of precision can be realistically obtained. Prior to the 2014 season, WDFW and the tribes will jointly review and analyze results of the sampling and monitoring program for these fisheries to evaluate the effectiveness at achieving the intended objectives.

Data Needs for Evaluating the Fishery

Monitoring, sampling and reporting programs are being implemented by WDFW for the purpose of providing data necessary to estimate the impact of these mark-selective fisheries and to support the evaluation of future mark-selective fisheries.

WDFW will carry out the monitoring, sampling and reporting program for the Areas 11 & 13 summer Chinook mark-selective fisheries as described in Attachment A. On-water as well as shore-based surveys and sampling techniques will be employed, with the intention of collecting data that will form the basis of post-season analyses and evaluation of performance. During the conduct of these fisheries WDFW will maintain sampling rates in areas 5-13 at levels equivalent to or greater than rates achieved in the most recent two-years. This monitoring, sampling and reporting program is part of the WDFW Puget Sound monitoring and sampling operational plan documented with the co-managers' preseason fishing plan.

These monitoring and sampling programs are designed to provide data to estimate the following parameters:

- the mark rate in the fishery - marked and unmarked encounters will be estimated for legal and sub legal fish by both on-water and shore-based programs;

- the number of fish retained or landed - marked and unmarked fish will be estimated using a shore-based program, including CWT and scale-age sampling;
- the number of unmarked fish released - estimated by shore-based and on-water programs;
- the number of unmarked fish retained - estimated by a shore-based program;
- the number of marked fish released - estimated by a shore-based program in conjunction with on-water mark rate encounter estimates;
- the number of the Chinook encounters that are of sub legal size - estimated by shore-based and on-water programs;
- the stock composition of the mortalities – estimated by CWT and DNA
- estimates of marked and unmarked mortalities of double-index tagged (DIT) and other CWT stocks.

Post-Season Report

WDFW will provide a preliminary post-season report with results of monitoring and sampling programs for the Areas 11 & 13 summer period Chinook mark-selective fishery to the Tribes no later than February 1, 2014 to be considered for planning the 2014 fisheries. The post-season report will include the estimates described above together with the supporting information collected from monitoring and sampling programs. In addition, the report will include estimates of marked and unmarked mortalities of (DIT) and other CWT stocks as described in the section below. The post-season report will include a comparison of independent on-water and shore-based estimates of mark rate, unmarked fish released and sublegal size fish encountered.

Data Needs for Post-Season Estimation of Stock-Specific Unmarked Fish Mortalities

The co-managers agree to implement these fisheries with the understanding that the capability to estimate stock-specific unmarked fish mortalities is preserved. Methods for estimating unmarked mortalities of double-index tagged CWT stocks within the Area 11 & 13 mark-selective chinook fishery will be determined jointly by co-managers, considering recommendations of the Selective Fisheries Evaluation Committee of the Pacific Salmon Commission. WDFW will be responsible for reporting the necessary fishery information and data to the Pacific States Marine Fisheries Commission that allows these estimated to be generated.

In the post-season report (see previous section), WDFW will provide estimates of unmarked mortalities, by DIT group (by stock and age) and area. Unmarked DIT recoveries will be estimated based on estimated recoveries of marked DIT fish and assuming:

1. DIT release numbers provide a reasonable estimate of the unmarked to marked fish ratio; and,
2. the mortality rate for Chinook caught and released in the fishery (*sfm*) is known.

The assumption that the DIT release numbers provide a reasonable estimate of the unmarked to marked fish ratio will be evaluated through post-season comparisons of DIT tag groups. A design for these comparisons will be developed jointly by the co-managers following the method used in analyzing coho DIT groups.¹ All information from this fishery necessary for making these comparisons is assumed to be included in the sampling design and will be included in the post-season report.

Estimates of total fishery related mortalities, including the total exploitation rate or the southern US exploitation rate, that represent the co-managers' management objectives for Puget Sound Chinook management units, are made by combining mortality estimates in mark-selective fisheries with mortality estimates in non-selective fisheries. To ensure that all information necessary to make these estimates is collected, plans for sampling and monitoring of the summer selective fishery in Areas 9 and 10, as well as other mark-selective and non-selective fisheries will be included as a component of the co-managers' annual pre-season agreement.

¹ Analysis of coho salmon double-index tag (DIT) data. 2003

Monitoring the Area 11 Summer Selective Chinook Fishery, June 1 through September 30, 2013

The WDFW Puget Sound Sampling Program will monitor the mark-selective Chinook fishery in Area 11 during the proposed summer season from June 1 through September 30, 2013 via comprehensive data collection strategies consisting of dockside sampling, on-the-water surveys, and our enhanced voluntary trip report (VTR) program, as shown in **Figure 11S-1** and detailed below.

The monitoring plan shown in **Figure 11S-1** will enable us to estimate the critical data parameters necessary for evaluating pilot mark-selective fisheries as previously identified by the co-managers (e.g., WDFW and NWIFC 2009), including: *i*) the mark rate of the targeted Chinook population (based on dockside angler interview data and voluntary trip reports), *ii*) fishery-total angling effort and Chinook salmon encounters (harvest + releases) and mortalities (by size/mark-status class) (e.g., from a combination of VTR-based encounter rate data and dockside sampling), *iii*) the coded-wire tag (CWT)-based stock composition of marked and unmarked Chinook mortalities (from dockside sampling data), and *iv*) fishery-total mortality of marked and unmarked double index tag (DIT) CWT stocks (once post-season CWT sample rates are estimated). In addition, we will acquire and analyze relevant data characterizing other aspects of the pilot fishery, including descriptors of fishing success (catch [landed Chinook] per unit effort, CPUE), the length and age composition of encountered and/or landed Chinook, and the overall intensity of our sampling efforts.

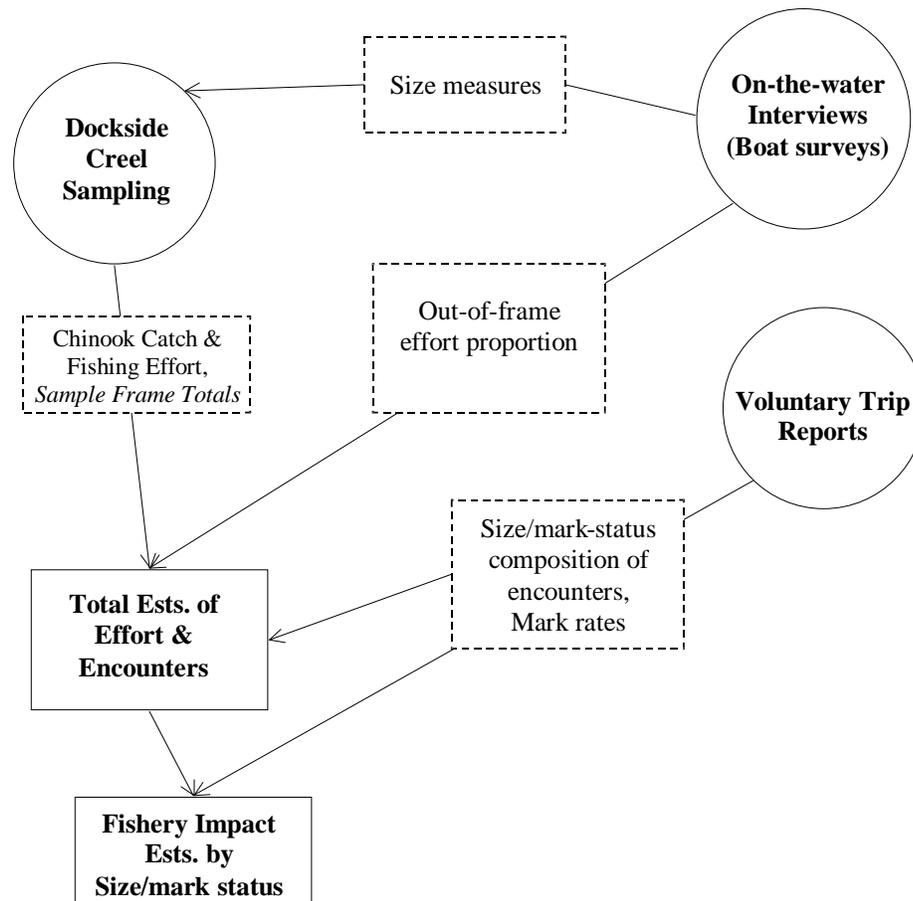


Figure 11S-1. Conceptual diagram of the monitoring plan proposed for the 2013 **Area 11 summer** mark-selective Chinook season. Circles represent discrete sampling activities, dashed boxes represent parameters that are estimated using data from a given activity, and solid boxes depict key quantities estimated from the comprehensive plan. ‘Encounters’ includes both harvested and released Chinook salmon.

Dockside Sampling

We will implement creel surveys during the summer mark-selective Chinook fishery in Area 11 using the same sampling design as implemented successfully during the 2012 summer season -- a modified (i.e., scaled back relative to the full Murthy design employed during the 2007 and 2008 summer seasons) version of the Murthy estimator method (Murthy 1957, Cochran 1977), in order to produce total-Area estimates of catch and effort with accompanying estimates of variance. Our modified-Murthy approach, as detailed below, will incorporate data from intensive dockside sampling days, combined with site size measures obtained from on-the-water surveys, to produce total-Area catch and effort estimates with variances.

Dockside Sample Design

Sampling strata will be divided into 'weekday' (Monday through Thursday) and 'weekend' (Friday, Saturday, and Sunday) days. For each two-week period of the fishery, we will randomly select $n=2$ sample days from the $N=8$ possible weekday stratum days (distributed so there is at least one weekday sampled in each of the two weeks). For the weekend stratum (Friday through Sunday), and we will select $n=2$ sample days out of the $N=3$ possible weekend days each week. In total, we will sample 12 site-days every two weeks using the reduced Murthy creel survey design.

Samplers will be stationed at two ramps on each of the selected sampling days. Sites in our sample frame will be selected for sampling via our weighted-random site selection process (e.g., probability proportional to size, using the most current boat survey data). Samplers will achieve 100% sampling coverage at the assigned ramps from approximately from dawn until dark (i.e., individual samplers will cover early-, mid-, and late-shifts) in order to intercept all boats. All anglers and fish exiting the fishery through the sampled sites will be counted. Any boats that are missed at the sampled sites will be counted and recorded on the sampling forms.

The sites in our sample frame in Area 11 will likely include the following sites:

- Point Defiance Public Ramp
- Point Defiance Boathouse
- Redondo Ramp
- Gig Harbor Ramp
- Narrows Marina Ramp
- Armeni Ramp

On-the-water Surveys

On-the-water surveys (boat surveys) will be employed to estimate the percent of effort from sites in our sample frame versus sites outside of the frame (e.g., never-sampled sites). Boat surveys will cover the entire area to pick up effort from all launch sites. We will ask boat occupants where they will tie up or exit the fishery rather than where they launched. We will calculate the size measures of Area 11 sites based on the most recently available boat survey data.

We will strive for a minimum sample size of one hundred boats per time period stratum (weekday and weekend strata), or as many boats as possible. In addition, boat surveys will be conducted whenever anything changes in the fishery that could affect effort patterns (e.g., if launch sites open or close or if adjacent catch areas open or close). The boat survey data will be used to expand site estimates to all sites accessing the fishery.

Harvest and Effort Estimates

The harvest and effort observed at the Murthy-based sampled sites in Area 11 will be expanded to all access sites (based on estimated site size measures) to estimate total harvest for the day. Sample data will be combined and expanded to create stratum estimates of harvest and effort with variances.

To generate weekly catch and effort estimates for the Area 11 summer fishery, the four-day “weekday stratum” estimate for Monday-Thursday of each week (based on $n=2$ days sampled out of $N=8$ available weekdays per two-week period) will be added to the “weekend stratum” (Friday-Sunday) estimate for the particular week (based on $n=2$ days sampled out of $N=3$ available weekend days per week). The eight-day weekday estimates for each two-week period will be split evenly between individual weeks in the two-week block to enable weekly estimates, with variances computed using the $n=2$ days sampled out of $N=8$ available weekdays in the appropriate variance equation.

Assumptions

Harvest and effort estimates are based on the following assumptions:

- Boat surveys provide an unbiased estimate of the proportion of anglers accessing fisheries from sites in our sample site frame and sites outside the frame.
- The proportion of total effort accessing the fishery at site A represents the proportion of total catch landed at site A.
- All anglers exiting at a sampled site are interviewed and all anglers accurately report their harvest. If any boats are missed they are counted and catch and effort estimates are expanded appropriately.
- CPUE does not differ significantly between sites in our sample frame and sites outside our sample frame.

Estimates of Total Encounters

We will estimate total Chinook encounters in the Area 11 summer mark-selective Chinook fishery using the bias-corrected approach developed by Conrad and McHugh (2008). Briefly, with the Conrad and McHugh (2008) method, Chinook encounters are estimated by dividing the estimate of legal-marked Chinook harvest by the estimated proportion of the fishable Chinook population that is of legal size and marked. Given that our former “Method 2” approach (e.g., WDFW 2008a) yields negatively biased estimates if anglers release any of the legal-marked Chinook they encounter, Conrad and McHugh estimated a “correction” factor to account for this phenomenon and incorporated it into their estimator. Applying Conrad and McHugh’s (2008) approach within the design proposed in **Figure 11S-1**, we would estimate total Chinook encounters by dividing the estimate of legal-marked Chinook harvest (obtained via creel surveys) by the estimated proportion of the fishable Chinook population that is of legal size and marked (obtained via our enhanced Voluntary Trip Report program).

CWT Sampling

We will sample for coded wire tags (CWT) in the Area 11 summer mark-selective Chinook fishery as part of our dockside angler interviews. The objective is to provide stock specific estimation (by hatchery and brood year) of population parameters, such as fishery contribution and marine survival, as part of the coast-wide CWT program. The sample rate goal for CWT recovery is 20% in mark-selective Chinook fisheries. During dockside interviews samplers will inspect landed Chinook and coho salmon for the presence of coded-wire tags using wand CWT detectors, and snouts will be collected from all fish containing CWTs. For post-season analyses and reporting, CWT data will be used to estimate stock composition by hatchery and brood year. Total unmarked double index tagged (DIT) mortality estimates will be produced post-season.

Charter Vessels

Similar to our approach applied during the 2011 season, charter vessels will be included in the Murthy estimate for the 2013 Area 11 summer mark-selective fishery.

Voluntary Trip Reports

Information on adipose mark rates and the percentage of Chinook that are legal size (22 inches [56 cm] total length and larger) versus sublegal size (less than 22 inches) will be obtained from Voluntary Trip Reports (VTR's) submitted by private-boat anglers during the mark selective Chinook fishery in Area 11. Anglers will be asked to record on the VTR forms the date, number of anglers, target species, CRC Area, each Chinook or coho hooked, whether the fish was kept or released, species (if they positively identified the fish), total length to the nearest 1/8th inch, and whether the fish was adipose fin-clipped or not clipped.

The "enhanced" Voluntary Trip Report (VTR) program will be used during 2013 in Area 11, in which an additional WDFW technician will be hired to work exclusively on distributing and collecting VTRs from the angling public. Several measures will be taken to help expand and ensure the success of our VTR program. First, samplers will distribute our new and improved, user-friendly VTR form that is easier for anglers to complete compared to the old VTR form. The VTR position and other samplers will maximize the distribution of VTRs by handing out VTRs as anglers launch, and collecting the VTRs as anglers exit the fishery. Additionally, samplers will provide participants with a brochure describing the intent of VTRs and their significance to fishery monitoring, and answer VTR-related questions. To increase the response rate, participants are given three options for returning completed VTRs to WDFW: hand-delivering them to samplers, placing them in on-site drop boxes, or sending them via U.S. mail (pre-paid); if they are unsuccessful (i.e., no encounters occurred [harvested or released]) on their trip, the VTR samplers will request that participants keep their forms for future trips.

The sample size goal is $n=150$ Chinook encounters per month obtained from VTRs during the four-month Area 11 Chinook mark-selective fishery. From the VTR-based Chinook encounter data collected over the season, we will calculate the proportion of Chinook that were legal-size and marked, legal-size and unmarked, sublegal-size and marked, and sublegal-size and unmarked.

Reporting Schedule

After the four-month Area 11 fishery is completed, we will distribute a report containing catch and effort estimates and total encounter estimates. This report will be distributed within one month following the end of the mark-selective Chinook fishery in Area 11. In this report we will present estimates of angler effort, catch, and releases by species and mark status, with variances, the coefficient of variation, and 95% confidence intervals for the estimates. We will also distribute a second table with the cumulative total Chinook encounters estimated for each month to date. Voluntary Trip Report results will also be included in the report, showing the cumulative total number of legal and sub-legal encounters and the mark rates over the four-month fishery.

A final report will be written and distributed by February 1, 2014, to enable reviews before the 2014-15 North of Falcon process, with a full post-season analysis of all data collected in the 2013 Area 11 summer selective Chinook fishery.

Sampling Rates and Staffing Levels

WDFW will meet or exceed the sampling rate goal of 20% during the selective Chinook fishery time period via increased staffing levels as compared to non-selective fisheries. **Table 11S-1** shows staffing levels needed to implement the monitoring plan for the 2013 Area 11 summer selective Chinook fishery.

Table 11S-1: Number of Additional Staff Required for Monitoring the Summer Selective Chinook Fishery in Area 11, June 1 through September 30, 2013.

Month	Area 11 Dockside Samplers	Area 11 VTR Dockside Position
June	4	1
July	4	1
Aug	4	1
Sept	4	1

MONITORING THE AREA 13 SUMMER SELECTIVE CHINOOK FISHERY FROM MAY 1 THROUGH SEPTEMBER 30, 2013

Overview

The Puget Sound Sampling Program will monitor the mark-selective Chinook fishery in Area 13 during the summer season from May 1 through September 30, 2013. We will implement the monitoring plan shown in **Figure 13-1** to enable estimation of the critical data parameters necessary for evaluating pilot mark-selective fisheries as previously identified by the co-managers (e.g., WDFW and NWIFC 2009), including: *i*) the mark rate of the targeted Chinook population (based on voluntary trip report [VTR] and dockside angler interview data), *ii*) fishery-total angling effort and Chinook salmon encounters (harvest + releases) and mortalities (by size/mark-status class) (e.g., from a combination of VTR encounter rate data and dockside sampling data), *iii*) the coded-wire tag (CWT)-based stock composition of marked and unmarked Chinook mortalities (from dockside sampling data), and *iv*) fishery-total mortality of marked and unmarked double index tag (DIT) CWT stocks (once post-season CWT sample rates are estimated). In addition, we will acquire and analyze relevant data characterizing other aspects of the pilot fishery, including descriptors of fishing success (catch [landed Chinook] per unit effort, CPUE), the length and age composition of encountered and/or landed Chinook, and the overall intensity of our sampling efforts.

During the Area 13 summer mark-selective Chinook fishery we will implement a baseline-level sampling program (**Figure 13-1**), with samplers stationed at the higher-use access sites throughout Area 13. Baseline sampling is opportunistic in nature, with overall sampling effort allocated across space and time in a manner that maximizes the number of angler interviews obtained per sampling event. In-sample catch and effort data (e.g., catch per unit effort [CPUE] and species composition data) are used in conjunction with the Catch Record Card (CRC) system to compute post-season (available approximately 1 to 1.5 years from the close of the fishery) catch estimates by species and area.

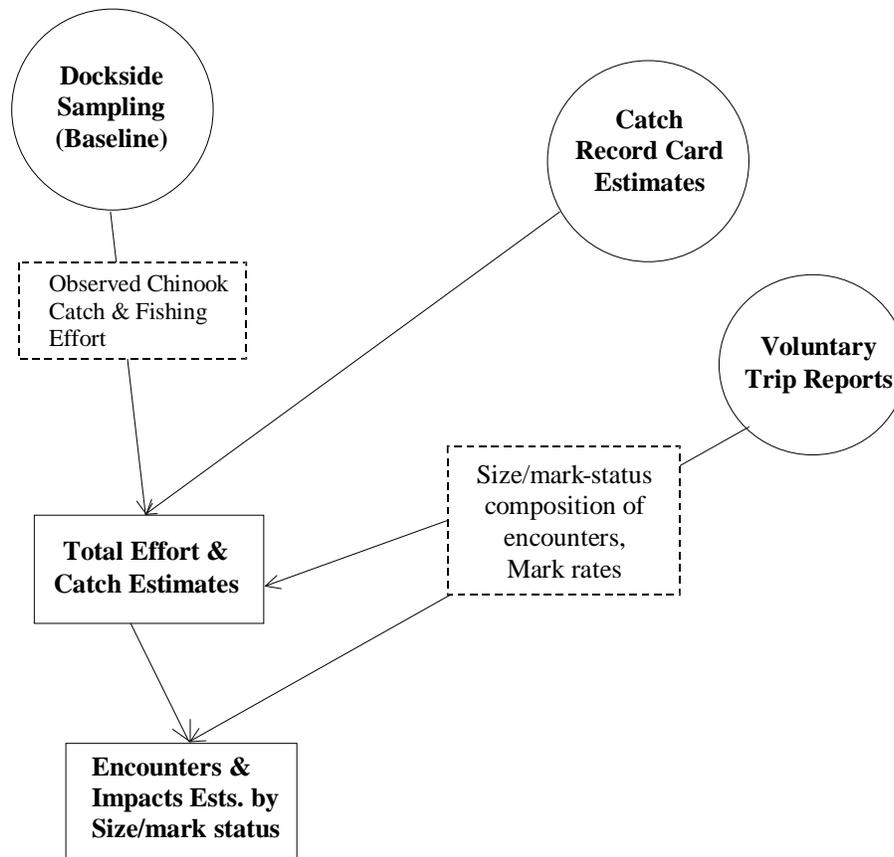


Figure 13-1. Conceptual diagram of the monitoring plan proposed for the **Area 13 summer** mark-selective Chinook season. Circles represent discrete sampling activities, dashed boxes represent parameters that are estimated using data from a given activity, and solid boxes depict key quantities estimated from the comprehensive plan. ‘Encounters’ includes both harvested and released Chinook salmon.

Dockside Sampling

Dockside samplers will interview anglers exiting the fishery at selected access sites in Area 13 via our baseline sampling program, approximately five days per week. Samplers will collect data on: 1) angler effort (i.e., boats and angler counts, trip duration, etc.); 2) encounter (fish retained and/or released) composition, by species (all fish species) and mark status (unmarked vs. adipose-clipped; Chinook and coho salmon only); and 3) landed Chinook size (fork and total lengths) and age composition (i.e., scale samples are collected and subsequently read).

Baseline sampling is opportunistic in nature, with overall sampling effort allocated across space and time in a manner that maximizes the number of angler interviews obtained per sampling event. In-sample catch and effort data (e.g., catch per unit effort [CPUE] and species composition data) are used in conjunction with the Catch Record Card (CRC) system to compute post-season (available approximately 1 to 1.5 years from the close of the fishery) catch estimates by species and area. Sampling size is set at 120 fish per stratum for estimation of species composition and 100 boats per stratum for the estimation of CPUE.

CWT Sampling

We will sample for coded wire tags (CWT) in the Area 13 summer mark-selective Chinook fishery as part of our dockside angler interviews. The objective is to provide stock specific estimation (by hatchery and brood year) of population parameters, such as fishery contribution and marine survival, as part of the

coast-wide CWT program. The sample rate goal for CWT recovery is 20% in mark-selective Chinook fisheries. During dockside interviews samplers will inspect landed Chinook and coho salmon for the presence of coded-wire tags using wand CWT detectors, and snouts will be collected from all fish containing CWTs. For post-season analyses and reporting, CWT data will be used to estimate stock composition by hatchery and brood year. Total unmarked double index tagged (DIT) mortality estimates will be produced post-season (note: DIT mortality estimates cannot be produced until post-season CRC estimates are available because sample-rate estimates are needed for tag expansions).

Voluntary Trip Reports

Additional information on adipose mark rates and the percentage of Chinook that are legal size (22 inches [56 cm] and larger total length) versus sublegal size (less than 22 inches total length) will be obtained from Voluntary Trip Reports (VTRs) that are submitted by private-boat anglers during the winter mark-selective Chinook fishery in Area 13. Anglers will be asked to record on the VTR forms the date, number of anglers, target species, CRC Area, each Chinook or coho hooked, whether the fish was kept or released, species (if they positively identified the fish), total length to the nearest 1/8th inch, and whether the fish was adipose fin-clipped or not clipped.

We will take several measures to help ensure the success of our VTR program. First, samplers will distribute our new and improved, user-friendly VTR form that is easier for anglers to complete compared to the old VTR form. Samplers will maximize the distribution of VTRs by handing out VTRs as anglers launch, and collecting the VTRs as anglers exit the fishery. Additionally, samplers will provide participants with a brochure describing the intent of VTRs and their significance to fishery monitoring, and answer VTR-related questions. To increase the response rate, participants are given three options for returning completed VTRs to WDFW: hand-delivering them to samplers, placing them in on-site drop boxes, or sending them via U.S. mail (pre-paid); if they are unsuccessful (i.e., no encounters occurred [harvested or released]) on their trip, the VTR samplers will request that participants keep their forms for future trips.

We will estimate the mark rates of legal-size and sublegal-size Chinook via calculating the season average mark rate from VTRs. We will calculate the proportion of Chinook that were legal-size and marked, legal-size and unmarked, sublegal-size and marked, and sublegal-size and unmarked.

Estimates of Total Encounters

We will estimate total Chinook encounters in the Area 13 summer selective Chinook fishery using the bias-corrected approach developed by Conrad and McHugh (2008). Briefly, with the Conrad and McHugh (2008) method, Chinook encounters are estimated by dividing the estimate of legal-marked Chinook harvest by the estimated proportion of the fishable Chinook population that is of legal size and marked. Given that our former "Method 2" approach (e.g., WDFW 2008a) yields negatively biased estimates if anglers release any of the legal-marked Chinook they encounter, Conrad and McHugh estimated a "correction" factor to account for this phenomenon and incorporated it into their estimator. Applying Conrad and McHugh's (2008) approach within the design proposed in **Figure 13-1**, we would estimate total Chinook encounters by dividing the estimate of legal-marked Chinook harvest by the estimated proportion of the fishable Chinook population that is of legal size and marked (obtained via VTRs). Estimates of legal-marked Chinook harvest will be obtained via post-season CRC estimates in Area 13.

April 12, 2013

2013-14 Area 12 Winter Period Mark-Selective Sport Fishery

The Northwest Treaty Tribes and the Washington Department of Fish and Wildlife (WDFW) have reached agreement to implement a Chinook salmon mark-selective fishery in Area 12, for the winter period October 1 to December 31, 2013 and February 1 to April 30, 2014. This fishery will be implemented consistent with management objectives defined by the co-managers' Puget Sound Chinook Harvest Management Plan (March, 2004), the WDFW-Tulalip management plan for hatchery origin fish (2005 Memorandum of Understanding), and established principles concerning the allocation of harvestable salmon and the exercise of treaty rights. The co-managers will seek to minimize or eliminate any unintended effects of this fishery on individual treaty fisheries, including dislocation and/or disruption. Therefore, treaty fisheries will not be modified in order to accommodate this mark-selective fishery.

Fishery Intent

The winter period mark-selective fishery in Area 12 has been implemented to provide recreational fishing opportunity directed at hatchery Chinook salmon. Sampling and monitoring programs implemented with this fishery are intended to provide information necessary to evaluate and plan potential future Chinook mark-selective fisheries. The sampling program will provide a basis for determining if the data needed to estimate critical management and analysis parameters can be collected and if the sample sizes needed to produce these estimates with agreed levels of precision can be realistically obtained. Prior to the 2014-15 season, WDFW and the tribes will jointly review and analyze results of the sampling and monitoring program for these fisheries to evaluate the effectiveness at achieving the intended objectives.

Data Needs for Evaluating the Fishery

Monitoring, sampling and reporting programs are being implemented by WDFW for the purpose of providing data necessary to estimate the impact of these mark-selective fisheries on un-marked Chinook and to support the evaluation of future mark-selective fisheries.

WDFW will carry out the monitoring, sampling and reporting program described for Area 12 winter Chinook mark-selective fishery in Attachment A. Shore-based surveys and sampling techniques will be employed, as well as an intensive voluntary trip report program, with the intention of collecting data that will form the basis of post-season analyses and evaluation of performance. During the conduct of these fisheries WDFW will maintain sampling rates in Areas 5-13 at levels sufficient to meet the obligation to adequately sample for CWT and other biological information. This monitoring, sampling and reporting program is part of the WDFW Puget Sound monitoring and sampling operational plan documented with the co-managers' preseason fishing plan.

These monitoring and sampling programs are designed to provide data to estimate the following parameters:

- the mark rate in the fishery - marked and unmarked encounters will be estimated by shore-based and voluntary trip report programs;
- the number of fish retained or landed - marked and unmarked fish will be estimated using a shore-based program, including CWT and scale-age sampling;
- the number of unmarked fish released - estimated by shore-based and voluntary trip reporting of on-water activity;
- the number of unmarked fish retained - estimated by a shore-based program;
- the number of marked fish released - estimated by a shore-based program in conjunction with voluntary trip report program information;
- the number of the chinook encounters that are of sub legal size - estimated by shore-based and voluntary

trip report programs;

- the stock composition of the mortalities – estimated by CWT data collected in the shore-based sampling program;
- estimates of marked and unmarked mortalities of double-index tagged and other CWT stocks.

Post-Season Report

WDFW will provide a preliminary post-season report that will be written and distributed by November 30, 2014, containing a full post-season analysis of all data collected in the October 1 to December 31, 2013 and February 1 to April 30, 2014 Area 12 winter selective Chinook fishery.

Data Needs for Post-Season Estimation of Stock-Specific Unmarked Fish Mortalities

The co-managers agree to implement these fisheries with the understanding that the capability to estimate stock-specific unmarked fish mortalities is preserved. Methods for estimating unmarked mortalities of double-index tagged CWT stocks within this mark-selective chinook fishery will be determined jointly by co-managers, considering recommendations of the Selective Fisheries Evaluation Committee of the Pacific Salmon Commission. WDFW will be responsible for reporting the necessary fishery information and data to the Pacific States Marine Fishery Commission that allows these estimates to be generated.

In the post-season report (see previous section), WDFW will provide estimates of unmarked mortalities, by DIT group (by stock and age) and area. Unmarked DIT recoveries will be estimated based on estimated recoveries of marked DIT fish and assuming:

1. DIT release numbers provide a reasonable estimate of the unmarked to marked fish ratio; and,
2. the mortality rate for chinook caught and released in the fishery (sfm) is known.

The assumption that the DIT release numbers provide a reasonable estimate of the unmarked to marked fish ratio will be evaluated through post-season comparisons of DIT tag groups. A design for these comparisons will be developed jointly by the co-managers following the method used in analyzing coho DIT groups.¹ All information from this fishery necessary for making these comparisons is assumed to be included in the sampling design and will be included in the post-season report.

Estimates of total fishery related mortalities, including the total exploitation rate or the southern US exploitation rate, that represent the co-managers' management objectives for Puget Sound chinook management units, are made by combining mortality estimates in mark-selective fisheries with mortality estimates in non-selective fisheries. To ensure that all information necessary to make these estimates is collected, plans for sampling and monitoring of all mark-selective fisheries will be included as a component of the co-managers' annual pre-season agreement.

¹ *Analysis of coho salmon double-index tag (DIT) data. 2003*

MONITORING THE PROPOSED WINTER AREA 12 SELECTIVE CHINOOK FISHERY, OCTOBER 1 THROUGH DECEMBER 31, 2013 AND FEBRUARY 1 THROUGH APRIL 30, 2014

Overview

The WDFW Puget Sound Sampling Program will monitor the mark-selective Chinook fishery in Area 12 during the winter season from October 1 through December 31, 2013 and February 1 through April 30, 2014. We will employ the monitoring plan shown in **Figure 12-1** to enable estimation of the critical data parameters necessary for evaluating pilot mark-selective fisheries as previously identified by the co-managers (e.g., WDFW and NWIFC 2009), including: *i*) the mark rate of the targeted Chinook population (based on voluntary trip report [VTR] and dockside angler interview data), *ii*) fishery-total angling effort and Chinook salmon encounters (harvest + releases) and mortalities (by size/mark-status class) (e.g., from a combination of VTR encounter rate data and dockside sampling data), *iii*) the coded-wire tag (CWT)-based stock composition of marked and unmarked Chinook mortalities (from dockside sampling data), and *iv*) fishery-total mortality of marked and unmarked double index tag (DIT) CWT stocks (once post-season CWT sample rates are estimated). In addition, we will acquire and analyze relevant data characterizing other aspects of the pilot fishery, including descriptors of fishing success (catch [landed Chinook] per unit effort, CPUE), the length and age composition of encountered and/or landed Chinook, and the overall intensity of our sampling efforts.

During the Area 12 winter mark-selective Chinook fishery we will implement a baseline-level sampling program (**Figure 12-1**), with samplers stationed at the higher-use access sites in both northern and southern Hood Canal. Baseline sampling is opportunistic in nature, with overall sampling effort allocated across space and time in a manner that maximizes the number of angler interviews obtained per sampling event. In-sample catch and effort data (e.g., catch per unit effort [CPUE] and species composition data) are used in conjunction with the Catch Record Card (CRC) system to compute post-season (available approximately 1 to 1.5 years from the close of the fishery) catch estimates by species and area.

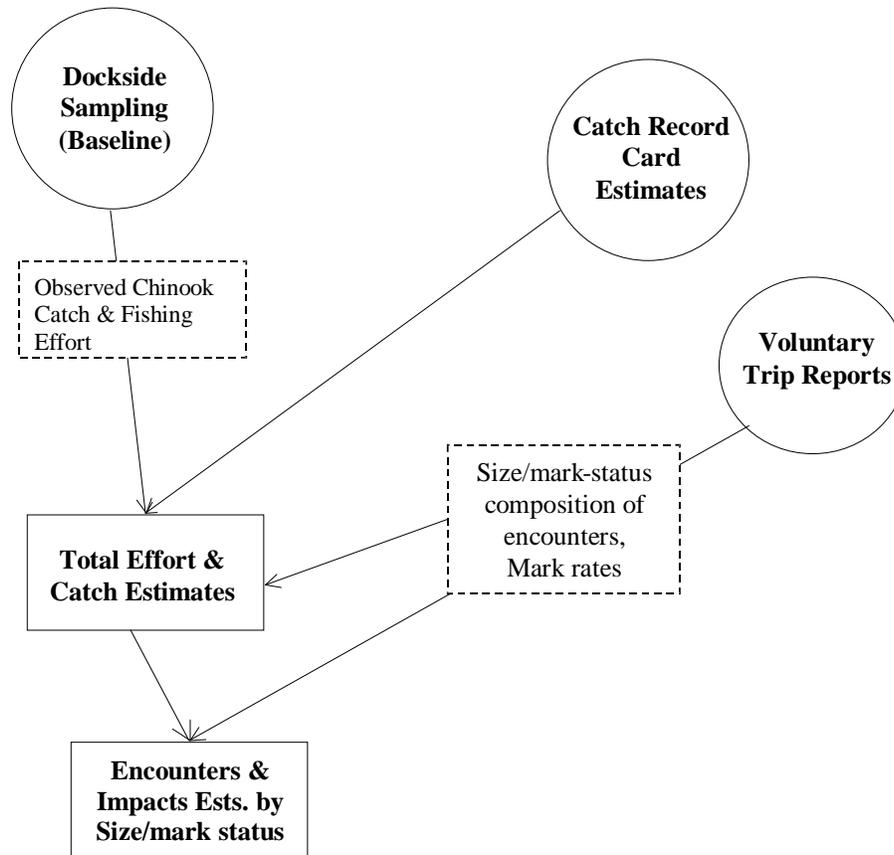


Figure 12-1. Conceptual diagram of the monitoring plan proposed for the **Area 12 winter** mark-selective Chinook season. Circles represent discrete sampling activities, dashed boxes represent parameters that are estimated using data from a given activity, and solid boxes depict key quantities estimated from the comprehensive plan. ‘Encounters’ includes both harvested and released Chinook salmon.

Dockside Sampling

Dockside samplers will interview anglers exiting the fishery at selected access sites in northern and southern Area 12 via our baseline sampling program, approximately five days per week. Samplers will collect data on: 1) angler effort (i.e., boats and angler counts, trip duration, etc.); 2) encounter (fish retained and/or released) composition, by species (all fish species) and mark status (unmarked vs. adipose-clipped; Chinook and coho salmon only); and 3) landed Chinook size (fork and total lengths) and age composition (i.e., scale samples are collected and subsequently read).

Baseline sampling is opportunistic in nature, with overall sampling effort allocated across space and time in a manner that maximizes the number of angler interviews obtained per sampling event. In-sample catch and effort data (e.g., catch per unit effort [CPUE] and species composition data) are used in conjunction with the Catch Record Card (CRC) system to compute post-season (available approximately 1 to 1.5 years from the close of the fishery) catch estimates by species and area. Sampling size is set at 120 fish per stratum for estimation of species composition and 100 boats per stratum for the estimation of CPUE.

CWT Sampling

We will sample for coded wire tags (CWT) in the Area 12 winter mark-selective Chinook fishery as part of our dockside angler interviews. The objective is to provide stock specific estimation (by hatchery and brood year) of population parameters, such as fishery contribution and marine survival, as part of the coast-wide CWT program. The sample rate goal for CWT recovery is 20% in mark-selective Chinook

fisheries. During dockside interviews samplers will inspect landed Chinook and coho salmon for the presence of coded-wire tags using wand CWT detectors, and snouts will be collected from all fish containing CWTs. For post-season analyses and reporting, CWT data will be used to estimate stock composition by hatchery and brood year. Total unmarked double index tagged (DIT) mortality estimates will be produced post-season (note: DIT mortality estimates cannot be produced until post-season CRC estimates are available because sample-rate estimates are needed for tag expansions).

Voluntary Trip Reports

Additional information on adipose mark rates and the percentage of Chinook that are legal size (22 inches [56 cm] and larger total length) versus sublegal size (less than 22 inches total length) will be obtained from Voluntary Trip Reports (VTRs) that are submitted by private-boat anglers during the winter mark-selective Chinook fishery in Area 12. Anglers will be asked to record on the VTR forms the date, number of anglers, target species, CRC Area, each Chinook or coho hooked, whether the fish was kept or released, species (if they positively identified the fish), total length to the nearest 1/8th inch, and whether the fish was adipose fin-clipped or not clipped.

We will take several measures to help ensure the success of our VTR program. First, samplers will distribute our new and improved, user-friendly VTR form that is easier for anglers to complete compared to the old VTR form. Samplers will maximize the distribution of VTRs by handing out VTRs as anglers launch, and collecting the VTRs as anglers exit the fishery. Additionally, samplers will provide participants with a brochure describing the intent of VTRs and their significance to fishery monitoring, and answer VTR-related questions. To increase the response rate, participants are given three options for returning completed VTRs to WDFW: hand-delivering them to samplers, placing them in on-site drop boxes, or sending them via U.S. mail (pre-paid); if they are unsuccessful (i.e., no encounters occurred [harvested or released]) on their trip, the VTR samplers will request that participants keep their forms for future trips.

We will estimate the mark rates of legal-size and sublegal-size Chinook via calculating the season average mark rate from VTRs. We will calculate the proportion of Chinook that were legal-size and marked, legal-size and unmarked, sublegal-size and marked, and sublegal-size and unmarked.

Estimates of Total Encounters

We will estimate total Chinook encounters in the Area 12 winter selective Chinook fishery using the bias-corrected approach developed by Conrad and McHugh (2008). Briefly, with the Conrad and McHugh (2008) method, Chinook encounters are estimated by dividing the estimate of legal-marked Chinook harvest by the estimated proportion of the fishable Chinook population that is of legal size and marked. Given that our former "Method 2" approach (e.g., WDFW 2008a) yields negatively biased estimates if anglers release any of the legal-marked Chinook they encounter, Conrad and McHugh estimated a "correction" factor to account for this phenomenon and incorporated it into their estimator. Applying Conrad and McHugh's (2008) approach within the design proposed in **Figure 12-1**, we would estimate total Chinook encounters by dividing the estimate of legal-marked Chinook harvest by the estimated proportion of the fishable Chinook population that is of legal size and marked (obtained via VTR's). Estimates of legal-marked Chinook harvest will be obtained via post-season CRC estimates in Area 12.

Sampling Rates and Staffing Levels

WDFW will strive to meet a 20% sampling rate goal for the Area 12 winter selective Chinook fishery, although typically effort and catches are very low during the winter season in Area 12, which will impact feasibility of reaching the sample rate goal. We will implement increased staffing levels (compared to non-selective fisheries) to boost the sample rates in Area 12.

Post-Season Report

WDFW will provide a preliminary post-season report that will be written and distributed by November 30, 2014, containing a full post-season analysis of all data collected in the Area 12 winter selective Chinook fishery from October 1 through December 31, 2013 and February 1 through April 30, 2014.

April 12, 2013

2013 Area 12 Summer Period Mark-Selective Sport Fishery

The Northwest Treaty Tribes and the Washington Department of Fish and Wildlife (WDFW) have reached agreement to implement a Chinook salmon mark-selective fishery in Area 12, for the summer period from July 1 through September 30, 2013. This fishery will be implemented consistent with management objectives defined by the co-managers' Puget Sound Chinook Harvest Management Plan (March, 2004), the WDFW-Tulalip management plan for hatchery origin fish (2005 Memorandum of Understanding), and established principles concerning the allocation of harvestable salmon and the exercise of treaty rights. The co-managers will seek to minimize or eliminate any unintended effects of this fishery on individual treaty fisheries, including dislocation and/or disruption. Therefore, treaty fisheries will not be modified in order to accommodate this mark-selective fishery.

Fishery Intent

The summer period mark-selective fishery in Area 12 has been implemented to provide recreational fishing opportunity directed at hatchery Chinook salmon. Sampling and monitoring programs implemented with this fishery are intended to provide information necessary to evaluate and plan potential future Chinook mark-selective fisheries. The sampling program will provide a basis for determining if the data needed to estimate critical management and analysis parameters can be collected and if the sample sizes needed to produce these estimates with agreed levels of precision can be realistically obtained. Prior to the 2014-15 season, WDFW and the tribes will jointly review and analyze results of the sampling and monitoring program for these fisheries to evaluate the effectiveness at achieving the intended objectives.

Data Needs for Evaluating the Fishery

Monitoring, sampling and reporting programs are being implemented by WDFW for the purpose of providing data necessary to estimate the impact of these mark-selective fisheries on un-marked Chinook and to support the evaluation of future mark-selective fisheries.

WDFW will carry out the monitoring, sampling and reporting program described for Area 12 summer Chinook mark-selective fishery in Attachment A. Shore-based surveys and sampling techniques will be employed, as well as an intensive voluntary trip report program, with the intention of collecting data that will form the basis of post-season analyses and evaluation of performance. During the conduct of these fisheries WDFW will maintain sampling rates in Areas 5-13 at levels sufficient to meet the obligation to adequately sample for CWT and other biological information. This monitoring, sampling and reporting program is part of the WDFW Puget Sound monitoring and sampling operational plan documented with the co-managers' preseason fishing plan.

These monitoring and sampling programs are designed to provide data to estimate the following parameters:

- the mark rate in the fishery - marked and unmarked encounters will be estimated by shore-based and voluntary trip report programs;
- the number of fish retained or landed - marked and unmarked fish will be estimated using a shore-based program, including CWT and scale-age sampling;
- the number of unmarked fish released - estimated by shore-based and voluntary trip reporting of on-water activity;
- the number of unmarked fish retained - estimated by a shore-based program;
- the number of marked fish released - estimated by a shore-based program in conjunction with voluntary trip report program information;
- the number of the chinook encounters that are of sub legal size - estimated by shore-based and voluntary

trip report programs;

- the stock composition of the mortalities – estimated by CWT data collected in the shore-based sampling program;
- estimates of marked and unmarked mortalities of double-index tagged and other CWT stocks.

Post-Season Report

WDFW will provide a preliminary post-season report that will be written and distributed by February 1, 2014, containing a full post-season analysis of all data collected in the July 1 to September 30, 2013 Area 12 summer selective Chinook fishery.

Data Needs for Post-Season Estimation of Stock-Specific Unmarked Fish Mortalities

The co-managers agree to implement these fisheries with the understanding that the capability to estimate stock-specific unmarked fish mortalities is preserved. Methods for estimating unmarked mortalities of double-index tagged CWT stocks within this mark-selective chinook fishery will be determined jointly by co-managers, considering recommendations of the Selective Fisheries Evaluation Committee of the Pacific Salmon Commission. WDFW will be responsible for reporting the necessary fishery information and data to the Pacific States Marine Fishery Commission that allows these estimates to be generated.

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Monitoring the Summer Area 12 Selective Chinook Fishery, July 1 through September 30, 2013

Overview

The WDFW Puget Sound Sampling Program will monitor the mark-selective Chinook fishery in Area 12 during the summer season from July 1 through September 30, 2013. We will employ the monitoring plan shown in **Figure 12-1** to enable estimation of the critical data parameters necessary for evaluating pilot mark-selective fisheries as previously identified by the co-managers (e.g., WDFW and NWIFC 2009), including: *i*) the mark rate of the targeted Chinook population (based on voluntary trip report [VTR] and dockside angler interview data), *ii*) fishery-total angling effort and Chinook salmon encounters (harvest + releases) and mortalities (by size/mark-status class) (e.g., from a combination of VTR encounter rate data and dockside sampling data), *iii*) the coded-wire tag (CWT)-based stock composition of marked and unmarked Chinook mortalities (from dockside sampling data), and *iv*) fishery-total mortality of marked and unmarked double index tag (DIT) CWT stocks (once post-season CWT sample rates are estimated). In addition, we will acquire and analyze relevant data characterizing other aspects of the pilot fishery, including descriptors of fishing success (catch [landed Chinook] per unit effort, CPUE), the length and age composition of encountered and/or landed Chinook, and the overall intensity of our sampling efforts.

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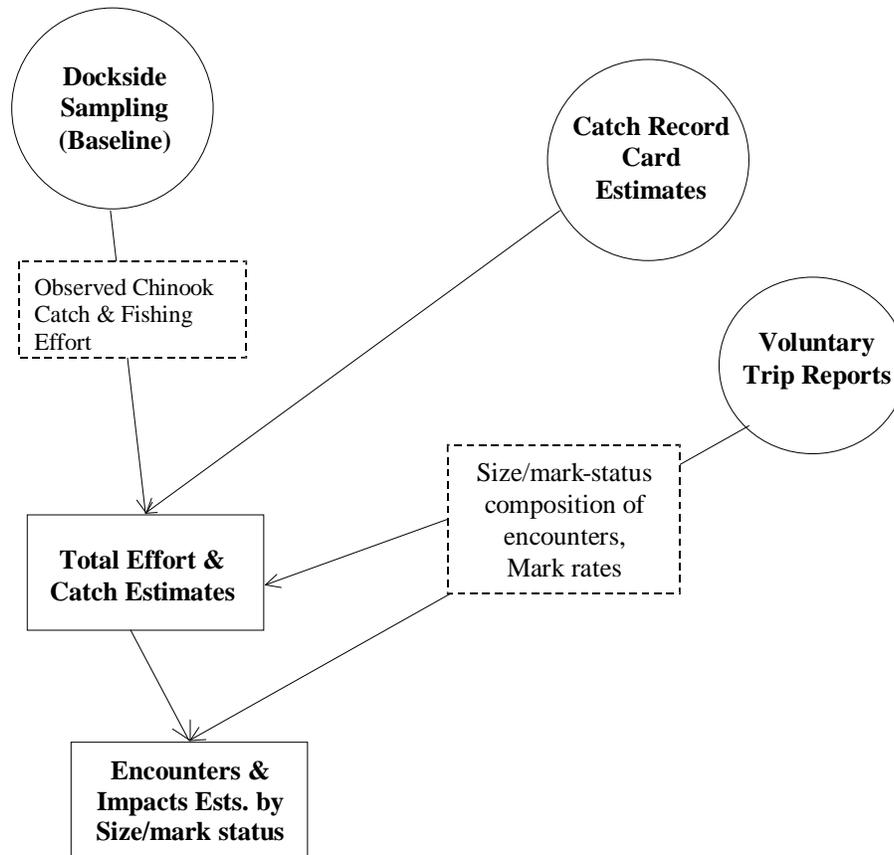


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