Final Technical Report

For the study entitled:

LIST OF POTENTIAL DATA SOURCES ON SUBSISTENCE FISHING IN THE WESTERN STATES

In Fulfilment of NOAA Contract NFFP7000-4-00044

Submitted to:

Karma Norman
NOAA Fisheries
National Marine Fisheries Service
Northwest Fisheries Science Center
2725 Montlake Boulevard East
Seattle, WA 98112

Submitted by:

IMPACT ASSESSMENT, INC.
2166 Avenida de la Playa, Suite F
La Jolla, California 92037

June 22, 2005

TABLE OF CONTENTS

LIST OF EXHIBITS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

IMPACT ASSESSMENT, INC.

2166 AVENIDA DE LA PLAYA, SUITE F • LA JOLLA, CA 92037

TELEPHONE (858) 459-0142 • FACSIMILE (858) 459-9461 • E-MAIL IAI@SAN.RR.COM

Karma Norman
NOAA Fisheries
National Marine Fisheries Service
Northwest Fisheries Science Center
2725 Montlake Boulevard East
Seattle, WA 98112

June 22, 2005

Re: NOAA CONTRACT NFFP7000-4-00044

The attached Final Report entitled LIST OF POTENTIAL DATA SOURCES ON SUBSISTENCE FISHING IN THE WESTERN STATES is submitted in fulfillment of the above Contract requirements and consists of three components – a technical summary, a bibliography, and selected annotations. A separate data appendix has been developed to include copies of data reports, key articles and publications, and pertinent unpublished or otherwise inaccessible materials collected during the course of the research. We have also enclosed a data CD containing reports, data files, maps, and other materials of potential salience to future NOAA analysts concerned with subsistence uses along the Pacific Northwest coast.

The technical summary provides: (1) a description of conceptual frameworks essential to the interpretation of data sources, findings, and/or conclusions; (2) a discussion of the background and methods of data collection, data sources identified and assembled, and how and where they were discovered; and (3) where appropriate, a summary discussion of data analysis, findings, and recommendations for future studies.

The bibliography has been assembled with the purpose of understanding the role and importance of marine resources to the communities and tribes of the Northwest. While many works are included that describe pre-contact, and early contact traditional harvest and resource use patterns among the Indian tribes, the principal thrust of our review of the literature has been on use patterns and practices occurring in the last century, with a primary emphasis on current practices, primarily on use patterns of the last decade (i.e., from 1993-2003).

The selected annotations section is intended to provide the reader with access to summary descriptions of the content and quality of particularly relevant documents, published, and unpublished sources of information of direct bearing on the study objectives.

The data appendix has been compiled to provide the NMFS with quantitative information or sources of directly accessible quantitative information of potential use in developing community profiles of Indian coastal communities. We have endeavored to emphasize important caveats in the use of this quantitative information. For reasons enumerated throughout the report, an emphasis on the use of quantitative indicators of subsistence harvests and uses understates and *devalues* the importance of the resource use patterns. This is because the salmon (and other fishery) harvests represent both the past and present central value of these Indian communities.

We look forward to your review and approval of the report and to working again with you in the near future.

Sincerely,

John S. Petterson, Ph.D.
President

1.0 INTRODUCTION:

The following interim report was prepared by Impact Assessment, Inc. under contract to the Department of Commerce (DOC), National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service (NMFS), and Northwest Fisheries Science Center (NWFSC). The NWFSC mandate is stewardship of living marine resources. A high priority area of concern under the Magnuson-Stevens Act is the determination of the importance of marine resources to fishing communities dependent on those resources or "substantially engaged" in their utilization, and the agency has made a concerted effort to address this requirement by developing community profiles to be used as a foundation for understanding the future effects of NMFS management actions.

In keeping with this mandate, the NWFSC is considering three distinct sources of "engagement" in community dependence on fishery resources: (1) commercial; (2) recreational; and (3) subsistence. The agency, through internal and external sources, has immediate access to the geography, quantity, quality, seasonality, and other social and cultural measures of and influences on community dependence on the commercial aspects of Pacific coast fisheries. While there are shortcomings in available data, the agency also has access to an abundant literature, fishing license, seasonality, and harvest estimates on the recreational aspects of coastal fisheries. The agency, however, does not have what it considers to be an adequate understanding of the characteristics of the subsistence uses of coastal marine resources, and lacks immediate access to information concerning the practices, harvest levels, and cultural dependence on subsistence harvests within its area of jurisdiction. The present study was initiated to help address this shortcoming.

The original concept of the study interpreted the concept of "subsistence" to incorporate all harvests of all marine resources, by all coastal populations, for the purpose of "consumption." This interpretation proved to be untenable for several reasons. First, it was overly broad, encompassing the harvest of all fishery products not taken for the purpose of sale. This definition would therefore subsume "recreational" harvests within "subsistence" harvests. This was neither reasonable nor plausible – whereas recreational fishing is heavily regulated, geographically managed, and routinely quantified, "subsistence" harvests are not. More importantly, the term "subsistence" has a long and meaningful history that both precedes and supersedes the topic of the analysis. The word encompasses much more than the mere harvest of marine products, it *embodies* the traditional, and in important ways, the continuing pattern of life of the aboriginal populations of the continent. For this and other reasons, the focus of the present study was adjusted to center on the traditional subsistence practices, harvest areas, fishery products, and quantities (where available or appropriate) of the Indian populations and communities dependent upon the fishery resources of the U.S. Pacific coast and its principal tributaries.

While considerable quantitative information exists and has been published for the commercial harvest and sale of fishery resources, comparable information is not readily available for the harvest and consumption of subsistence and personal consumption fishery resources among the Indian Tribes of the Pacific Coast. While both the state and Indian tribes both require accurate recording of commercial, and ceremonial, subsistence, and 'take-home' harvests in Washington

waters on sales receipts or 'fish tickets', many factors conspire to minimize the accuracy of this information. Official reports on total and component harvests are maintained by the WDFW, individual tribes, and the principal tribal fishing agencies (NWIFC and CRIFC). This project is designed to identify and assemble information sources to help address this shortcoming and to document likely future research requirements.

The reader should understand, above all, that tribal subsistence harvests (including tribal ceremonial and other related harvests) is not a major component of the overall Pacific Northwest marine fishery. For selected species (e.g., Geoduck), specific periods, and/or geographically constrained localities, however, local subsistence takes can represent a significant portion of the total take of that particular species at that particular location. For the primary species, however, including salmon, halibut, and other fishes, subsistence harvests are taken by relatively few participants which, even when combined, represent only a minor component of the fishery. As indicated in the 2004 Washington State-Tribal Comprehensive Management Plan, "The magnitude of ceremonial and subsistence harvest of Chinook is small relative to commercial and recreational harvest, particularly where it involves critically depressed stocks" (Comprehensive Management Plan for Puget Sound Chinook, Puget Sound Indian Tribes and Washington Department of Fish and Wildlife, March 1, 2004).

Nevertheless, inherent conflicts exist or have arisen as a result of the allocation of 50% of the harvestable fisheries to Indian communities. These arise by virtue of differences in the structure of the allocation process and differential regulatory constraints on Indian and non-Indian fishermen. Subsistence harvests, for example, hold a special status, as stated in the Comprehensive Management Plan (ibid), "For the duration of this Plan, directed fisheries that target listed Chinook populations are precluded, unless a harvestable surplus exists, and except for very small-scale tribal ceremonial and subsistence harvest, and research-related fisheries in a few areas."

2.0 OBJECTIVES:

The objectives of the project were:

(1) To develop a list of potential data sources on subsistence fishing in the western states, including, but not limited to: (a) county courthouse illegal fishing citation databases; (b) non-governmental organizations; (c) government sources (e.g., EPA consumption studies); (d) recreational fishing sources; and (e) relevant and available professional literature;

(2) To examine and evaluate these data sources to determine the best available data reflecting the quantity of subsistence fishing in the U.S. western states (with highest priority on the ten-year period from 1993-2003);

(3) To characterize subsistence fishing by linking quantities available in the data to qualitative attributes of subsistence harvesters, including information on subsistence harvester race, ethnicity, place of birth, place of residence and frequency of involvement in subsistence fisheries;

(4) Where feasible and appropriate, develop a statistical analysis of quantitative data, including tribal commercial catch as compared to subsistence catch, and percentages of subsistence harvest for each harvester category (tribal, recreational, other subsistence harvesters); and,

(5) To develop and submit interim and final reports describing the data sources and where and how they were discovered, including the background and methods of collection, and, where possible, any results, conclusions, and recommendations for future studies.

The achievements and shortcomings of the present study are:

(1) We have identified what we believe to be the major published and unpublished studies and reports of direct pertinence to understanding the traditional and present day subsistence practices of the Indian communities along the Pacific coast (including the Columbia River), from the Canadian border through northern California. Key historical documents have been assembled and provided as an Attachment to this report. Annotations of particularly relevant materials have been compiled and included as an Appendix. Native communities living south of San Francisco no doubt continue subsistence harvests to the extent practicable, but cost and time constraints prevented a detailed examination of these smaller, more widely distributed, and predominantly "interior" Native communities of southern and central California.

(2) The second objective was to examine and evaluate identified data sources to determine the "best available data reflecting the quantity of subsistence fishing in the U.S. western states." We have identified the best sources of quantifiable information for understanding the total harvests of many of the species employed by the Native populations of the Pacific coast for subsistence purposes. Given the critical importance of subsistence practices and harvests to the Native communities of the Pacific coast, not only in terms of their economic importance, but in terms of their social, cultural, and, also, political importance – as a foundation of their claim to continued access to the resource, and as the lynchpin of their sovereign relationship with the United States – great attention has been paid by the agency and the research team to concerns of confidentiality. All information that was publicly obtained through the internet, published sources, or unpublished but publicly disseminated reports, has been identified and highlighted in the present survey report. By agreement with the agency, information considered potentially sensitive or confidential was not intentionally collected by the research team and, where such information was collected incidental to the research, was not considered a deliverable in terms of this research contract. The agency understands that the Native Tribes of the Pacific Northwest are sovereign nations and have been afforded treatment as such.

(3) The third objective was link harvester race, ethnicity, place of birth, place of residence and frequency of involvement in subsistence fisheries to quantities of resources harvested. While some of this kind of information was collected during field visits to the tribal communities, and is assembled and represented in this report, a full treatment of the relationship between subsistence harvest levels – for reasons noted above, as well as cost and time constraints – could not be accomplished for the list of individual communities provided by the agency. We describe, in our recommendations section, how a more extensive study could be fashioned to achieve the desired level of detail and specificity.

(4) The study was not able to adequately address the fourth study objective. Sufficient information could not be obtained on the thirty six (36) Indian tribes visited or considered in development of this report, to construct a quantitative database of subsistence harvest levels, or to perform a defensible statistical or comparative analysis of subsistence harvesting practices or quantities. We do not believe this would be a feasible or desirable objective for future NMFS studies in these Tribal communities. First, as noted above, this information is of a particularly sensitive nature, much more so than such practices among Native communities in Alaska or other parts of the U.S. Second, the quantities involved, based on interviews conducted in most of the affected communities, represent only a very minor component of the overall fishery harvests. Moreover, in some communities, and for particular species (for example, Geoducks) the Tribal entitlements have resulted in considerable conflict with established commercial and local personal harvest practices of other users and concern is quite high about possible misuse of the information. Further data collection and understanding of these areas of actual and potential conflict and confidentiality may be warranted.

(5) The fifth objective was to prepare and deliver interim and final reports describing the data sources and where and how they were discovered, including the background and methods of collection, and, where possible, any results, conclusions, and recommendations for future studies. The interim report focused primarily on work accomplished for the 20 Treaty Tribes of the Puget Sound. The present, final, report incorporates the results of the initial report with additional field investigations, interviews, bibliographic, and secondary data collection effort for the all of the coastal tribes of the Pacific Northwest, reaching from north of San Francisco to the Canadian border. A final section of the report summarizes the results, conclusions, and recommendations of the study effort.

3.0 ORGANIZATION OF THE REPORT:

This Final Report consists of three components – a technical summary, a bibliography, and selected annotations. A separate data appendix has been developed to include copies of data reports, key articles and publications, and pertinent unpublished or otherwise inaccessible materials collected during the course of the research. We have also enclosed a data CD containing reports, data files, maps, and other materials of potential salience to future NOAA analysts concerned with subsistence uses along the Pacific Northwest coast.

The technical summary provides: (1) a description of conceptual frameworks essential to the interpretation of data sources, findings, and/or conclusions; (2) a discussion of the background and methods of data collection, data sources identified and assembled, and how and where they were discovered; and (3) where appropriate, a summary discussion of data analysis, findings, and recommendations for future studies.

The bibliography has been assembled with the purpose of understanding the role and importance of marine resources to the communities and tribes of the Northwest. While many works are included that describe pre-contact, and early contact traditional harvest and resource use patterns among the Indian tribes, the principal thrust of our review of the literature has been on use patterns and practices occurring in the last century, with a primary emphasis on current practices, primarily on use patterns of the last decade (i.e., from 1993-2003). This emphasis is, of course, consistent with the immediate needs of the NMFS for information of pertinence to profiling community dependence on, and relationships to, marine subsistence resources. It is not consistent, however, with the perception of tribal members and representatives of past and, more importantly, long-term future community dependence on these resources.

The selected annotations section is intended to provide the reader with access to summary descriptions of the content and quality of particularly relevant documents, published, and unpublished sources of information of direct bearing on the study objectives.

The data appendix will be compiled to provide the NMFS with quantitative information or sources of directly accessible quantitative information of potential use in developing community profiles of Indian communities. We have endeavored to emphasize important caveats in the use of this quantitative information. For reasons enumerated throughout the report, an emphasis on the use of quantitative indicators of subsistence harvests and uses understates and *devalues* the importance of the resource use patterns. This is because the salmon (and other fishery) harvests are both the traditional and the modern central value of these Indian communities. They are the "salmon people." Virtually every important cultural value has its underpinnings in the salmon harvest – the stories that make up the cultural context and values of present society (origin stories, stories of the relationship of men to women, parent to child, human to animal, human to environment, and so on) are all intimately, directly, and inextricably tied to the salmon harvests. The early historical events of importance to the tribes are related to the salmon harvest – from the early conflicts with invading whites over access to rivers and streams to the treaties and land concessions of the mid-nineteenth century – all emerge and are founded on the relationship of the tribe, clan, and individual to the salmon harvests. The recent history of the social, economic, and political travails of the Northwest Indians of the United States (particularly since the late

1960s) has centered on assertion of their sovereign rights to continue traditional harvests of salmon. Finally, the social, economic, and political future of these tribes is wrapped tightly around maintaining and advancing the linkage between them and the salmon harvests, salmon management, and maintenance of salmon habitat. If these fundamental concepts are kept foremost in mind, the quantities of subsistence resources taken and consumed can be appropriately interpreted within the appropriate cultural context.

4.0 OVERVIEW:

This Final Report considers the subsistence practices and, where available, the quantities of subsistence harvested marine resources, among the coastal and river tributary tribes of the Pacific coast of the U.S., from north of San Francisco to the Canadian border. The study is intended as a preliminary survey of available information on subsistence practices and harvest levels, and does not consider "all" of the Indian Tribes, or all of the marine coastal subsistence products, of potential relevance to the NMFS missions or mandates. We have organized the presentation into three geographically- and culturally-based components. We consider first, for purposes of understanding the predominant users of marine resources, the 20 "Treaty" Tribes of the Puget Sound and Washington Pacific coast (i.e., the member nations of the Northwest Indian Fishery Management Council). Second, we summarize subsistence information identified for the Tribal members of the Columbia River Inter Tribal Fishery Commission (including the Nez Perce, Umatilla, Warm Springs, and Yakama Tribes). And, third, we then summarize field discussions and data collected or identified for the coastal Indian tribes reaching from the Washington-Oregon border to the tribes of Northern California. For reasons discussed in the introduction, the study did not consider Tribes and Indian communities south of San Francisco.

For the "Treaty" Tribes of the Puget Sound and Washington coast, we include the following Indian Tribes: (1) Hoh Indian Tribe; (2) Jamestown S'Klallam Tribe; (3) Lower Elwha Klallam Tribe; (4) Lummi Indian Tribe; (5) Makah Indian Tribe; (6) Muckleshoot Tribe; (7) Nisqually Indian Tribe; (8) Nooksack Indian Tribe; (9) Port Gamble S'Klallam; (10) Puyallup Tribe; (11) Quileute Indian Tribe; (12) Quinault Nation; (13) Sauk-Suiattle Tribe; (14) Skokomish Tribe; (15) Squaxin Island Tribe; (16) Stillaguamish Tribe; (17) Suquamish Tribe; (18) Swinomish Tribe; (19) Tulalip Tribe; and (20) Upper Skagit Tribe.

For the Tribes of the Columbia River, we considered only the following tribes: (1) the Nez Perce; (2) the Umatilla; (3) the Warm Springs; and (4) the Yakama.

For the Oregon and Northern California coastal tribes, we included: (1) the Clatsop Tribe; (2) Tillamook; (3) the Siletz Tribe; (4) the Yaquina, Alsea, Siuslaw, Lower Upqua, and Coos Bay Tribes; and (5) the Coquille Tribe.

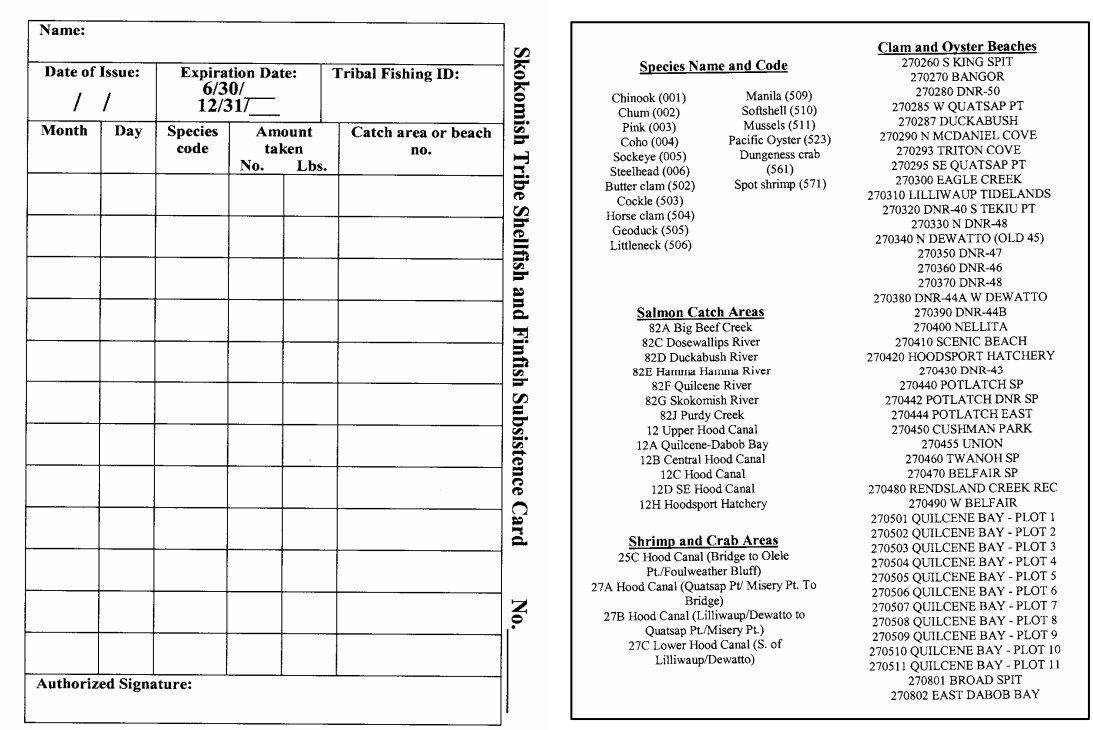
The Twenty "Treaty" Tribes

All commercial fish and shellfish buyers and brokers are also required to complete, and submit to the state, a fish harvest report or fish ticket that provides detailed harvest information on each

purchase from fishermen. That form also provides, as a separate section, a place to report the "take home" portion of the catch that was not sold to the fish or shellfish buyer. While there are many nuances in the reporting of this information, in terms of accuracy and frequency of reporting, this information provides the most complete and reliable source of quantitative information on fish and shellfish retained by commercial fishermen for purposes of subsistence or "personal use." These data are available directly from the Washington Department of Fish and Wildlife.

There is, however, a much larger number of tribal members that fish, clam, or crab for subsistence purposes. All of the tribes allow the subsistence taking of fish and shellfish during appropriate seasons and at appropriate locations, and specific "subsistence" licenses are issued for this purpose. Tribal fishery enforcement officers issue citations, and levy fines on tribal members harvesting subsistence resources without first securing their subsistence license. In order to adequately track and manage subsistence resource uses, tribal members are also required to record and quantify the number of fish, clam, or crab resources taken under the subsistence license, often on the back of the license itself (see example in Exhibit 1). Technically, this information must also be reported to the state as part of the tribal co-management responsibility, and used to adjust the remaining quota allocated to tribal use. From a pragmatic perspective, however, there is little incentive for individuals to carefully record their subsistence harvests, major logistical (and moral) impediments to tribal enforcement of subsistence harvest limits, and, given the very low number of fish and low volume of shellfish taken for strictly subsistence purposes, no real motivation on the part of the state to press for increased accuracy.

This is, perhaps, the central theme of the present report – while from a quantitative perspective the subsistence harvests of the various fishery resources are quite small; from a qualitative or cultural perspective, they represent and embody what are arguably the most important cultural values of these Indian nations. A second important concept to bear in mind is that fish represent only one component of subsistence use patterns, that some tribes may materially rely to a greater extent on shellfish (crab, shrimp, clams) than on fish, and that the use of fishery products must be considered within an overall subsistence dependence that includes a large component of hunting and gathering.



Name:

Date of Issue: / /		Expiration Date: 6/30/___ 12/31/___			Tribal Fishing ID:
Month	Day	Species code	Amount taken No.	Lbs.	Catch area or beach no.

Authorized Signature:

Skokomish Tribe Shellfish and Finfish Subsistence Card No.

Species Name and Code

Chinook (001)
Chum (002)
Pink (003)
Coho (004)
Sockeye (005)
Steelhead (006)
Butter clam (502)
Cockle (503)
Horse clam (504)
Geoduck (505)
Littleneck (506)
Manila (509)
Softshell (510)
Mussels (511)
Pacific Oyster (523)
Dungeness crab (561)
Spot shrimp (571)

Salmon Catch Areas

82A Big Beef Creek
82C Dosewallips River
82D Duckabush River
82E Hamma Hamma River
82F Quilcene River
82G Skokomish River
82J Purdy Creek
12 Upper Hood Canal
12A Quilcene-Dabob Bay
12B Central Hood Canal
12C Hood Canal
12D SE Hood Canal
12H Hoodsport Hatchery

Shrimp and Crab Areas

25C Hood Canal (Bridge to Oleie Pt./Foulweather Bluff)
27A Hood Canal (Quatsap Pt/ Misery Pt. To Bridge)
27B Hood Canal (Lilliwaup/Dewatto to Quatsap Pt./Misery Pt.)
27C Lower Hood Canal (S. of Lilliwaup/Dewatto)

Clam and Oyster Beaches

270260 S KING SPIT
270270 BANGOR
270280 DNR-50
270285 W QUATSAP PT
270287 DUCKABUSH
270290 N MCDANIEL COVE
270293 TRITON COVE
270295 SE QUATSAP PT
270300 EAGLE CREEK
270310 LILLIWAUP TIDELANDS
270320 DNR-40 S TEKIU PT
270330 N DNR-48
270340 N DEWATTO (OLD 45)
270350 DNR-47
270360 DNR-46
270370 DNR-48
270380 DNR-44A W DEWATTO
270390 DNR-44B
270400 NELLITA
270410 SCENIC BEACH
270420 HOODSPORT HATCHERY
270430 DNR-43
270440 POTLATCH SP
270442 POTLATCH DNR SP
270444 POTLATCH EAST
270450 CUSHMAN PARK
270455 UNION
270460 TWANOH SP
270470 BELFAIR SP
270480 RENDSLAND CREEK REC
270490 W BELFAIR
270501 QUILCENE BAY - PLOT 1
270502 QUILCENE BAY - PLOT 2
270503 QUILCENE BAY - PLOT 3
270504 QUILCENE BAY - PLOT 4
270505 QUILCENE BAY - PLOT 5
270506 QUILCENE BAY - PLOT 6
270507 QUILCENE BAY - PLOT 7
270508 QUILCENE BAY - PLOT 8
270509 QUILCENE BAY - PLOT 9
270510 QUILCENE BAY - PLOT 10
270511 QUILCENE BAY - PLOT 11
270801 BROAD SPIT
270802 EAST DABOB BAY

EXHIBIT 1: Example of Subsistence Fishery Permit (courtesy Skokomish Tribe)

5.0 THE TWENTY "TREATY" TRIBES AND THE EVOLUTION OF TRIBAL CO-MANAGEMENT:

5.1 Introduction:

It is important to note that the members of these twenty "treaty" tribes do not represent the entirety of the Indian population dependent on, or affected by, fishery management decisions of the NMFS. Within the State of Washington alone there are at least another 19 federally recognized tribes culturally and/or economically dependent upon marine resources, [1] as well as a number of non-federally-recognized Indian tribes also with significant economic and cultural dependence on these resources.[2] It is not our purpose or charge here to diminish in any way the importance of marine resources to these other subsistence dependent Indian communities – reaching across Washington and into Idaho. Because our goal in this initial survey was to

[1] Other federally-recognized tribes of Washington include the Chehalis, Chelan, Colville, Cowlitz, Entiat, Kalispel, Lake Nespelem, Methow, Moses, Okanogan, Palouse, Samish, San Poil, Shoalwater Bay, Sinkiuse, Spokane, Wenatchee -- and the Nez Perce and Yakama (considered among the tribes of the Columbia River).

[2] Other Washington tribes or bands with applications for recognition still pending include the Chinook Indian Tribe, Duwamish Indian Tribe, Mitchell Bay Band, Noo-Wha-Ha Band, Snohomish Tribe of Indians, Snoqualmoo Tribe, and Steilacoom Tribe. There are, in addition, other tribes (e.g., the Kikiallus Indian Nation and Marietta Band of Nooksack Tribe) that have not applied for formal recognition.

identify available sources of primary data on a large number of Indian tribal subsistence uses, and not to carry out a comprehensive assessment of *all potential* sources of information, we have concentrated our field data collection effort on what we concluded to be the primary user groups along the Northwest Coast of Washington initially, followed by consideration of Oregon and California Indian communities in the Draft Final Technical Report. From a purely resource management or quantitative perspective, we believe these user groups represent the dominant sources of marine subsistence uses along the northernmost coast of the continental U.S.

The twenty "treaty" tribes identified above, and emphasized in this report, are all members of the Northwest Indian Fisheries Commission (NWIFC), which was organized to represent and coordinate the fishery interests of its twenty member tribes. Each of the member tribes has a designated fisheries representative that coordinates with the NWIFC and submits summary (and sometimes very detailed) reports on both commercial and "take-home" (subsistence and ceremonial) harvests. Each of the tribes has established tribal regulations and rules to govern the take and reporting of harvested marine resources – both commercial and subsistence.

5.2 Historical Context:

In order to understand present tribal perspectives on the cultural importance of marine resources, we must first understand the broad historical currents within which both commercial and subsistence use patterns are embedded. At the grave risk of oversimplifying the past two centuries of post-contact history, the relationship of the federal and, later, state governments to the aboriginal inhabitants of this continent has been one of unabated pillage. The following figure provides a graphic summary of the sequence and pace of territorial loses during the period 1775-1992. Of particular concern to the present study is the period from 1850 to 1860 – a decade during which the U.S. government defeated and forcibly removed the Indian inhabitants from virtually the entirety of the Northwest. These events represent perhaps the most shameful episode in U.S. history.

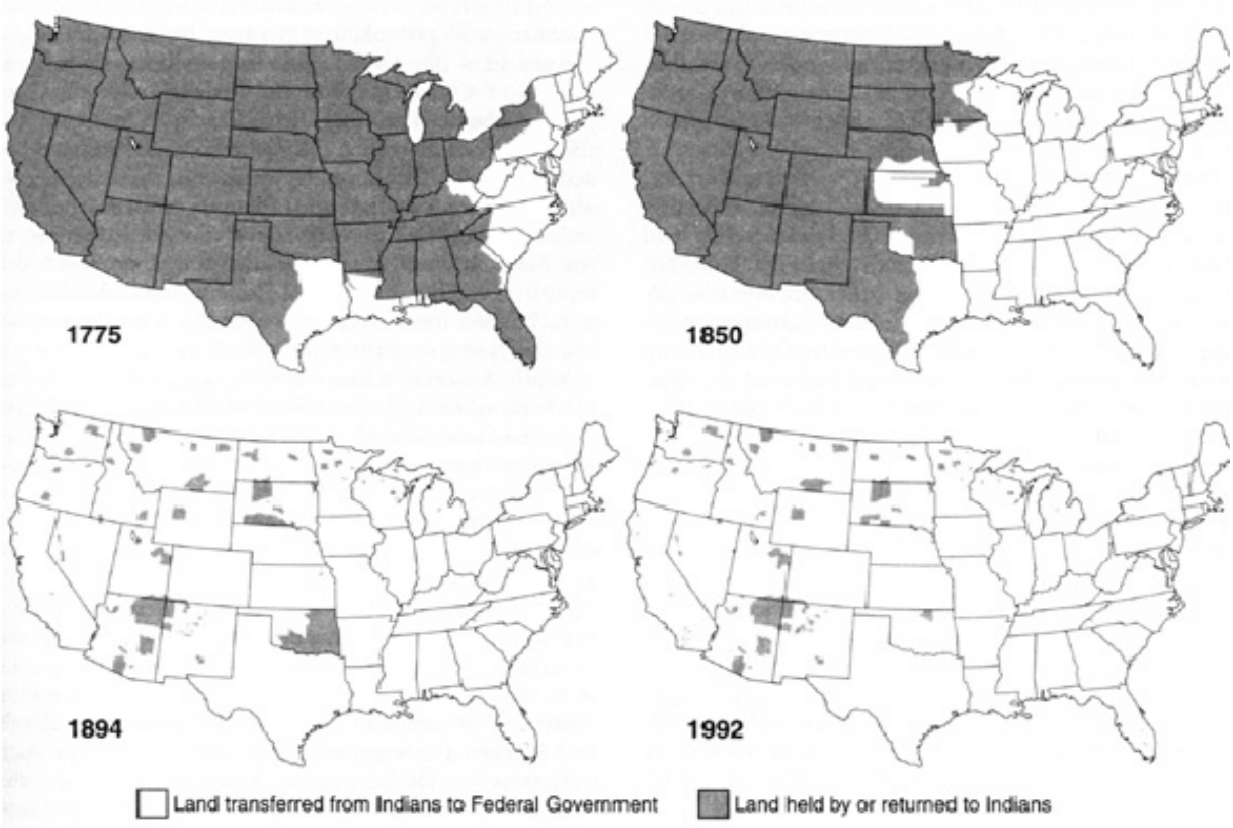


Figure 1: U.S. Government Indian Land Takings: 1775-1992

As depicted above, the lands held by Indian tribes between 1850 and 1894, through fraud, theft, military action, and treaties were diminished to mere tokens of their former size. Similarly, over this period, U.S. government actions resulted in the decimation of Indian populations in all corners of their former lands, and the eradication of most of the entitlements originally granted in the treaties the tribes were compelled to sign. Governmental inaction and benign neglect in the form of abandoned trust responsibilities, unchecked disease, and permissive, sometimes abusive, commercial destruction of natural habitat, the slaughter of indigenous wildlife to extinction or near extinction, the spread of fenced lands, and unabated atmospheric pollution, coastal runoff, and pesticide contamination have further diminished the amount and quality of the lands remaining under Indian control.[3]

Of particular pertinence to the present research, however, and one of the common features of the "treaties" negotiated and signed by the U.S. government during the 1850s, was the sole

[3] As noted above, the press of the U.S. government to remove Indian populations from their lands was only the most obvious means of constraining and limiting their use of traditional lands and resources – many other forms of public and private encroachment were independently employed to achieve similar objectives. Thus, by the mid-1900s, Indian tribes had been stripped not only of their lands but the protections theoretically afforded them by virtue of their treaty entitlements, as well as the protections to which they were entitled by virtue of their trust relationship with the U.S. government (e.g., housing, health, education, and other protections).

concession allowed by the U.S. government, a provision intended to protect and sustain the right of Indian tribes to continue "taking fish at usual and accustomed grounds and stations . . . together with the privilege of hunting and gathering roots and berries on open and unclaimed lands" (Treaty of Point Elliott, 1855).

Despite the existence of these treaty rights, traditional subsistence (and, later, commercial) practices have been persistently undermined and gradually eroded during the intervening decades as a result of federal actions (e.g., Congressional gerrymandering of the Nisqually River out of the reservation in 1906), and state laws and local prohibitions (e.g., trespass laws, licensing laws, laws prohibiting the sale of game or fish, closed seasons and areas, catch limits, and prohibited gear).

It was not until the 1960s and early 1970s, however, during the height of the civil rights movement, that the issue of treaty hunting and fishing rights held by the Indian tribes of Washington would finally be asserted and pursued. Indian activities, and government response, during this period are referred to by some tribal members as the "fish wars," by others as the "fish-ins," when tribal members organized to assert their rights to fish in their traditional fishing grounds, disregarding federal and state regulations designed to allocate the resource to commercial and sport fishermen. This intentional and organized defiance of state laws was centered in the community of Frank's Landing, and on the fisheries of the Puyallup and Nisqually Rivers, and would eventually affect indigenous rights throughout the world. Indian fishermen, initially led by Robert Satiacum, pursued traditional fishing practices on traditional fishing grounds, in direct defiance of the law, and were blocked or arrested at every possible turn, until the U.S. Government agreed to intervene in the Puyallup case – which ultimately reached the U.S. Supreme Court in 1968. This case and associated decision, however, arrived at no real conclusion concerning Indian treaty rights, deciding instead to allow the state to regulate Indian fishing off the reservations, but only if the regulations were "necessary for conservation of the fish" (which had not been proved in the case). The "fish-ins" and arrests continued.

The next event of critical importance to Indian fishing rights centered on a case brought by the Yakima Indian fishermen on the Columbia River (on behalf of the Columbia River Stevens Treaty Tribes) claiming that existing laws simply divided the allowable harvest of salmon between white commercial and sports fishermen, without allocating any portion to Indian users. U.S. District Court Judge Robert Belloni's ruling in 1969 determined that Indians were, in fact, entitled by treaty rights to an "equitable" portion of the harvest, finding that:

> "There is no reason to believe, that a ruling which grants the Indians their full treaty rights will affect the necessary escapement of fish in the least. The only effect will be that some of the fish now taken by sportsmen and commercial fishermen must be shared with the treaty Indians, as our forefathers promised over a hundred years ago."

His decision, however, did not result in a determination of what constituted an "equitable" share of the fish, and the decision was not taken to apply directly to the fisheries of western Washington, where the "fish-ins" and arrests continued.

The case of Northwest Washington Indian treaty rights was finally adjudicated in 1974 when the U.S. Government agreed to enter the case in *U.S. v. Washington*. This case resulted in what has become known as the Boldt decision (after the federal district judge who issued the initial ruling). The decision was ultimately appealed and argued before the U.S. Supreme Court and, finally, unanimously upheld in 1979. Judge Boldt, in his ruling, reaffirmed the sovereign rights of the Indian tribes of western Washington to continue traditional fishing and determined that an "equal" part of the harvest, or 50 percent of the harvestable number of salmon and steelhead returning to Washington waters, represented an appropriate permanent allocation of the resource. He concluded that "by dictionary definition and as intended and used in the Indian treaties and in this decision, 'in common with' means sharing equally the opportunity to take fish at 'usual and accustomed grounds and stations.' "

As Judge Boldt wrote in his 1974 decision:

> "One common cultural characteristic among all of these Indians was the almost universal and generally paramount dependence upon the products of an aquatic economy, especially anadromous fish [i.e., both salmon and steelhead trout]. . . . At the treaty negotiations, a primary concern of the Indians whose way of life was so heavily dependent upon harvesting anadromous fish was that they have freedom to move about to gather food, particularly salmon . . . at their usual and accustomed fishing places. . . . Reluctant to be confined to small reservation bases, the Indian negotiators insisted that their people continue to fish as they had beyond the reservation boundaries. There is no indication that the Indians intended or understood the language [of the treaties] . . . to limit their right to fish in any way."

The Boldt decision, inevitably, led to a conclusion that the only effective means of managing the fisheries of the Northwest was by means of "co-management" strategies involving collaborative arrangements between Federal, State, and Indian agencies to manage the fisheries (and associated habitats).

The following year (1975) Judge Belloni, in *U.S. v. Oregon* applied the 50 percent allocation formula to all Columbia River fisheries, holding that the States of Oregon and Washington must afford the tribes an equal share of the allowable fish harvests.

None of the preceding cases, however, addressed or settled the issue of allocation of shellfish resources. Finally, in 1994, District Court Judge Edward Rafeedie, in a subproceeding of *U.S. v. Washington* concerning the taking of shellfish resources from public and private tidelands under the Stevens Treaties, cited the terms of the Point No Point Treaty (1855) that:

> ". . . the right of taking fish at usual and accustomed grounds and stations is further secured to said Indians in common with all citizens of the United States; and erecting temporary houses for the purposes of curing; together with the privilege of hunting and gathering roots and berries on open and unclaimed lands. Provided however, that they shall not take shellfish from any beds staked or cultivated by citizens."

Judge Rafeedie concluded that all public and private tidelands within the case area [4] are subject to a treaty harvest of 50 percent of the allowable shellfish take. In his decision he wrote that "A treaty is not a grant of rights to the Indians, but a grant of rights from them" to white settlers, and that "This right was promised as a sacred entitlement, one which the United States had a moral obligation to protect. The court may not rewrite the treaties or interpret the treaties in a way contrary to settled law simply to avoid or minimize hardship to the public or to the intervenors (i.e., private property owners and commercial shellfish growers)." The Rafeedie Decision was appealed to the Ninth Circuit Court, which unanimously affirmed (1998), and then subsequently appealed to the U.S. Supreme Court which finally denied a petition for rehearing the case in 1999 – effectively ratifying the decision.

An important final hurdle remains in the relationship between the Indian tribal claims and entitlements, and other international treaties with Canada and Canadian Indian Tribes over access rights to the use of Fraser River salmon.

Cooperative fish management, as it has evolved to the present, involves the direct collaboration and coordination of fishing activities through two processes: (1) direct government-to-government collaboration with the Washington Department of Fish and Wildlife in managing fisheries within Washington state waters; (2) participation in Pacific Fishery Management Council (PFMC) process which sets annual fisheries in federal waters off the coasts of Washington, Oregon and California; and (3) participation in the North of Falcon annual collaboration on management of inland waters of Puget Sound, Willapa Bay, Grays Harbor and state rivers. The four tribes of the Columbia River and its tributaries are also direct participants in fisheries management decisions affecting their entitlements under the *U.S. v. Oregon* decisions.

By any measure, the history of Indian involvement in the marine fisheries management and harvests has evolved in a radically different direction since the Boldt decision. The changes, however, have occurred incrementally. Each year the Treaty Tribes, under the guidance of the NWIFC, have advanced their agenda and strengthened their foothold in fishery management issues. They have taken their role as co-managers of fishery resources very seriously, assembling a highly competent staff of fish biologists, habitat experts, GIS specialists, and others to improve the management of salmon and other marine resource harvests (e.g., in formulating and enforcing regulatory standards, in setting appropriate escapement goals, in improving spawning habitat, and in promoting hatchery development). The NWIFC, alone, employs seventy staff, and each of the tribes employs their own staff of habitat managers, code enforcement personnel, and support personnel devoted to fishery management. This entire process has generated, predictably, considerable opposition from established commercial and recreational users of the resource and has continued as a persistent source of friction between Indian and non-Indian fishery interests since 1974.

---

[4] The court's ruling applied to 15 northwest Indian tribes: Jamestown S'Klallam, Lower Elwha Klallam, Lummi, Makah, Muckleshoot, Nisqually, Nooksack, Port Gamble S'Klallam, Puyallup, Skokomish, Squaxin Island, Suquamish, Swinomish, Tulalip, and Upper Skagit.

6.0 HISTORICAL SALMON HARVESTS:

In order to place the subsistence harvest in perspective, we must first understand its relationship to the overall commercial take of salmon by the tribes. And before we can interpret that relationship, we must first understand the relative take of all tribal fisheries in relationship to the total commercial take of salmon in the State of Washington.

Tribal fishermen are entitled, by law, to an allocation of 50 percent of the total allowable harvest (see http://wdfw.wa.gov/fish/tribal/2004-05agreement.pdf for current year tribal and non-tribal troll allocation variables, and http://wdfw.wa.gov/fish/tribal/index.htm for characterization of river net allocations and restrictions). As co-managers of the fisheries, each tribe is responsible for establishing regulations, permitting requirements, and enforcement provisions, and for maintaining harvest records for each of their individual fisheries (see http://www.pnptc.org/regulations.htm for a representative example of regulations developed and employed by the Point No Point Treaty Council). The following graphic depicts the total annual salmon harvest for the members of the NWIFC.

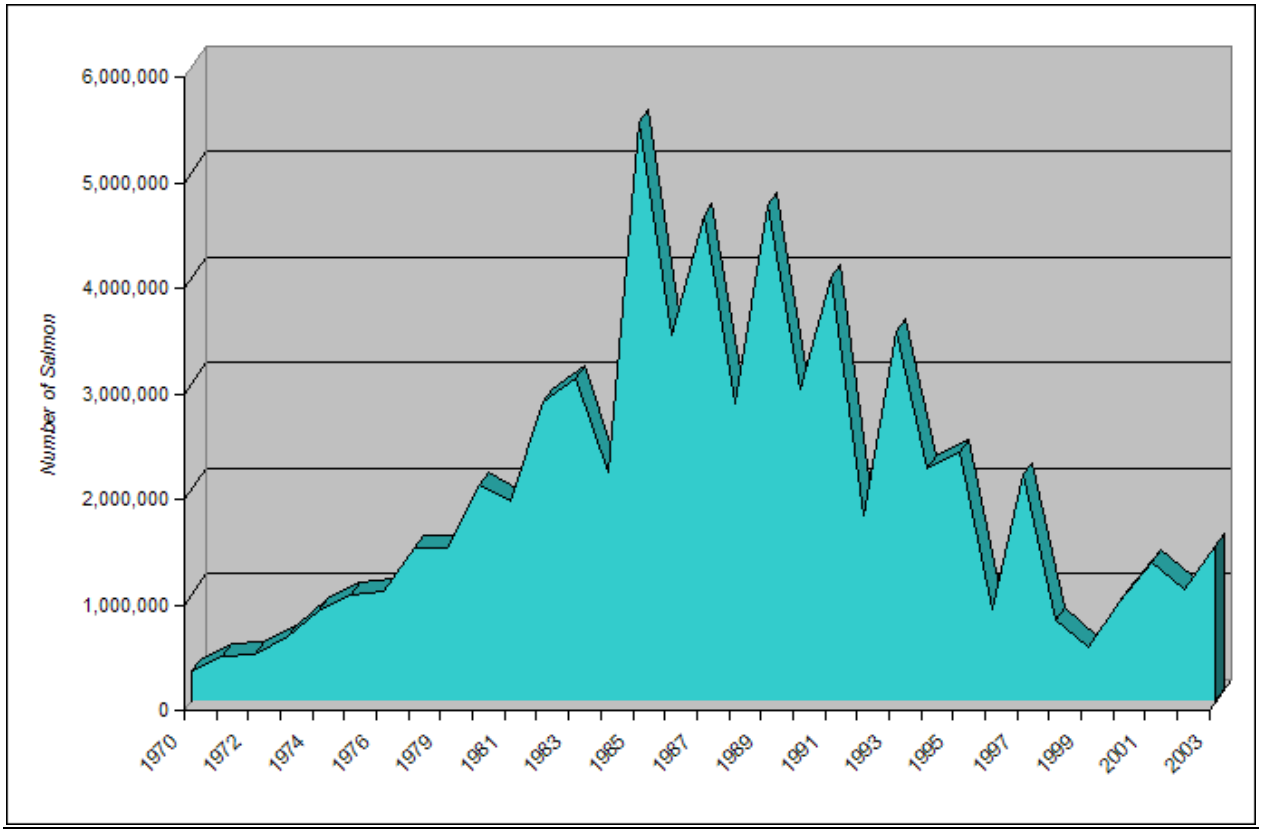


Figure 2: Total Number of Salmon Taken by NWIFC Tribes

The following graphics depict: (1) the total commercial net and troll harvest of Chinook (King) salmon (used here as our "sentinel" indicator species)[5] by year for the period 1980 to 2003 for marine Puget Sound; (2) recreational salmon catch in Puget Sound marine areas: 1985-2002 (note, in particular, the precipitous decline in recreational take of Chinook); and (3) annual tribal harvest of Chinook: 1970-1997. It is very important to appreciate that the salmon "fishery" is composed of many different harvest areas or zones, and that each of these zones is managed more or less independently, each with specific harvest limits, fishing periods, and gear restrictions. Thus, the aggregate numbers for the entire fishery do not accurately reflect the *relative* importance of the individual fisheries to the adjacent tribal communities. Moreover, immense differences exist in terms of species abundance between individual streams, thus directly affecting availability of fish to the different upriver habitats and tribal communities. In addition, the annual returns of salmon to any particular fishing zone can vary radically from one year to the next. Finally, dependence on salmon, as opposed to halibut, steelhead, crab, clams, and so on can vary dramatically from one area of the coast to the next.

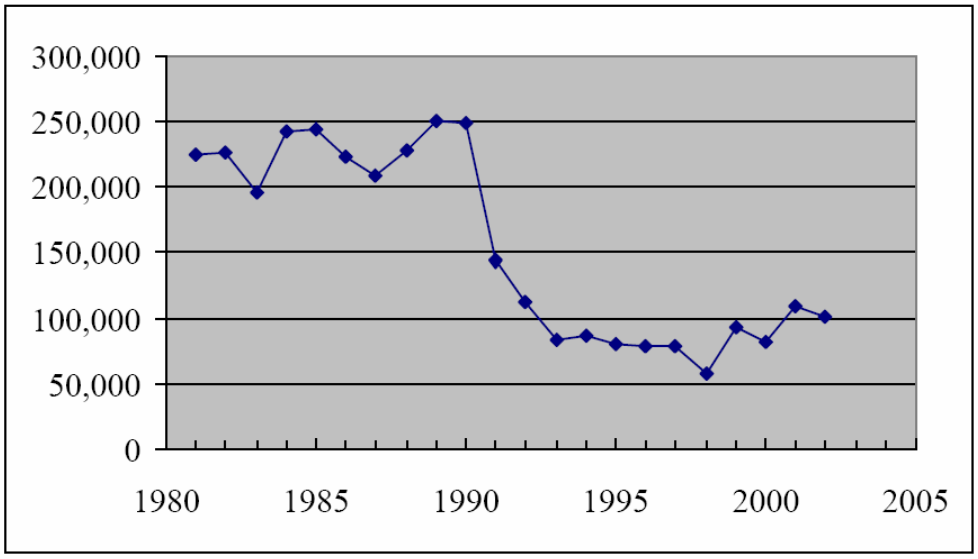


Figure 3: Commercial Net and Troll Catch of Chinook in Puget Sound; 1980-2002

[5] As a result of recent aggressive conservation efforts, targeted commercial harvests of Chinook have been of minor importance, except at or near the terminal areas of hatchery operations (i.e., in the areas near Bellingham /Samish Bay and the Nooksack River, Tulalip Bay, Elliot Bay and the Duwamish River, Lake Washington, the Puyallup River, the Nisqually River, Budd Inlet, Chambers Bay, Sinclair Inlet, southern Hood Canal and the Skokomish River). From 1998 to 2002, harvests have declined from about 200,000 Chinook to less than 100,000.

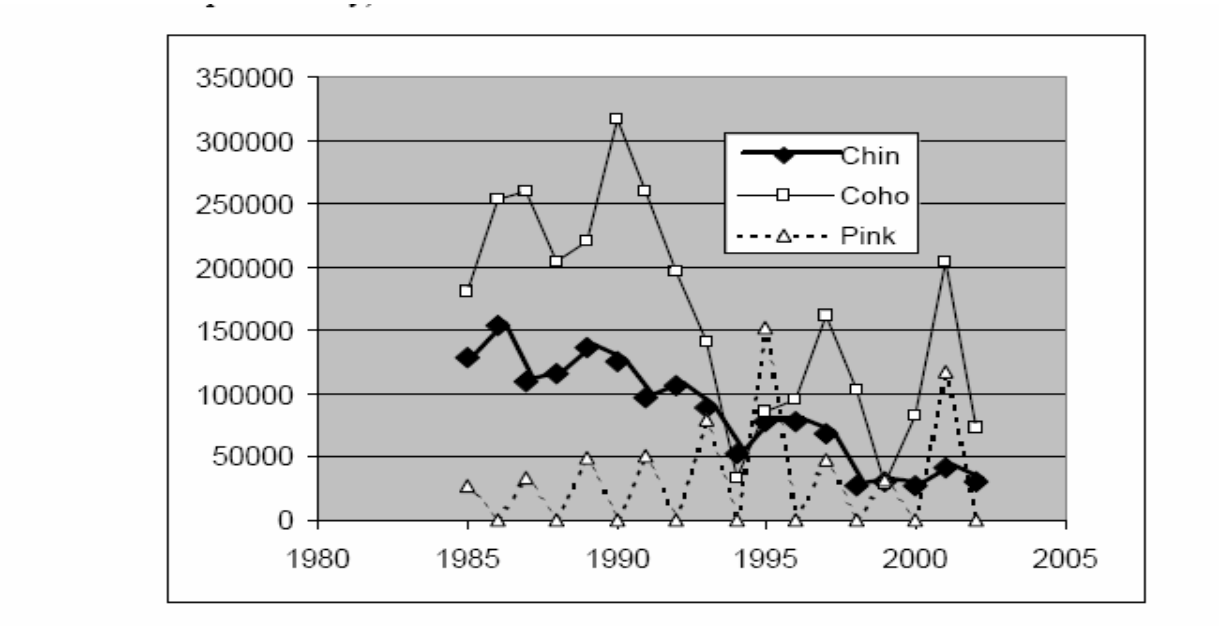


Figure 4: Recreational Salmon Catch in Puget Sound Marine Areas: 1985-2002 (non-Tribal)

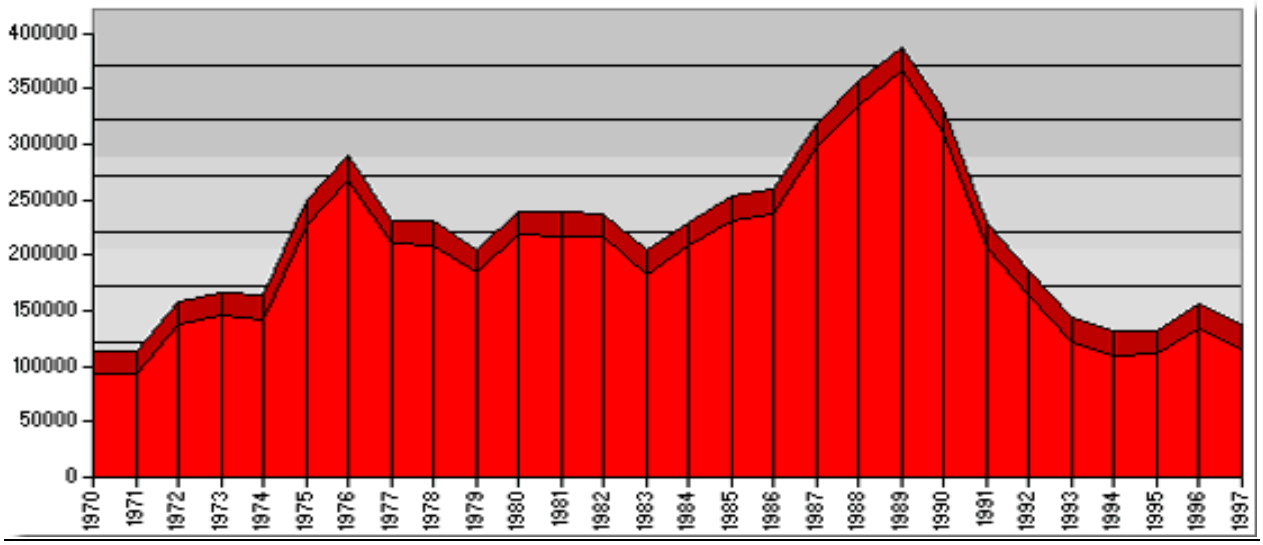


Figure 5: Annual Tribal Harvest of Chinook: 1970-1997

With the previous caveats in mind, it is clear that the overall harvests of native Chinook salmon, our sentinel species, in the State of Washington have undergone a dramatic decline among commercial, recreational, and tribal users. The above figures demonstrate a precipitous decline from 250,000 commercially harvested Chinook from Puget Sound in 1990 to 100,000 in 2002. The recreational harvest of Chinook, during roughly the same period, dropped from approximately 150,000 in 1985 to approximately 30,000 in 2002. During the period 1990 to 1997, total tribal harvests of Chinook dropped from approximately 325,000 to 125,000.

As indicated in the following figure, tribal harvests of Chum salmon have declined from a peak harvest of 950,000 in 1988 to approximately 280,000 in 1997 (these figures will be updated to 2003 in the final report). As noted on the NWIFC website, "Over the past two decades, the treaty tribes have voluntarily reduced their overall salmon harvests by 80-90 percent to protect weak wild salmon stocks."

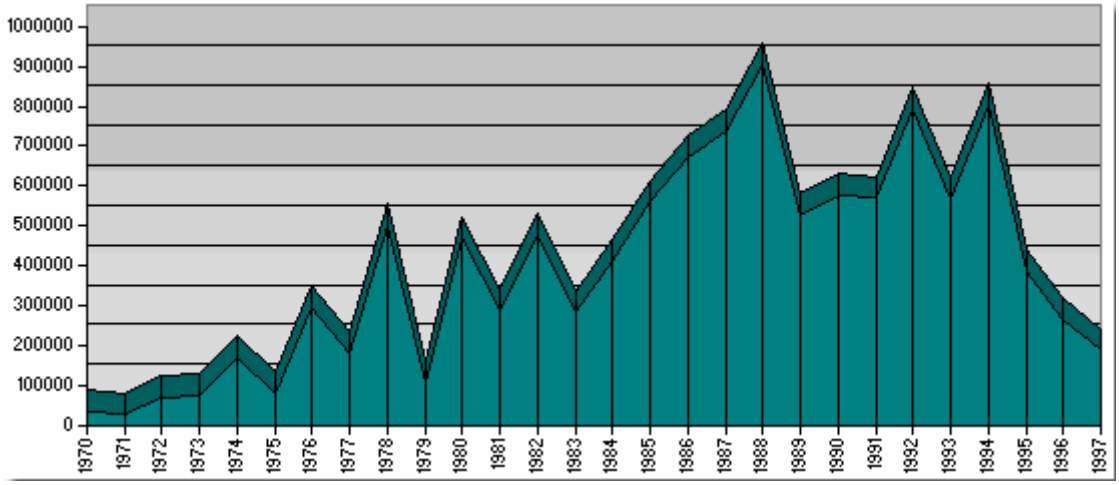


Figure 6: Tribal Harvest Statistics, 1970-1997; Chum Salmon

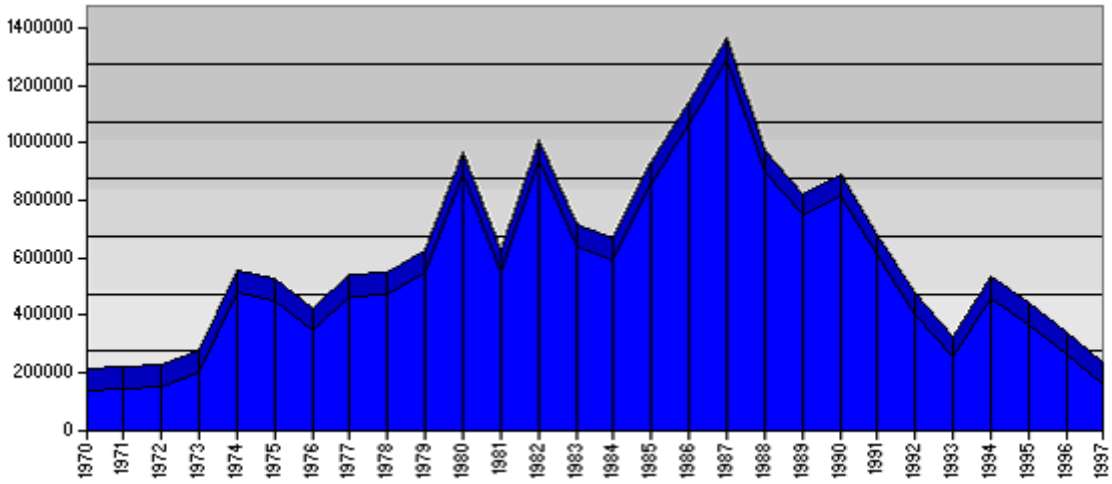


Figure 7: Tribal Harvest Statistics, 1970-1997; Coho Salmon

As depicted in the above figure, the Tribal harvest of Coho salmon has declined from a peak in 1987 of 1.3 million to less than 200,000 in 1997.

7.0 CAUSES OF DECLINE:

The two principal causes of decline (biology and market) have operated in tandem to decimate the commercial salmon fisheries of the state, and dramatically limit the availability of subsistence harvests. Biology, in the form of lower species abundance, resulting from contaminated streams, degraded habitat and spawning conditions, inadequate escapement, high-seas interception, man-made barriers (dams), and so on, represent perhaps the largest component of the problem. Dams represent one of the primary sources of the decline in salmon abundance in the state. For example, the combined commercial, recreational, and subsistence harvests are estimated to account for only five percent (5%) of the total human-induced mortality for the Columbia River salmon runs – with dams accounting for as much as eighty-five percent (85%). As indicated in the following figure, virtually all of the major salmon rivers and streams in the Sstate of Washington are affected by dams.

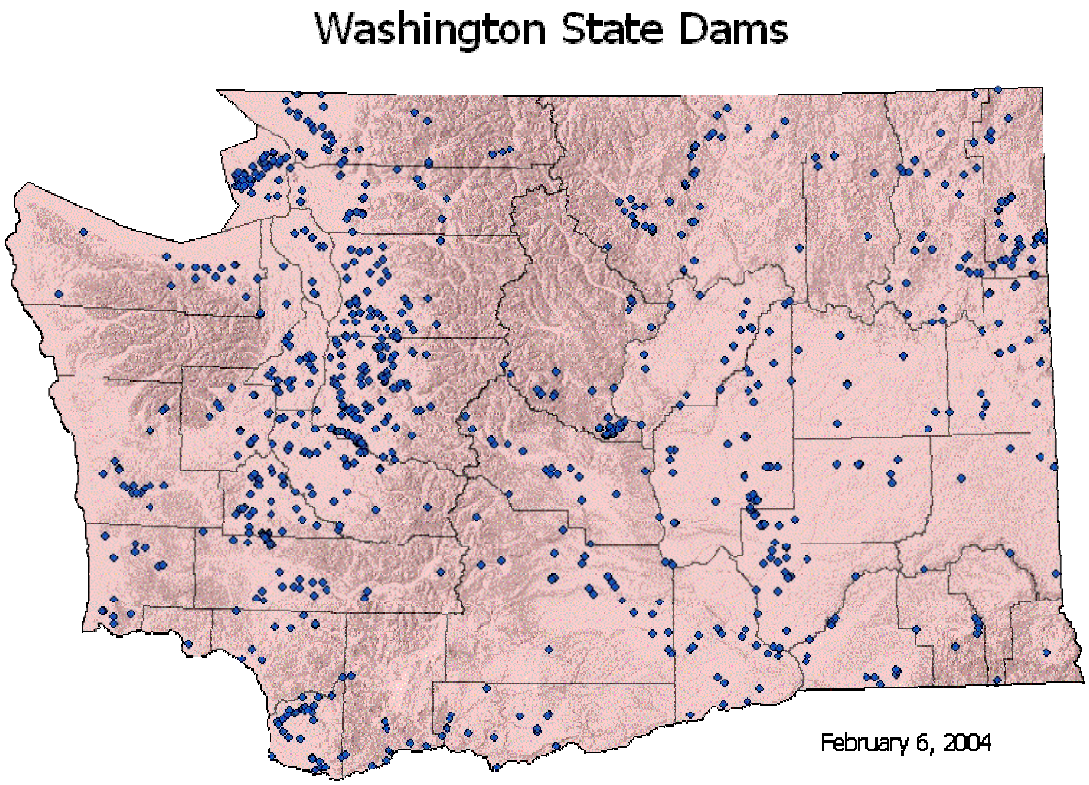


Figure 8: Distribution of Dams in the State of Washington

There are over 1,000 dams in the Sstate of Washington that meet the state's definition of "an artificial barrier that can or does impound more than 10 acre-feet of water." Of these, 870 dams fall under regulations of the State's Dam Safety Office, and 306 are located above populated areas, and therefore represent high or significant downstream hazards. Approximately ten10 to-15 new dams are constructed each year. Not all of these dams, however, directly affect the annual migration of salmon to spawning grounds but, taken in their entirety, they represent a major impediment to natural reproduction of the species. The following figure identifies the

major dams affecting the movement of salmon to spawning areas throughout Washington and Idaho.

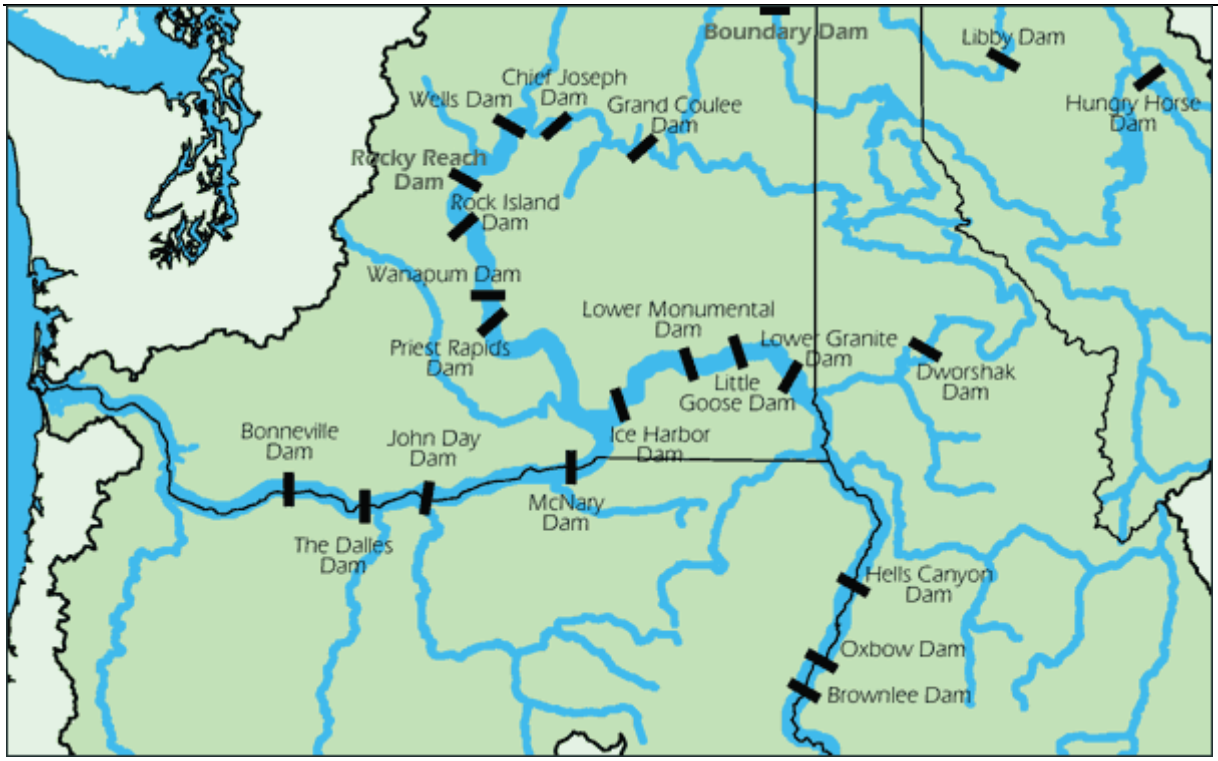


Figure 9: Major Dams in the State of Washington

Source: www.nwcouncil.org/library/2004/2004-1/print.asp

A second major component of the decline has been the advent and explosive expansion of fish hatcheries and pen-reared salmon throughout the state – primarily a market force. The resulting rapid growth in abundance of farmed fish is seen as a critical element of the decline in the market for natural salmon harvests, and resulting precipitous decline in the price paid per pound of salmon harvested, with the greatest impact falling on the more abundant (and less preferred) Chum salmon of the southern reaches of the Sound. Thus, regardless of habitat considerations, escapement issues, or abundance in salmon runs, commercial salmon harvests have endured a lengthy period of declining returns on investment, to the point where some commercial fishermen, including tribal fishermen, *simply decline to fish rather than lose money on the season*.

Hatcheries represent a core component of the state's efforts to sustain the salmon fisheries of the northwest. The growth and spread of hatchery operations has been based on the expectation that their production can offset the loss of habitat, and reproductive capacity, of the rivers, streams, and lakes cordoned off by dams, the decline of river flows due to irrigation, the contamination associated with agricultural and forest practices, the rapid rise in number of fishermen, and the

degradation of coastal streams, estuaries, and other resources by pollution associated with population growth.

As depicted in the following graphic, there are over 100 state and federal hatcheries, and 40 tribal hatcheries, currently operating in the State of Washington.

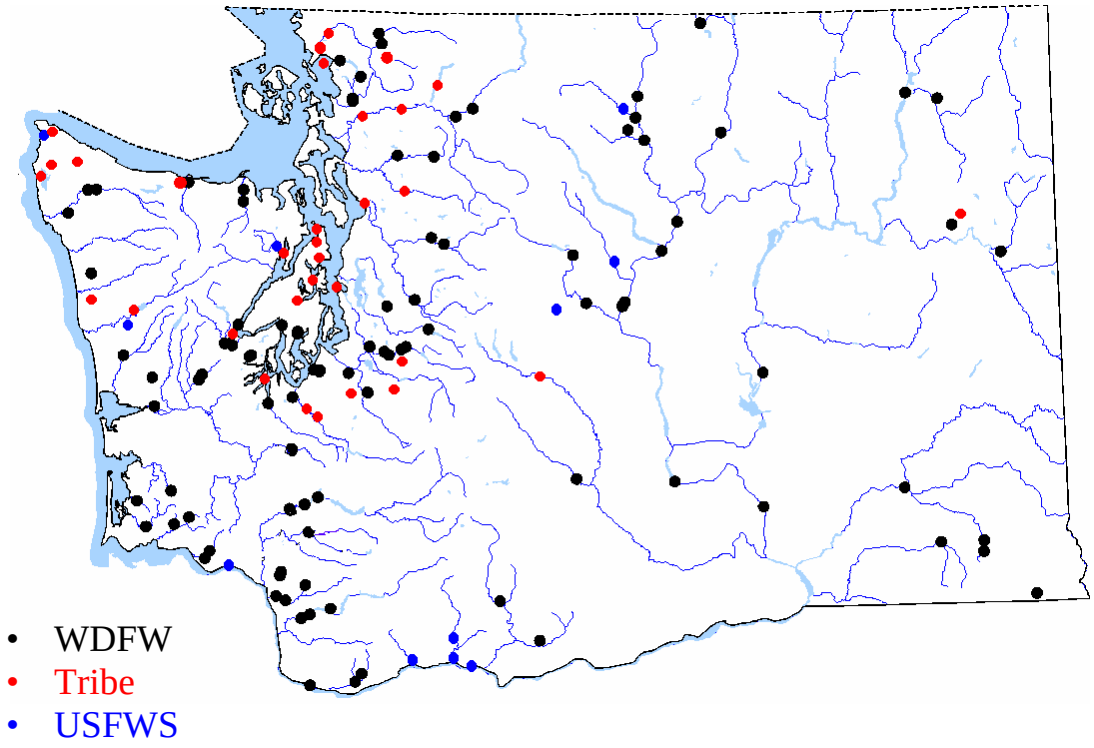


Figure 10: Location of Fish Hatcheries in state of Washington, Color-Coded by Agency

While much care is committed to ensuring the health and genetic integrity of the hatchery raised fish, many (including tribal representatives) continue to be concerned about possible degradation of the vitality and viability of the artificially reared salmon.

The forty (40) tribal salmon hatcheries represent a vital component of their commercial involvement in the Puget Sound and coastal Washington fisheries. The following is a map of the distribution of tribally owned or managed fish hatcheries currently operating in Washington.

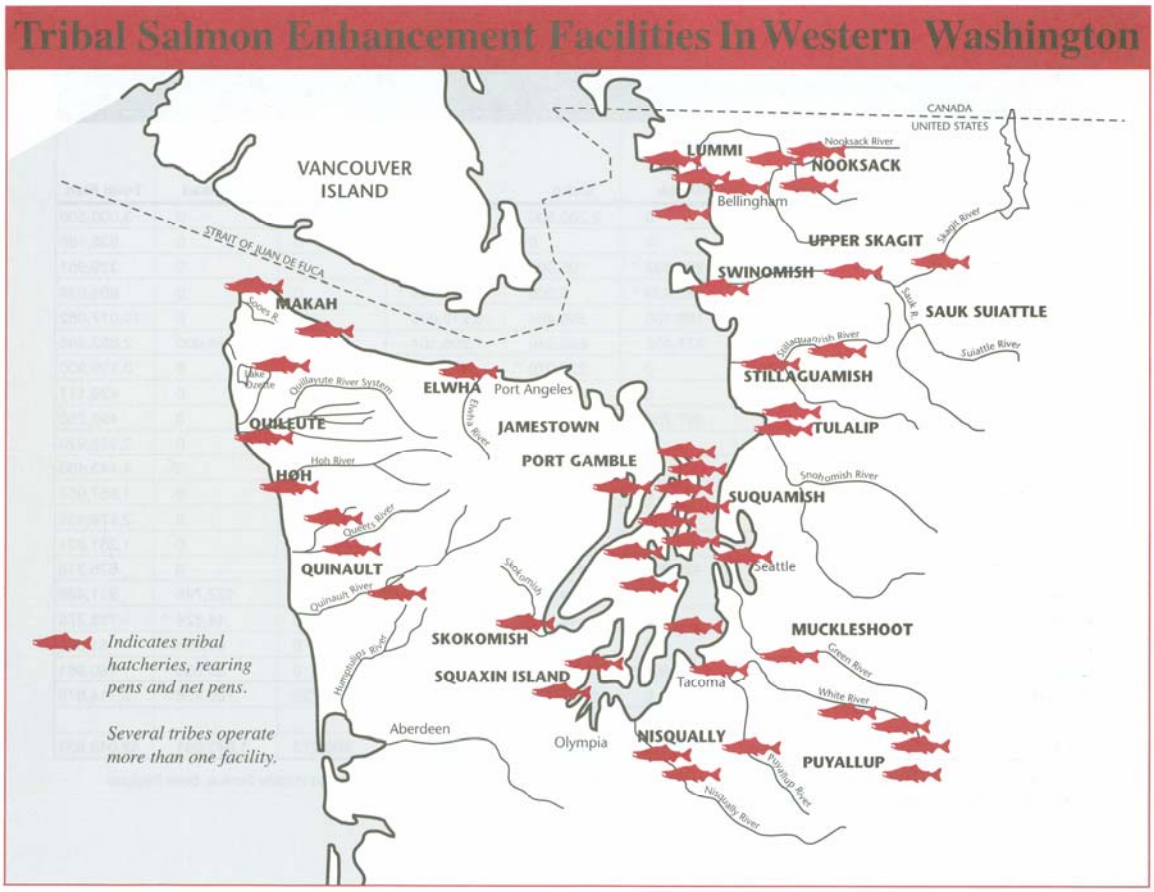


Figure 11: Tribal Salmon Fish Hatcheries in Western Washington

It is difficult to dispute the productivity of their hatchery activities. As indicated in the following table, tribal hatchery releases have been very large, and the number of salmon of hatchery origin returning to these locations has grown dramatically.

Table 1: 2003 Tribal Hatchery Releases

Tribe	Fall Chinook	Spring/ Summer Chinook	Coho	Chum	Sockeye	Steelhead	Total Fish
Lummi	800,000	0	2,200,500	0	0	0	3,000,500
Upper Skagit	0	0	0	638,188	0	0	638,188
Skagit System Cooperative	34,359	200,592	105,000	0	0	0	339,951
Stillaguamish	0	289,439	6,000	511,199	0	0	806,638
Tulalip	1,250,558	188,100	368,404	8,210,000	0	0	10,017,062
Muckleshoot	402,600	371,452	838,240	1,206,104	0	34,000	2,852,396
Suquamish	2,588,542	0	232,070	979,288	0	0	3,799,900
Muckleshoot/Suquamish Coop	0	0	426,111	0	0	0	426,111
Muckleshoot/Puyallup Coop	0	497,750	0	0	0	0	497,750
Puyallup	334,700	0	209,000	2,385,220	0	0	2,928,920
Nisqually	3,514,024	0	929,444	0	0	0	4,443,468
Squaxin Island	0	0	1,657,957	0	0	0	1,657,957
Skokomish	0	0	90,000	2,789,663	0	0	2,879,663
Port Gamble S'Klallam	0	0	409,221	822,580	0	0	1,231,801
Jamestown S'Klallam	0	426,318	450,000	0	0	0	876,318
Lower Elwha Klallam	0	0	724,594	59,149	0	127,745	911,488
Makah	477,524	0	42,380	0	228,550	44,824	793,278
Hoh	0	0	0	0	0	51,596	51,596
Quileute	0	95,961	0	0	0	85,000	180,961
Quinault	1,024,088	0	1,051,169	287,400	651,725	700,496	3,714,878
Total	10,426,395	2,069,612	9,740,090	17,888,791	880,275	1,043,661	42,048,824

The tribes are also actively involved in a wide range of other fishery enhancement efforts, such as the reintroduction of native Olympia oysters to the southern end of Hood Canal (a collaborative effort between WDFW and the Skokomish Tribe), and are assisting the WDFW in formulating management plans for Dungeness crabs, shrimp, clams and other shellfish.

8.0 PRINCIPAL FISHERIES OF PUGET SOUND:

The fisheries of Washington consist primarily of the area of Puget Sound and its river systems, including the Columbia River, as well as coastal Washington. Since the advent of fish hatcheries, the allocation of allowable salmon harvests from the Sound and from Washington rivers has become complex. Again, using Chinook salmon harvests as our model (sentinel) species, the Comprehensive Management Plan for Puget Sound Chinook, Harvest Management Component, prepared and approved by the Puget Sound Indian Tribes and Washington Department of Fish and Wildlife (2004), categorizes Puget Sound management units according to the relative abundance of: (1) naturally reproducing indigenous populations; (2) the proportional contribution of artificial production; and (3) populations primarily of hatchery origin.

This categorization is important for several reasons. First, fish from Category 1 consist of predominantly native stocks produced naturally or enhanced by hatchery programs utilizing indigenous species. Category 2 fish are predominantly of hatchery origin, including broodstock from both indigenous and non-indigenous sources, but which are capable of reproduction in the natural habitat. Category 3 represents fish of primarily hatchery origin, which are not considered endangered or threatened.

The highest priority in the state's fish management plans is placed on conservation of Category 1 populations. These fish represent "genetically and ecologically essential and unique components of the ESU." The harvest management plan provides that the recovery of this component of the fishery is essential and to be protected over all other objectives. Fish of Category 1 include certain populations in the Nooksack, Skagit, Stillaguamish, Snohomish, Cedar, Green, White, Dungeness, Elwha, and Hoko rivers (see Figures X, Y, and Z below).

Category 2 fisheries, where hatchery supplementation has been deemed essential in order to protect "the genetic and demographic integrity of populations" which also include the Nooksack, Stillaguamish, White, Dungeness, and Elwha rivers. The natural populations in the North Lake Washington tributaries, and the Puyallup, Nisqually, Skokomish, and mid-Hood Canal rivers have also "been heavily influenced by artificial production, in most cases based on non-indigenous stocks," and have also been designated Category 2 management units.

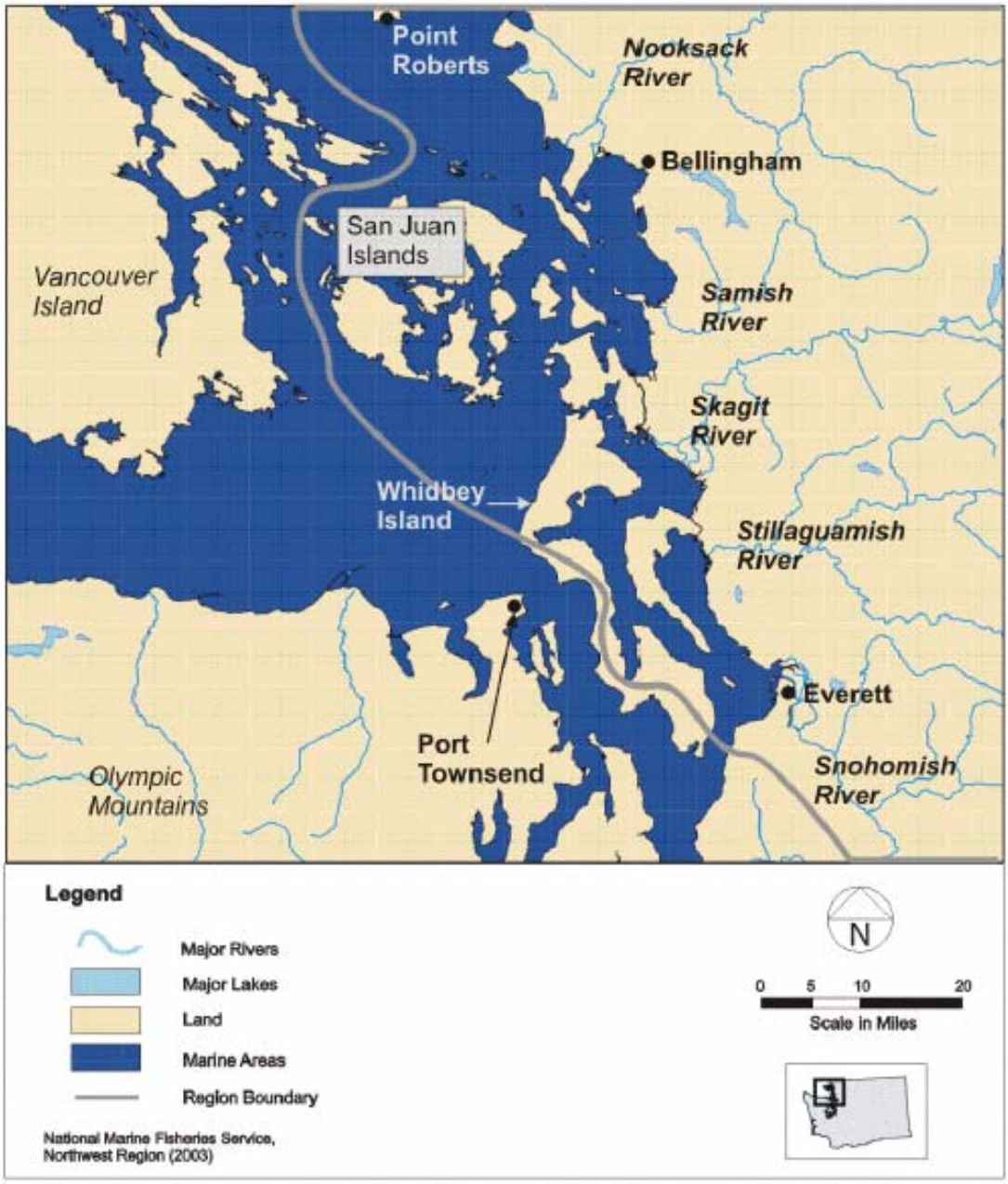


Figure 12: Map of Primary Salmon Rivers of North Puget Sound

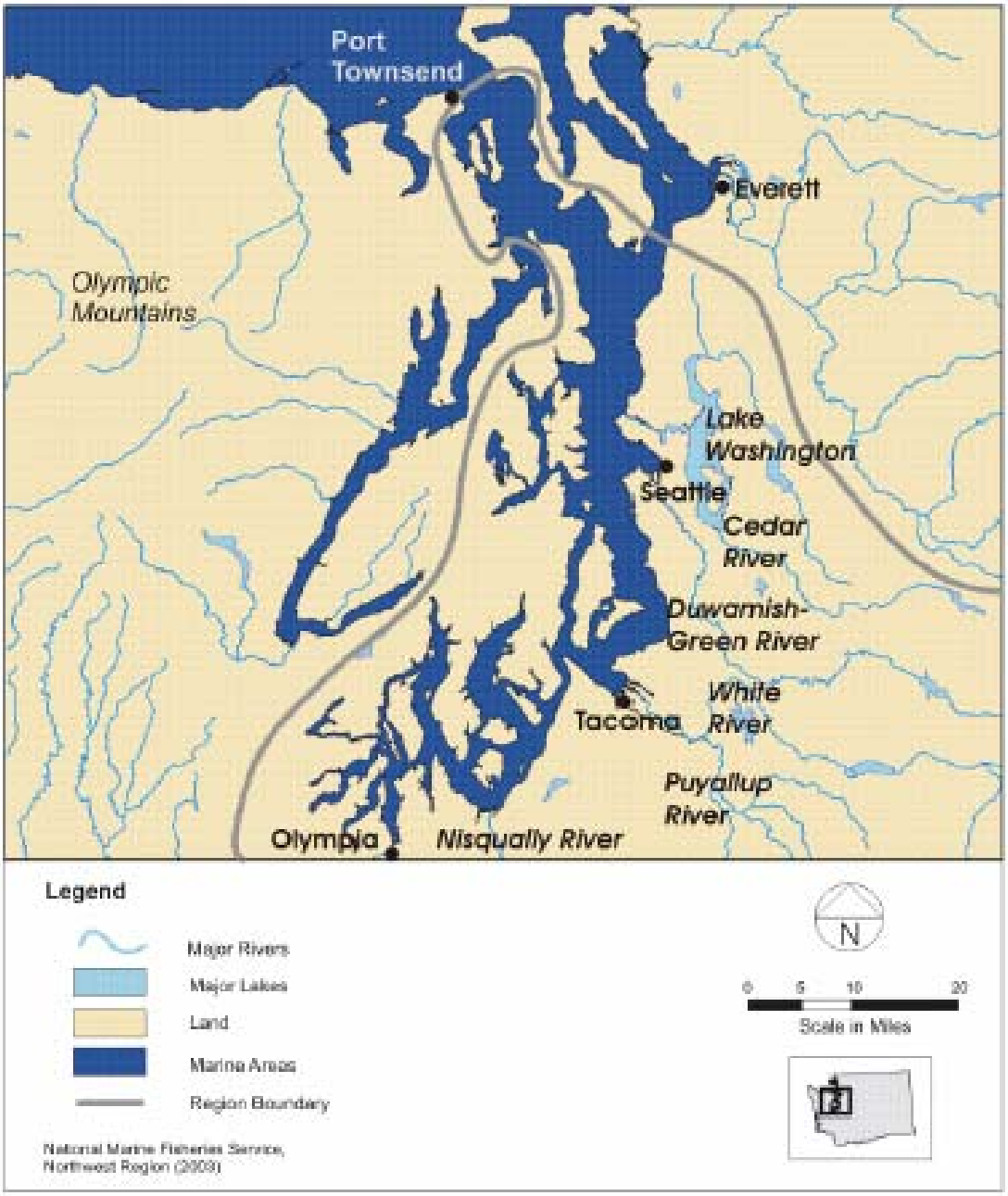


Figure 13: Map of Primary Salmon Rivers of South Puget Sound

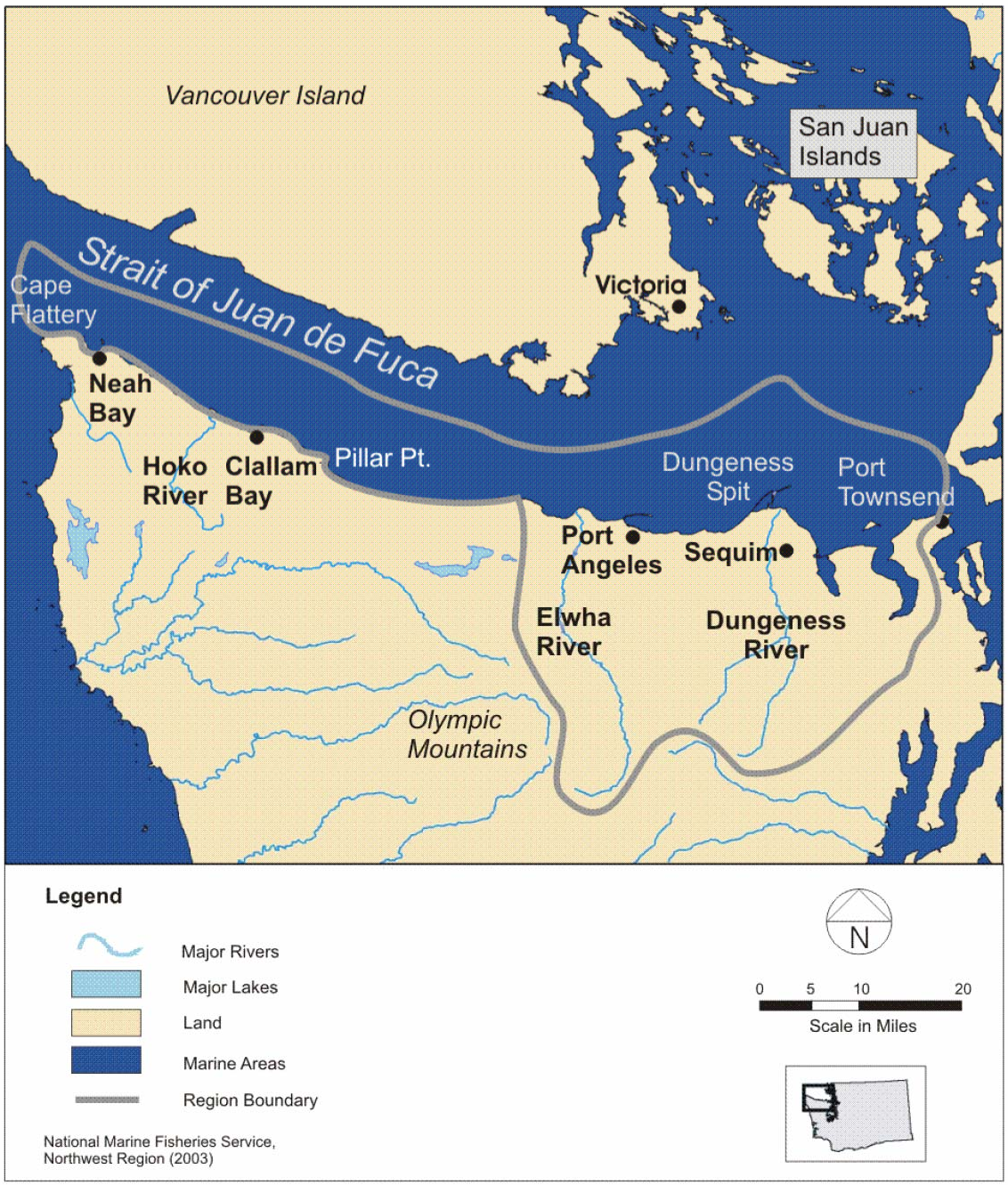


Figure 14: Map of Primary Salmon Rivers of West Puget Sound

9.0 PUGET SOUND SUBSISTENCE FISHERIES:

In meetings with representatives of the Northwest Indian Fisheries Commission (NWIFC), an organizationed devoted to the interests of its twenty member tribes (see Figure X), we discussed the use of the "personal use" or "take home" variable used in the commercial fishery harvest forms to record that portion of the catch retained by the fisherman for his personal use. The fisheries representative estimated that the total figure recorded on the commercial fish ticket was probably at the lower end of the continuum of likely consumption. There are many ways and reasons why the total recorded take home portion of the commercial harvest understates actual subsistence consumption. There are also a range of reasons why subsistence harvests are under-reported on the subsistence licenses, including: . Contributing factors, such as inconsistent catches, lack of incentives to immediately record all catches on the subsistent license, lack of disincentives for failure to report, lack of enforcement on reporting requirements, lack of interest or need on the part of enforcement to push reporting, and so on.

As reported below, the level of subsistence catch reported on the commercial fish tickets and subsistence license is actually quite low for a total tribal population of 19,000 members. The unofficial estimate (perhaps "guestimate" would be a better term) was that the total reported "take home" and "subsistence" harvests represents no more than 25 percent (25%) of the actual consumption. Even, however, if we multiply total reported subsistence harvests by a factor of four, the quantity harvested is quite limited. This estimate is at least consistent with previously completed household surveys of subsistence uses in some of the tribal areas. Subsistence consumption of salmon is also constrained or encouraged by the market conditions for the various species at different points in the annual harvest sequence.

Figure 15: Map of Location of Member Tribes of NWIFC

Our informant provided the following example: “”If salmon is selling for $2/lb, you sell the fish and buy your family hamburger. If salmon is at $0.20/lb, you feed your family salmon. The market economy directly influences subsistence use.”

While all of the tribes are members of the NWIFC, they are each individually responsible for formulating and implementing fishery policy for both tribal commercial and subsistence fisheries. This includes the formulation of regulations, setting penalties, enforcement, and habitat restoration. Some tribes have established collaborative arrangements for enforcing regulations in common fishing areas (e.g., the Point No Point Treaty Council coordinates enforcement for the Lower Elwha Klallam, Jamestown S’Klallam, and Port Gamble S’Klallam tribal fisheries).

As indicated in the following table, the total number of enrolled tribal members in the Twenty Treaty Tribes is approximately 19,000. Some individuals are members of two or more tribes, resulting in total enrollment numbers for individual tribes exceeding the actual total number of individual members.

Table 2: Tribal Enrollment in the Twenty Treaty Tribes of Puget Sound

Tribe	Membership in One Tribe	Membership in Two or More Tribes
Hoh	**448**	**574**
Jamestown S’Klallam	**368**	**537**
Lower Elwha S’Klallam	**293**	**426**
Lummi	**3,082**	**3,868**
Makah	**1,704**	**2,147**
Muckleshoot	**1,456**	**1,621**
Nisqually	**460**	**699**
Nooksack	**728**	**1,170**
Port Gamble S’Klallam	**514**	**568**
Puyallup	**1,545**	**2,069**
Quileute	**448**	**574**
Quinault	**2,207**	**3,006**
Sauk-Suiattle	**104**	**130**
Skokomish	**698**	**814**
Squaxin Island	**584**	**793**
Stillaguamish	**97**	**122**
Suquamish	**616**	**798**
Swinomish	**590**	**743**
Tulalip	**2,449**	**2,862**
Upper Skagit	**380**	**604**
Total Enrollment	**18,771**	**24,125**

Source: U.S. Census Bureau, Census 2000, Special Tabulation. Last revised June 30, 2004. Available online at: http://factfinder.census.gov/home/aian/sf_aian.html

Indian communities of the Puget Sound rely on the entire array of subsistence resources available on or near their reservations or traditional use areas. These resources include both the flora and fauna of the local environment. Because this review of available primary and secondary

information centers primarily on the fishery resources utilized by the tribes, we have not pursued information on subsistence hunting or gathering activities (e.g., berry picking, collection of traditional plants, etc.) activities. Nevertheless, while salmon may or may not be the primary subsistence harvest, salmon are the undisputed cultural heart of all of the tribal subsistence practices. Given this core dependency on the salmon fishery, the vagaries of the biological resources available, and the variation in subsistence practices, we have centered this summary report and associated literature review primarily on the salmon subsistence fisheries of the Northwest.

With regard to fishery resources, our data collection and interviews with tribal representatives from the 20 Ttreaty Ttribes, indicates a wide variation in levels of dependence on the different marine resources. Tribes to the north, for example, the Nooksack Tribe (~700-1,100 members), because of biological and legal constraints on the availability of salmon resources, is dependent primarily on shellfish harvests (e.g., Dungeness crab, shrimp, geoduck, etc.), with fewer than a dozen active commercial salmon fishermen (and very few subsistence fishermen in tightly controlled, 24-hour, subsistence openings for Chinook fisheries along the Nooksack river). Salmon are utilized for almost all ceremonies and cultural events, are the centerpiece of the tribal restoration efforts, and the Salmon Habitat Department is the largest tribal employer. The tribe also conducts tribal subsistence harvests and maintains an on-site salmon storage facility to respond to the requests of tribal members for salmon for ceremonial and subsistence purposes.

The Upper Skagit Ttribe has, with an enrollment of 380 single-tribe members in 2000 (and 604 cross-registered members), andwith offices located on a 2two-acre parcel, as well as 16 acres of land at Bohill (as well as Land Allotment Act lands and trust lands upriver). This tribe, hasve an estimated 150 members that fish, approximately 75 of which are still active, and 25 of which are significantly involved in the commercial fishery. They rely extensively not only on salmon but on a broad range of shellfish (butter clams, manila clams, etc.). They have a very active cultural involvement and dependence on subsistence salmon, including "gatherings" or communal collections for tribal subsistence purposes of fish for community functions, such as the "blessing of the fleet," the "Ffirst Ssalmon Cceremony," funerals, smokehouse rituals, annual stick games, "burning" ceremonies (where plates of food enjoyed by deceased loved ones are ritually burned in memory of their passing), marriages, and use in the annual community "Big Drum Pow Wows" (where the County Commissioners, City Council, school principals, and other prominent community members are invited and feted). Many other special events are also hosted by the tribe and almost all feature salmon in one form or another. The Upper Skagit tribe relies on a shared fishery management approach with the Swinomish and Lummi tribes.

Tribes in the middle reaches of the Sound (see figures X and Y above) access a more robust salmon fishery for all four salmon species (while also pursuing an active shellfish fishery). The relatively large Tulalip Tribe, for example, has fully staffed environmental, fisheries, and enforcement departments, a relatively large reservation, and an active and successful Casino operation (as do all but 5five of the Twenty Treaty Tribes). Tulalip commercial fishermen are active in virtually all of the fish and shellfish fisheries of the Ssound, and major contributors to the regional management process. They also have an active subsistence fishery, and participate in a broad spectrum of associated social and cultural practices (e.g., the "First Salmon

Ceremony," the Smokehouse traditions, weddings, funerals, and other salmon-dependent cultural events).

The Stillaguamish Tribe, also in the mid-reaches of Puget Sound, has no land reservation, and a total Census year enrollment of 97 members and an estimated 188 current members – of which approximately 30 were commercial fishermen from the mid-1970s to the mid-1980s. A number of factors have coalesced to reduce both commercial (three or fewer last year) and subsistence resource users (none last year), including the transfer of a majority (approximately 10ten) of their remaining fishermen to the Tulalip Ttribe (possible if founded on genealogy), the decline and closure of their traditional Chinook fishery and very marginal recovery since that time, fish openings only during the week days (not weekends), and very low price for river caught fish. While the tribe has been growing slightly with the return of members to the region, and enrollment, and subsistence practices continue to be viewed as important, have

Some tribes to the south, on the other hand, while pursuing an active shellfish harvest, are primarily dependent on the annual Chum salmon runs for both commercial and subsistence purposes. The Skokomish Ttribe (with enrollment between 700 and 800 members), at the furthest southern reaches of the Sound, is heavily dependent upon shellfish (geoduck and crab) and Chum salmon. Approximately 305 members are enumerated in their commercial and subsistence use database, with about 159 licensed commercial fishermen for all species. In recent years, in light of relatively abundant runs of Chum, and exceptionally poor markets for the fish, commercial fishery activity has centered primarily on the sale of salmon eggs, with a portion of the unused flesh used for subsistence purposes, and the rest disposed of in the Sound. This is a strong market because pen-reared salmon are legally prohibited from being used as a source of eggs. Geoducks, a large clam found in ten10 to -80 feet of water, are relatively abundant in the southern Sound, and are highly valued in the Asian market. They are harvested by approximately 75 commercial divers of the Skokomish tribe, and are only rarely utilized for subsistence purposes (given their relatively high commercial value). Tribal members also conduct subsistence harvests of oysters and other clams. Subsistence cards are required to be turned in for subsistence harvests every six months, but few members are inclined to record the very minor harvests of geoducks for subsistence purposes, or see a need to record the take of unused commercial Chum salmon that would otherwise simply be discarded.

The Squaxin Island tribe, with a total enrollment of 584 single-tribe members, or 793 dual-tribe members, is also located at the southern margin of Puget Sound. They have issued, in 2004, approximately 100 commercial tribal licenses for fish, and approximately 200 licenses for shellfish, of which approximately 70 were for geoduck. The use of subsistence products, according to our discussions, is significantly underreported due to similar incentives and disincentives described for other tribes. They estimate that perhaps seventy percent (70%) of the tribal members are likely to have taken home a "pot" of fish without bothering to record the amount in on the subsistence license. In response to the question concerning "subsistence dependence on the salmon fishery," we were provided with the following response: "Do you really ask the Chinese how important rice is or spaghetti to the Italians . . . it is just part of us."

An important point to note is that similar reporting disincentives, and difficulties in enforcement, result in a much lower reporting of harvests by "recreational" fishermen. Similar structural and

enforcement issues, in addition to financial (e.g., tax) disincentives, also affect the reporting of commercial harvests.

10.0 COLUMBIA RIVER TRIBAL SUBSISTENCE FISHERIES:

The Columbia River Intertribal Fish Commission (CRITFC) has centralized tribal fisheries data (including subsistence and ceremonial use) for the four treaty tribes that are part of CRITFC (Warm Springs, Yakama, Umatilla, and Nez Perce). The CRITFC Data Manager expressed several concerns about this data. First, the data vary in completeness and accuracy. Second, much of the data are sensitive; many tribes have "naturally competitive" relationships with neighboring tribes and any directly comparable catch and use data may negatively influence this competition. Data is aggregated to address some of these competitive concerns. Tribes are especially sensitive to maintaining data confidentiality because of treaty allocations, especially when data is inaccurately reported/recorded (e.g. undercounting of subsistence use may erroneously equate "take" with "need" thereby underestimating actual need).

CRITFC tribes are not required to submit fish tickets (rather they use "laissez-faire accounting practices"), so it is difficult to account for catch. Each of the tribes collects catch data and provides these data to CRITFC. Some of the individual tribal resource management divisions have good monitoring and fairly accurate data reporting. Methods for measuring catch vary between the different tribes and between the various fisheries making comparison difficult. Umatilla subsistence steelhead fishery, for example, occurs over a very diffuse area making it very difficult to do creel surveys. Household surveys are used instead. Some geographic areas have poor accounting. The Nez Perce occupy a huge part of the State of Idaho; it is impossible to monitor most of their fishing territory. The Indian platform fishing on the main stem of the Columbia, however, has fairly accurate monitoring and accounting. There are about 100 platforms on the river (between the Bonneville and Marysville dams) that are open all year. These platforms are sampled to extrapolate use and catch. Fly-overs are also used to count the number of gill nets set.

Individual tribes do not issue fishing cards; tribal ID cards are used as fishing licenses (tribal fishers must be formally enrolled in the tribe). For this reason it is very difficult to determine how many tribal members actually fish (even commercially). The Data Manager stated that a 'high proportion' of tribal members do at least some fishing. In a broad historic context, tribes do not distinguish between commercial, recreational, and subsistence use of fish. There is still an attitude among tribal fishers that "what they do with their fish is their business." This contributes to reporting issues. Permits are issued for ceremonial take if individual is catching a large amount of fish for ceremonial use. Subsistence take can be sold or traded among Indians, but cannot be sold to non-Indians.

CRITFC has a number of data files and records of potential utility. Files are organized by fishery. Data from 1988-2004 can be aggregated and provided on request (from the research team or directly by NOAA). It was noted that CRITFC has supplied data to NMFS for the biological opinions for the ESU designation.

CRITFC representatives stress that capturing the cultural and spiritual importance of subsistence and ceremonial use of fish is not possible via quantitative data (example provided of the great importance of the salmon ceremony to pay respect to salmon and begin the season). He also

emphasized this issue in several different contexts as important. In the tribal view, subsistence use is a priority over all other uses (particularly ceremonial and cultural use, which is the "single most important need for fish"; all tribes make sure they have a community supply of salmon for such uses, e.g. salmon ceremonies, funerals, community gatherings).

Species of importance for subsistence include: Chinook, coho, sockeye, steelhead, sturgeon, lamprey (important cultural food highly desired by elders), smelt (esp. Yakama), also walleye (not native to Columbia River system, but are harvested in small numbers and often sold), bass and trout.

The CRITFC representative suggested the following typology as a means of organizing or aggregating WA and OR tribes: (1) Puget Sound tribes: similar species and timing of harvest; (2) WA Coast, Peninsula tribes: Different species mix – ocean and river species; (3) Columbia River Basin: similar species and cultural uses; treaty vs. non-treaty is an important issue, with some non-treaty tribes (Wanampum Band) that also have a subsistence catch that comes out of the State of Washington share. Other tribes are federally recognized but do not have the same treaty rights (Coleville, Colitue, Grand Rola, Siletz); (4) Oregon Coast – limited fishing (salmon and steelhead) – "limited fishing – real small takes;" and (5) Klamath River – not quite the same as treaty rights, utilize fall Chinook, lamprey and suckers.

11.0 WEST COAST WASHINGTON, OREGON, & NORTHERN CALIFORNIA TRIBAL SUBSISTENCE FISHERIES

11.1 Introduction

Historically, fishing served primarily a subsistence purpose among Native American groups of the Pacific Northwest and northern California coastlands. For some groups, this has changed, such that the reliance is presently on fishing for commercial purposes. For others, fishing for subsistence purposes only has come full circle, from fishing for subsistence, to fishing for commercial purposes, back to fishing for subsistence. For all groups, however, subsistence catches are small compared to what they were is past time. Subsistence catches for all groups is defined as "take-home" catches that supplement the diet.

Key fishing tribes along the Washington coast include the Makah, the Quileute, and the Quinault, who combined command 97% of fish allocated to the state's coastal Native American communities. The Hoh and Shoalwater receive a smaller allocation. Key fishing areas include Willapa Bay, Gray's Harbor, the Queetz, Quinault, Hoh, and Quileute Rivers and the coastal shores. They report to the Northwest Indian Fishing Commission. All tribes have a relatively substantial commercial fishery, and, with the exception of the Yurok of California, are the only tribes in this study who have a commercial fishery and whose subsistence catch is taken from the commercial catch.

Oregon has nine tribes total, four with large land bases. These include: Warm Springs; Umatilla; Nez Perce; and Klamath. These tribes have treaties with the U.S. and command a large fishery. They report to Columbia River Basin Indian Fisheries Commission. The other five (Coos, Cal Creek, Coquille, Siletz, and Grand Ronde) have small land bases, no treaty, and, with the exception of the Siletz, no recognized fishing rights. The Confederation of the Siletz Tribes have entered into an agreement with the state of Oregon; they report to the State of Oregon. Nearly all fish, though small in number, among these five tribes are taken for subsistence purposes.

Californian tribes have a long history of conflict with the state of California; they have experienced periods of decommission and resettlement. As such, many of the tribes (e.g. Tolowa, Wiyot, and Pomo) are now separated into Rancherias and their territories consist of a patchwork arrangement of lands that, along with the culture, are being reconstructed. The central fishing and land-holding tribe here is the Yurok, to which many of the smaller Rancherias (e.g. Big Lagoon, Trinidad, Table Bluff) culturally, but not politically. The two major fishing areas here are the Smith and the Klamath Rivers, as well as ocean shores for shellfish gathering. The only tribes with an active commercial fishing industry are theYurok and the Hoopa, although the Hoopa's commercial fishing industry is very recent and very small.

11.2 Coastal Washington Tribes

11.2.1 Makah

Russel Svec (Fisheries) (360)645-2201
Steve Joiner

The Makah ("Ocean People") Tribe is located along Neah Bay in the Strait of Juan de Fuca on the northwestern tip of the U.S. Pacific coast. Tribal territory lies in a heavily wooded, mountainous region that drops sharply to the rocky shore. Tribal enrollment is approximately 1,500 people, most of whom reside on the reservation. The reservation is also home to a large harbor, which caters to recreational, commercial, and charter fishermen. Most fishing takes place offshore.

Makah Nation landscape, with view of harbor

The maintenance and the revival of fishing traditions are a focal point for tribal members. Presently, the dependence on fish in the Makah diet is down from what it was in the past, and as such, the Tribe is looking to increase its dependence on fish consumption. The opportunity to fish is seen as very valuable, both to the diet and to the traditions and culture. It is the philosophy of the tribe to continue to exercise the right to fish, both commercially and for subsistence.

Most fish for subsistence is taken from the commercial catch. Fishermen are required to report take-home fish under the C&S section of the NWIFC. Although the take-home catch is

important in supplementing the diet of the Makah people, and although the people are dependent upon this catch for food, it is not significant enough to const

The Makah think of fishing in terms of ceremony; in fact, it is considered the foundation of culture and tradition. One informant presented the relation as follows: “Our treaty is a living document and the fisheries are the heartbeat.”

Presently, the Makah are trying to define their fisheries program. In general, they have an ecosystem-based approach to management. “We grow with newer technologies, but we focus on begin an ecosystem-based management.” An interest with the reservation uplands is inherently tied to an interest in freshwater protection, which in turn is tied to an interest in the oceans.

Given the rugged coastline of the Makah, there is little shellfish gathering. Rather, most fish taken-home is halibut and salmon caught commercially. Although once a significant part of the Makah diet, halibut and salmon compete with non-tribal-produced foods, including fried processed foods.

Coastline of Makah Nation

11.2.2 Quileute

Contact: Jay Burns and Chris Northcut (Fisheries biologists) (360) 374-2059

The Quileute Tribe is located along Washington's northwest coast, along the Quillayute River. The usual and accustomed fishing areas include the lower part of the Quillayute River and some offshore areas. The Quileute Marine fishing area is described in 50CFR660.324. The Quileute's facilities include a marina and a fish-packing house. A seafood restaurant is also located on tribal grounds.

Quileute Tribal fisheries, located in La Push, are managed by Quileute Natural Resources, which is under the Quileute Tribal Council. All fishing regulations are written and approved by the Quileute Natural Resources Committee, also known as, the Fish Committee. The Fish Committee is an elected body of Tribal members and is comprised of mostly active fishermen. QNR Staff, consisting of a Director, biologists, attorneys, administrative and field staff, advise the Fish Committee and monitor fisheries and other issues. Quileute Fishing regulations are enforced by Quileute Wildlife Enforcement.

Quileute Department of Natural Resources

The tribe set their own regulations for tribal purposes and for purposes of co-managing fisheries with the state of Washington. The Quileute Marine fishing fleet consists of seven vessels. While the majority of fishing is for commercial purposes, a small portion is taken during commercial harvest for subsistence purposes. Quileute fishermen report all C&S takes. The subsistence harvest for the Quileute for any one year is recorded by way of the C&S ticket, which is reported to the Quileute Natural Resources separately from commercial harvests, which is then reported to

the Northwest Indian Fisheries Commission. It is rare than anyone not a commercial fisherman will catch fish for subsistence purposes.

Quileute Marina

The Department of Natural Resources manages fisheries by tracking C&S (ceremonial and subsistence) and commercial harvest. The C&S take is projected/modeled each year based on past takes. After the season, there is a past season review, during which the C&S number is rectified an placed back into the model. Everyone is accounted for, including non-commercial fishermen who go out after the commercial season ends.

Halibut and salmon are very important to the Quileute means of subsistence, although smelt is also sometimes used. The Quileute currently do not have a significant ocean salmon fishery. Subsistence takes are generally larger between March 1 and August 1, at the start of the halibut season. The takes are distributed thorough the community as a whole, and, as such, subsistence fisheries are also used to fulfill social and cultural obligations. There is an awareness that a significant part of the community relies on fish.

Shellfish also are important; they make up a part of the community diet. When the beaches are closed due to high levels of biotoxins (e.g. domoic acid), it becomes clear how important the razor clam is to the Quileute. Typically, shellfish is gathered during the spring and summer months, when low tides are more favorable, although of this there are perhaps only a few very good days per month to dig. Also gathered are buttr clams, mussels, barnacles, and sea urchins. Regulations provide for daily limits on all shellfish species.

Fish (especially halibut and salmon) are also important for ceremonial purposes, used as a means to honor guests at weddings, naming ceremonies, and funerals. The Tribal Fish Committee requires a permit to be completed to harvest for ceremonial purposes. Cermonial catches, while important, are heavily regulated and the rules quite stringent, making it difficult for an individual's permit to be accepted.

11.2.3 Quinault

Contact: Larry Gilbertson (Senior Scientist)

The Quinault Indian Nation (QIN) is located on Washington's Pacific Coast. With roughly 2,675 enrolled members, the Nation is a one of two Washington tribes recognized by the Federal Courts as self-regulating in all aspects of fisheries management (Yakama being the other).

Quinault Indian Nation Department of Natural Resources

All of the Quinault Nation's harvest of aquatic resources is managed through established governmental authorities and procedures based on the Nation's own constitution and code of laws. The governing body of the Quinault Nation, the Quinault Business Committee (QBC), has the constitutional authority to protect, manage and regulate the Nation's natural resources and the harvests thereof. The QBC is made up of 11 QIN members, elected by the Quinault General Council (all members of the QIN). Four of the 11 members hold executive positions, so the QBC is a combined executive and legislative governmental body. The Quinault government is made up of the QBC and many divisions, departments, commissions, etc. One of the governmental divisions is the Quinault Division of Natural Resources, which includes four departments; Forestry, Environmental Protection, Resource Protection, and Fisheries.

Title 51 of the Quinault Code of Laws is the body of law pertaining to fishing, hunting, and gathering by QIN members in all the Nation's ceded lands, and by every person on the Quinault Reservation. In Title 51, the QBC delegates some of its authority to manage and regulate hunting, fishing, and gathering to the Quinault Fish and Game Commission and four committees; Queets River Committee, Quinault River Committee, Off Reservation Committee, and Ocean Committee. The Commission and Committees are delegated the authority to act in conjunction with the Quinault Department of Fisheries to adopt appropriate regulations within their respective areas of responsibility. The Commission, Committees, and Department are responsible for dealing with shellfish and fish in both the rivers and the ocean.

At the most general level, fishing and gathering is governed by Title 51. A foundational principal within Title 51 states that all areas subject to QIN jurisdiction are closed to hunting, fishing, gathering, or harvesting unless specifically opened by duly adopted regulations. This rule covers all harvesting, including for commercial, subsistence or ceremonial purposes. At a more particular level, regulations for commercial and subsistence harvests are set through a joint effort between the Fisheries Department and the River Committees. Any new regulation must be signed by both the Department of Fisheries and the River Committees. Because the QIN is self-regulating, there are no limitations set by the State of Washington. Rather, all Quinault fisheries are managed by QIN based partly on co-management agreements and procedures negotiated with Washington State.

Co-management processes are, for the most part, designed to ensure that the fisheries resources are protected (i.e., escapement objectives are achieved) and harvests are split 50%/50% or other negotiated shares between treaty and non-treaty fishermen. The level of harvest is typically determined during a pre-season process that establishes the expected annual population size (run size) and, by subtracting the stock specific escapement objectives, the total allowable catch. At times, there will be disagreement between the two managing entities as to the expected run size, escapement goal, or harvest schedules, but for the most part, they are able to negotiate agreements. Harvests by each group, determined through historical performance, may influence adjustments to the 50/50 arrangement. For example, non-treaty fishers have harvested more than 50% of the winter steelhead in Grays Harbor in recent years because the treaty fishers have not captured their share. This has been partly due to a lack of fishing power in the treaty fishery and run timing of some Grays Harbor stocks. In this case, the 50/50 sharing principal had been adjusted slightly by agreement.

As subsistence and commercial fishing among the Quinault are managed together within a season, it is difficult to discern how much is used for subsistence. Historically, it has not been well documented, although subsistence use of fish and shellfish is very important to the Quinault

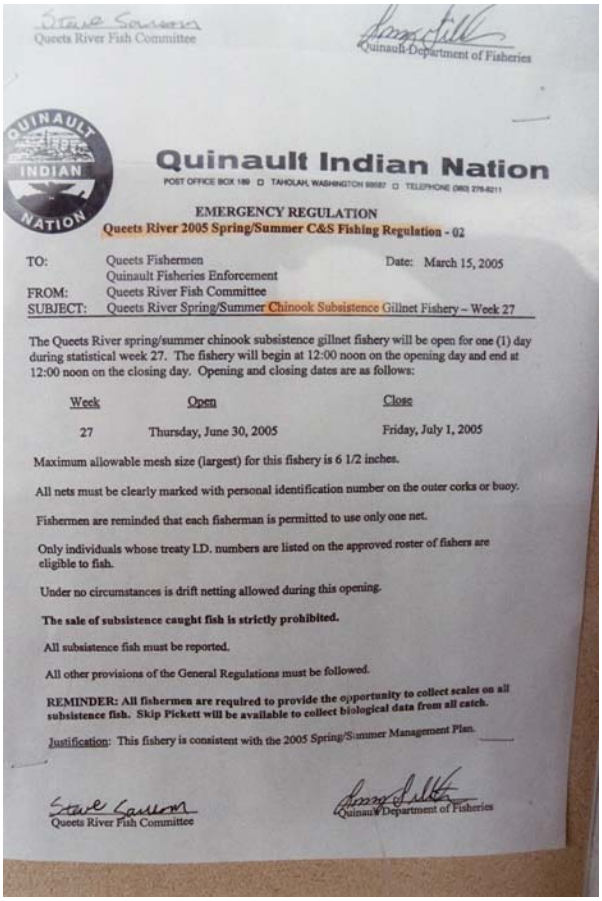
The Quinault tribe Fisheries Department has recently (within the past four or five months) started a program to better document subsistence harvesting. A fish technician is to contact individual fishermen or families with regard to subsistence fishing use. In the past, methods for understanding subsistence takes have consisted of interviewing fishermen, so the estimates are rather subjective. Nevertheless, this means has helped to produce numbers as "place holders" in formulae for calculating total effort and harvests for a season (e.g. how many days per week/

how many weeks per month fishermen can fish). For this, management models are used. Fisheries are modeled to allocate fish out over time. In the end, what is determined as harvestable for both commercial and subsistence purposes is established by the Harvest Manager, who works with a team of biologists. The model becomes complicated, particularly with regard to achieving escapement goals, because one must factor in both wild and hatchery-origin salmon, which have different entering times. There is a definite art involved in modeling the Quinault fisheries, and each fishery has its own unique attributes; thus no two fisheries' harvests are determined in the same way.

Although commercial and subsistence fisheries are considered part of the same harvest, fishery modeling renders a means to better understand subsistence takes. Presently, the estimation of subsistence takes is based upon a percentage (for example, 5%) of the run size, versus being based upon a whole number. There is a feeling that past counts may have been underestimated.

The commercial fishing regulations are separate from the Ceremony and Subsistence (C&S) regulations, and they vary from River Committee to River Committee. The Queets River 2005 Spring/Summer C&S fishing regulations include the following restrictions:

- Maximum allowable mesh size is 6½ inches.
- Must be marked with personl identification
- Only one net per fisherman
- Only individuals with treaty I.D. numbers and listed on the approved roster are eligible to fish
- No drift net fishing
- Sale of subsistence fishing is strictly prohibited
- All subsistence fish must be reported
- All other provision of the General Regulations must be followed
- All fishermen are required to provide the opportunity to collect scales on all subsistence fish (for biological data).



Queets River Fish Committee

Quinault Department of Fisheries

Quinault Indian Nation

POST OFFICE BOX 189 ☐ TAHOLAH, WASHINGTON 98587 ☐ TELEPHONE (360) 276-8211

EMERGENCY REGULATION

Queets River 2005 Spring/Summer C&S Fishing Regulation - 02

TO: Queets Fishermen — Date: March 15, 2005
Quinault Fisheries Enforcement
FROM: Queets River Fish Committee
SUBJECT: Queets River Spring/Summer Chinook Subsistence Gillnet Fishery – Week 27

The Queets River spring/summer chinook subsistence gillnet fishery will be open for one (1) day during statistical week 27. The fishery will begin at 12:00 noon on the opening day and end at 12:00 noon on the closing day. Opening and closing dates are as follows:

Week	Open	Close
27	Thursday, June 30, 2005	Friday, July 1, 2005

Maximum allowable mesh size (largest) for this fishery is 6 1/2 inches.

All nets must be clearly marked with personal identification number on the outer corks or buoy.

Fishermen are reminded that each fisherman is permitted to use only one net.

Only individuals whose treaty I.D. numbers are listed on the approved roster of fishers are eligible to fish.

Under no circumstances is drift netting allowed during this opening.

The sale of subsistence caught fish is strictly prohibited.

All subsistence fish must be reported.

All other provisions of the General Regulations must be followed.

REMINDER: All fishermen are required to provide the opportunity to collect scales on all subsistence fish. Skip Pickett will be available to collect biological data from all catch.

Justification: This fishery is consistent with the 2005 Spring/Summer Management Plan.

Queets River Fish Committee

Quinault Department of Fisheries

Queets River C&S Fishing Regulations

Subsistence fishing is very important to the Quinault people, as it is used to feed large groups of people through extended families and to maintain social and cultural norms of group get-togethers and forms of giving.

The total annual harvest of halibut by treaty tribes is set by the International Treaty between the U.S. and Canada through the International Pacific Halibut Commission. The Quinault work with other Western Washington "halibut tribes" to establish their share of the treaty allocation. The process of inter-tribal allocation is considered a "hot process", during which tribes get together and work out allocation schemes based on historical performance. The three dominant tribes in halibut allocation have been the Quinault, the Quileute, and the Makah, together who take approximately 97% of the allocated catch. For subsistence, commercial fishermen may take home quite a bit of catch, but it is distributed among extended family, elders in the tribe, and the needy. As mentioned, the fish serves as a means to reinforce the cultural value of sharing.

Aside from halibut and black cod, a wide variety of shellfish gathered along ocean beaches serve to meet subsistence needs. These include razor clams, mussels, gooseneck barnacles, and most rarely seaweed. Limpets and sea cucumber are also gathered, along with smelt, caught with dip nets. River estuaries, particularly those of the Queets and Quinault Rivers, are also sources of smelt fish. Surf perch, rock fish, and ling cod caught along ocean beaches, is another, though

smaller, part of the Quinault diet. Although shellfish gathering is potentially a year-round activity, most of these species are caught or gathered during spring and summer months, as the winter brings harsh storms and makes shellfish habitats difficult to access. Furthermore, species are in better condition (e.g. mussels are fatter) during summer months.

The USEPA is currently conducting a seafood consumption study of Quinault members to estimate potential risks to the population from contaminants or toxins carried in the organisms. This study might provide further insight into the levels of subsistence use.

Quinault Indian Nation Fish Hatchery

11.2.4 Shoalwater Bay

Contact:
2373 Tokeland Road
Tokeland, WA
Charlene Nelson (Tribal Chairperson) (360) 267-6766
Gary Burns (Environmental Programs and Laboratory) (360) 267-3101 ext. 26
Steve " ext. 22/29
Mike Shipman

The Shoalwater Bay Tribe is located on the southwest coast of Washington's Willapa Bay. Total enrollment is 237 people, who reside on the 334.5 acre reservation. The Shoalwater people historically were a part of the Quinault tribe, and they made their living by fishing, crabbing, and oystering. At the time of the formation of the Quinault reservation, the Shoalwater split off, as they desired to remain in the ancestral land in present-day Tokeland. Despite a close cultural affiliation, their separateness has created a state of competition for resources. The Quinault and other tribes have fought against the Shoalwater is restricted allocations. They are won in certain areas, such as fishing, but have lost in others, such as health care. For health care, "the pieces of the pie" get cut up equally (which is good for the Shoalwater), making each piece smaller (which is bad for the larger tribes).

Shellfish gathering in Willapa Bay

The Shoalwater people inhabit the north shore of Willapa Bay, in the shoalwaters of its mouth. The waters here are low and rocky, and the shoreline contains a number of inlets and bays created by inland creeks. On a given day, one can observe the Shoalwater people, knee-to-waste

deep in the waters of these inlets, collecting clams, crabs, mussels, and gooseneck barnacles. Willapa Bay is the primary fishing and shellfish gathering area, both inshore and offshore. Because the Shoalwater people do not have federally nor state recognized traditional fishing rights, as do those tribes to the north, they nevertheless engage in both commercial and subsistence fishing. Crabbing is the main industry, regulated through the allotment of the number of crab pots one is able to set.

Crab Pots setting at the Tokeland Marina

The town of Tokeland is home to many tribal members who wish to reside on Shoalwater land. Tokeland has a harbor, which is home to a number of crabbing vessels. Crabbing is, in fact, a key industry within Tokeland, which is home to a large seafood house and wholesale/retail trade facility, Nelson's Seafood.

Nelson's Seafood

Of a great concern among the Shoalwater and the fish they are eating is the question, "What is the condition of the fish we are eating?" Recently, the Shoalwater have suffered a bout of infant mortalities, which has increasingly been linked to the environment and water quality. Presently, their Environmental Programs and Laboratory personnel are collecting fish tissues from charter boats and "anything brought up" and testing them for PCB and mercury. Although there is not a complete dependence upon the area's fish and shellfish, there is enough of one to present a significant concern.

11.3 Coastal Oregon Tribes

11.3.1 The Confederated Tribes of the Siletz.

Contact:
Siletz Tribal Office
107 E. Swan Ave.
Siletz, OR 97380
Stan Van Wettering (fisheries biologist)

The Siletz Tribal Confederacy, located on the northern coast of Oregon along the Siletz River, has 4,100 enrolled members. The reservation surrounds several tributaries of the Siletz River.

The Siletz Tribal Confederacy administrative offices

The Department of Natural Resources is responsible for managing the reservation's fish population and harvesting activities. The Department has two fisheries biologists, who work from NOAA-based grants. These biologists monitor the well-being of fish in rivers and in the tribal hatchery.

Although traditional fishing areas included the lower Siletz River, present-day fishing areas include two designated tributaries of the Siletz River – Euchre Creek and Rock Creek – and Dewey Creek Falls. The harvest depends on yearly rainfall; presently, the fishing is poor due to

the period of drought. No other reservation along the coast (Coos, Cal Creek, Coquille, or Grand Ronde) have the same fishing rights.

Historically, the tribe lost its federally acknowledged fishing rights. In 1980, a Consent Decree was signed between the Siletz and the State of Oregon, which resolved the controversy between the Tribe and the State as to the Siletz hunting and fishing rights. According to Hill (1980), "The settlement will allow the tribe to take up to 375 deer and 25 elk annually in two areas of Lincoln County and a maximum of 200 salmon annually from designated sites on three tributaries of the Siletz River."

The Final Decree and Order (1980, 4-5, Section 4a) issued by the U.S. District Court for the District of Oregon, states the following:

> The Tribe shall have the opportunity to harvest 200 salmon, regardless of size, per year from sites on tributaries of the Siletz River according to the provisions of this agreement. The parties acknowledge that actual annual salmon harvest may be less than 200 salmon because of water conditions, varying sun sizes, and fishing effort. Furthermore, the parties agree that there shall be no makeup of salmon harvest in subsequent years if harvest is less than 200 salmon in any single year.
>
> The only permissible means of harvest shall be sip nets, spears, and gaffhooks. "Dip net" shall mean a net with a mesh size no larger than 5 inches…attached to a hoop no larger than 4 feet in diameter and attached directly to a handle; dip nets shall be attended at all times. "Spear" shall mean a hand-propelled barbed single or multiple point device attached directly to long shaft; no multiple pointed spear shall have an overall width greater than 8 inches. "Gaffhook" shall mean a large, strong, single point hook attached directly to a handle.
>
> Harvesting by the Tribe shall occur only during salmon runs as set forth herein. The tribal fishing season, up to but not to exceed 60 days, shall be established by the Department after consultation with the Tribe each calendar year during the period of the more active part of the fall salmon run. All tribal salmon fishing shall occur during those regular hours set for salmon angling by the Commission. The establishment of any special tribal fishing season is subject to the State's authority to regulate for conservation purposes and for protection of steehead.
>
> The harvest of salmon shall be permitted only at the following specific tributary locations:
>
> (a) Euchre Creek Fall, which is a single falls, and a site locate approximately between river mile 2.8 and 3.0 in Section 11, T9S, R10W, W.M;
>
> (b) Dewy Creek Falls, which is a series of falls located approximately between river mile 0.4 and 0.5 in Section 7, T10S, R10W, W.M; and
>
> (c) A single site on Rock Creek, as agreed upon in writing by the Tribe and the Department.

Prohibited activities include the taking of steelhead or game fish other than salmon; net fishing, including gill netting but not dip netting; the use of fish for commercial purposes; the

taking of fish from areas other than those designated; and the taking of more fish than the specified allocation.

The Final Decree and Order provides the following instructions for subsistence takes: “The State shall annually issue without charge to the Tribe 200 salmon tags…Whenever an animal is taken, the tag shall be promptly filled out by the tribal member and promptly affixed to the animal. The information listed on the tag shall be provided to the tribal office within a time period prescribed by the Tribe” (1980, 11, Section 7b-c). Tribal members must hold a tribal license and comply with state tagging, possession, and transportation regulations.

In addition to harvesting salmon from its tributaries, the Tribe also was given the right to receive 4,000 pounds annually of surplus salmon carcasses “from a source to be determined by the Department” for a subsistence supply (1980, 6; Section 4b).

For unknown reasons, the Siletz never catch the full 200 salmon permitted annually. In 2004, only one salmon was taken for subsistence.

Shellfish, including razor clam, rock oysters, saltwater mussels, and sea anemones constitute an important part of the tribal subsistence culture, as is lamprey. These are gathered along the coastal shore, north of Newport, Oregon. Individuals are required to apply for a “Cultural Shellfish Gathering Permit” if they gather in excess of the daily and possession bag limits. Although actual numbers of shellfish gathered are not known, it is believed that the Siletz “harvest what they need,” and they are reported to use all of what they harvest, including the shells.

Department of Natural Resources Director pointing to traditional use of clam shells in ceremonial dress

There are approximately 10-12 commercial fishermen, who fish “as citizens of the U.S.,” and they “go through the normal rules and regulations.” More specific information becomes more complex, as it depends on which tribe the fisherman is from, on which reservation he/she is fishing, etc.

> According to one informant, the tribe was recently approached by an Asian firm to commercially harvest dog fish, found in the rivers. The tribe declined.

11.3.2 The Confederated Tribes of Coos, Lower Umpqua, and Siuslaw

Contact:
Howard Cromby: 541-888-9577
Environmental Coordinator

The Coos, Lower Umpqua, and Siuslaw originally inhabited the central and southcentral Oregon coast. The ancestral territory of the confederated tribes was once 1.6 million acres, and it encompassed the Coos Bay, Umpqua, and Siuslaw estuaries. The tribal territory is now comprised of 250 acres only.

Unlike the Columbia River Basin Tribes, the Confederated Tribes do not have an acknowledged treaty nor reserved rights by the federal and state governments. As such, there is no opportunity to fish at a subsistence level. There is belief that, although consumption of fish has declined as a result of unrecognized rights, stemming from the lack of a treaty, the consumption is generally higher among the Confederated Tribes than the average population. This is attributed to two key factors:

1. low income pressures which drive individuals to procure their own food
2. cultural traditions which stress fishing as a life-way and which are reinforced through tribal ceremonies and celebrations.

The state of California considers the tribes to be subject to their fish and hunting regulations. The tribes fish according to these regulations. The state recently added requirements of a needed license for shellfish. This has greatly affected the tribes, which rely heavily on shellfish. Clams, mussels, gooseneck barnacles, and crabs are particularly important to the diet of the people. These are gathered in rocky, intertidal waters of the coast.

There are a number of tribal members who fish commercially and who engage in the profession as a U.S. citizen, but the tribes do not have a commercial fishing industry. Fishing for take-home largely occurs among individuals who travel to the rivers and ocean to fish with hook and line and to gather shellfish. That is, the dependence on fish in the home diet is accomplished through individual effort rather than on reliance upon a commercial fisherman's catch. All fish are reported to the state of Oregon.

The fisheries of the Confederated Tribes of Coos, Lower Umpqua, and Siuslaw are managed under the tribes' Department of Natural Resources. The Department has an Environmentalist who is in charge of fisheries, including biological studies on fish and habitat.

As a final statement, the group stresses that they have never given up their right to fish, and that they exercise their right frequently to supplement the diet; however, they would like to have their fishing rights recognized by the state and the federal governments.

11.4 Coastal Northern California Tribes

11.4.1 Smith River Rancheria

Contact:
Tribal Office
140 Rowdy Rd.
SmithValley
Brad Cass (707) 487-9255
Loren Bommelyn (707) 218-7722 tolowaz@charter.net

The Smith River Rancheria is located three miles from the Oregon/California border, with elevations ranging from 10 to 168 feet above sea level. The land includes Prince Island and the shoreline opposite to it, part of the lower Lopez Creek, the northern edge of the mouth of the Smith River, and the south riverbanks of the Smith River. With 190 acres, it is the largest Indian Rancheria in California, and one of the three Indian reservations serving the Tolowa people (Smith River Rancheria, Ribal Environmental Plan 2005). The Smith River Rancheria has an enrolled membership of 928 people, with 126 members living within the boundaries of the Rancheria and owning the floor of the Smith River Valley (ibid.). The Smith River is the largest undammed river in the United States. As such, all California coastal tribes recognize the river to provide excellent fishing.

The Smith River Rancheria's fishing rights are closely tied to its history with the U.S. government. California's Rancherias are remnants of reservations that were taken away in the early 1960s. The river and ocean rights were taken away during this time, and never fully restored. In 1942, the Smith River was shut down, as onland fisheries and commercial fishing industries were eliminated by the state. Up until 1950, the Tolowa people of the Smith River Rancheria speared flounder, gillnetted, and built fish dams.

The Smith River Rancheria does not have an agency specifically devoted to managing fishing. There is no regulatory ordinance in place by the tribe on fish. They are, however, just starting to develop a process to regulate clams.

Public Law 280, which transferred hunting and fishing regulatory process to California, did much to restrict Native rights. At the time when other tribes (e.g. Yurok) fought for fishing rights, the rancherias were dissolved, non-existent, and so were unable to fight for similar rights. The tribe, nevertheless, continues to fish, but it is ALL for subsistence (there is no commercial fishing to speak of). Although the state puts a limit on the state fishing license of 25 pounds, the Smith River people do no (are not obliged to???) conform to this limit. The people feel as though they are strapped, particularly as the present diet, which is saturated fat-rich and protein-low, has resulted in a higher level of diabetes and obesity. There is a sense that the loss of traditional foods, both proteins (e.g. substantial fish and shellfish meat and occasional seal and whale meat) and fruits/vegetables (berries and green leafy shoots, such as celery), combined with an introduced diet of refined sugars and saturated fats, has lead to the present state of health. The United Indian Health Services[6], located in Arcata, has information on this (CHECK).

[6] This agency services 10 tribes in California and approximately 10,000 – 12,000 Indians.

The tribe fishes for: smelt; salmon; red tail perch; ling cod; halibut; and steelhead. Much of the fishing takes place along the rivers. Presently, however, development has taken a toll on subsistence fishing, as buildings are being erected on traditional fishing (and gathering) grounds. The concern most prevalent among community members is the development of the ocean front, where large, private homes are being constructed. Restricted beach access is feared to come in the near future, as home owners are building solidly along the ocean front. Development up river has resulted in fishing runs being severely diminished.

There is a real concern among this tribe with the 2003 damming (by potato farmers) of the Klamath River, after which 35,000 adult salmon were killed. There is a sense that the entire Klamath River basin is endangered.

11.4.2 Elk Valley Rancheria

Contact:
2332 Howland Hill Road
Crescent City, CA 95531
Ray Martell (Economic Development and EPA Director)- 707-465-2642
Glenn Gray (Tribal Administrator / CEO) 707-464-4680

The present government of the Elk Valley Rancheria was organized in 1994, under the provisions of Indian Reorganization Act. Tribal enrollment is 98 persons. Land area consists of a patchwork of approximately 403 acres, most of which is in trust or in process of being put into trust. The tribal area has no fishing property. A few minor creeks run through the land, but these do not afford any fishing opportunity.

Fishing on the whole is "minimal if any", according to a tribal member. Further, shellfish is not gathered. As such, fish and shellfish are not a major component of the Elk Valley Rancheria diet.

Fishing, when done, takes place on Yurok land and often with the Yurok fishermen. The Elk Valley Rancheria still holds on to the tradition of fishing, despite the fact that there is very little fishing. The Rancheria continues to hold a few traditional tribal ceremonies in which salmon plays an important role. The salmon is taken from Yurok waters.

11.4.3 Yurok

Contact:

Yurok Indian Reservation
Northern California Agency
517 Third St., Suite 21
Eureka, CA 95501
Desma Williams (707) 482-2841 - Fisheries
Dave Hellermeyer – Head of Fisheries
Kevin McKernan (707) 482-1350 – Environmental Programs

The territory of the Yurok Tribe consists of the Ancestral lands, including the Yurok Reservation located along coastal and inland northern California. According to the Yurok Constitution, the territory extends "unbroken along the Pacific Ocean coast (including usual and customary off-shore fishing areas) from Damnation Creek, its northern boundary, to the southern boundary of the Little River drainage basin, and unbroken along the Klamath River, including both sides and its bed, from its mouth upstream to and including the Bluff Creek drainage basin" (1993, 7).

The Yurok Tribal Council consists of Nine Council members (including the Chairperson and the Vice-Chairperson) and seven Council Districts. The Department of Natural Resources attend to issues related to the environment. The Yurok Tribe Fisheries Department is found under this Department, although, like other tribes, it has its own building.

The Yurok Indian Nation Fisheries Department

The Yurok is a unique tribe in California because it has significant fishing rights. 50% of the harvestable amount of fish is allocated to the Yurok and Hupa (Hoopa); 50% is allocated to the California Fish and Wildlife Commission. As a result, it also has substantial commercial and subsistence fishing, as well as concomitant regulations and allocations ascribed by the tribe.

The Yurok harvest five species: fall chinook, coho, steelhead, green sturgeon, and white sturgeon. Although there is a substantial commercial fishery within the tribe, and although it is one of the two California tribes with commercial fishing, *the importance of subsistence fishing surpasses that of commercial fishing.* The subsistence needs of the tribe are met *first*, before commercial needs. In some years, such as 2005, the tribe may not have a commercial fishing season if there is not enough or just enough fish to meet subsistence requirements. These requirements change from season to season, based on the run size. *The tribe always tries to reserve 12,000 fish for subsistence purposes*. Anything above this can be used for commercial purposes, although the numbers can change. In 2004, 12,000 fish were used for subsistence purposes; 12,200 were allocated to commercial use. In 2005, however, given the state of the river flow, the *total harvest is to be 6,600, all of which will be used for subsistence as the quota has not been met.*

The Yurok have a seat on the FMC, which meets in April, on the KFMC and the PFMC. These seats ensure tribal representation and fairness in decision-making.

Notices are placed throughout key locations in Klamath. For example, there was a notice of a "sturgeon in-season adjustment," a two-day closure on both commercial and subsistence fishing. These adjustments affect not only tribal members but also members of other tribes (e.g. Big Lagoon) who wish to fish in Yurok waters.


SMOKED
JERKY
CLOSED
JERKY
AUTHENTIC
SMOKED
SALMON

11.4.4 Hoopa

Contact:
P.O Box 1348
Hoopa, CA 95546
Danny Jordan (530)625-4211
Mike Orcutt (fisheries)

The Hoopa Valley Indian Reservation was established on 1876. Today, it consists of 96,000 acres, on which approximately 2,200 live. The town of Hoopa is the tribal center for government and administration. The Trinity River runs through the reservation, along with seven major tributaries of the Trinity and Klamath Rivers.

The tribe's Agriculture and Natural Resources consists of three departments: Hoopa Tribal Forestry; Tribal Environmental Protection Agency, and Tribal Fisheries. According to "The Hoopa People" (2005, n.p.), "The Hoopa Valley Tribal Fisheries Department is responsible for the monitoring and reporting of the Fishery for the entire Trinity River Basin." The Fisheries Department receives funding through the Bureau of Reclamation, Bureau of Indian Affairs Compact, and the National Marine Fisheries Service. Fish tagging, weir operations, juvenile outmigrant trapping, creel census, screw tap monitoring, and net harvest monitoring are all Department monitoring activities: "Much of the data gathered through these monitoring activities is used to estimate future anadromous runs in order to determine allocation between the ocean fishery, Tribal fisheries, and the sports fishery" (ibid.). Attention to spawning habitat and rearing grounds is also a part of the tribal program.

Hoopa Tribe Fisheries Department

The Hoopa's relation to subsistence fishing is similar to that of the Karuk in that their position on the river, coupled with their allocation, has created a heavy stress on subsistence fishing and a restriction on commercial fishing. Unlike the Karuk, however, who depend solely on dip netting, the Hoopa engage in set netting. Further, because their fishing territory is further down the Klamath and is more extensive than the Karuk, their harvest is not as limited. Nevertheless, the average yearly catch is relatively small for the population: 4,000 spring salmon, 4,000 fall chinook, roughly 500 steelhead. The total of 8,500 for a population of 2,200 averages to only four fish per person per year.

Nearly all fish taken are for subsistence (take-home) purposes. In the past, the Hoopa placed a prohibition on commercial fishing due to the condition of the Trinity River. Subsistence has been, and continues to be, the priority. "Anything above that is used for commercial purposes." There is a very significant concern about keeping fish available, particularly given the state of the Trinity and Klamath Rivers and the past fish populations. Until recently, there has been no economic value given to commercial fishing among the Hoopa.

Since 2001, there has been an effort to operate a commercial cannery, largely to ease the high (40%) unemployment rate. Thus, the curtailment on commercial fishing is slowly beginning to lift. The tribe feels as though they have more a stable fish population and more of an understanding of cause/effect situation of the fisheries. "Now we are beginning to see an economy [in fishing]."

> Nevertheless, subsistence remains a high priority. One tribal member sums it up: "It's [subsistence fishing] a standard we cannot walk away from."

11.4.5 Karuk

Contact:
Orleans, California
Ron Reed (fisheries) (530) 627-3116
rreed@karuk.us

The Karuk Tribe is a federally recognized Indian Tribe (Federal Register, Vol. 5 1, No. 132, July 10, 1986) inhabiting aboriginal land along the middle course of the Klamath and Salmon Rivers in northern California. The Tribe's Aboriginal Territory encompasses an estimated 1.38 million acres within the Klamath River Basin. Presently, the Karuk territory is comprised of individual and tribal trust lands scattered between Yreka and Orleans. Tribal centers and administrative offices are located in Somes Bar, Orleans, Happy Camp, and Yreka. Present enrollment is 3,200

The Karuk Department of Natural Resources has nine programs: Fire/Fuels; Air Quality; Watershed Restoration; Water Quality, Environmental Education; Solid Waste; Government to Government Consultation; Cultural Preservation; and Fisheries. The Department is presently developing a preliminary Environmental Impact Statement for an Integrated Resource Management Plan. Fisheries are a central part of this plan.

Karuk Fisheries Office located along the upper Klamath River, Orleans, California

The Karuk fisheries (largely fall Chinook) are located on the Klamath River, at Ishi Pishi Falls. Dip netting is the primary means of fish harvesting. Individuals use nets on 14' to 16' poles. Fishing takes place in rough rapids. Because the Klamath has a history of being erratic in its

flow due the construction of dams and course divergence up-river, the Karuk fisheries have become flow-dependent.

The Karuk Tribe conducts subsistence fishing activities only. That is, all fish taken out of the river are for subsistence purposes only. Fishing catches can range, although the catch is never large. A good year is represented by roughly 2,000 fish a year, while a bad year, such as 2004, is represented by only 100 fish. Considering that the Karuk enrollment is 3,200, this represents *two fish per every three persons per year* on a good year, and *one fish for every 30 persons per year* on a bad year.

The fact that this figure is considerably low, particularly compared to the past, poses a significant concern. The state of fisheries becomes underscored in the context of the present health and well-being of the tribe, which is inherently tied to a healthy (e.g. fish-rich) diet.

The Karuk adhere to federal law regarding fishing. They do not have a commercial fishing industry. In fact, the idea of commercial fishing is against the tradition. There is no reporting mechanism in place. The California Fish and Game attempted to regulate the tribe, but, as they are legally under the jurisdiction of the federal, and not the state government, the Karuk are not obligated to comply with state regulations when fishing using traditional means (e.g. dip net). This is with the exception of the use of hook and line, when the Karuk must adhere to California state laws.

Although there is not a fishing allocation to the tribe, nor any federally recognized fishing rights, fishing is a central part of life, of the tribe's cultural heritage. The stories they tell, the traditions they keep, the celebrations and ceremonies they hold, all are associated with fishing, which, in turn, was once managed by tradition and ceremony. The season was regulated by the First Salmon Ceremony, which took place in April and initiated the season. A tribal ceremony was held 70 miles up the river from the point where fishing was allowed. Then, another ceremony took place in July, marking a 40 mile point. The ceremonies worked their way upstream broadening the fishing range. This allowed the fish to escape above the point. This used to be the way for ALL tribes. Now, these tribes, including the Karuk, have a fish tallying method in place. Consequently, most tribes fish the head of the run instead of the body of the run.

The annual harvest varies, but it is always highly dependent upon the regulation of the Klamath Dam. In 2002, for example, there was the largest juvenile fish kill that took place in recent history. Recently, there has been a state of disease among juvenile fish, which are dying off. Of the fish samples taken by the fisheries department of the Karuk tribe, nearly 100% were diseased. Much of this is attributed to the low flow of the river, created by six shallow dams upriver. The low water flow contributes to the algae bloom, which in turn suffocates the fish.

There has been a notable decline in the Pacific Lamprey. As part of the Chinook food web, this decline concerns tribal members. As a whole, there is a sentiment that the condition of the Klamath River is affecting the ceremonial and subsistence fishing industry.


Got Chinook?

11.4.6 Big Lagoon Rancheria

Contact:
Big Lagoon Rancheria Tribal Office
Arcata Hotel
Arcata, CA
Virgil Moorhead (Tribal Chairperson)(707)826-2079

The Big Lagoon Rancheria lies within 25 miles of the city of Eureka and 20 miles of the city of Arcata in Humboldt County. The original Rancheria consisted of nine acres, but it has since expanded to the present 34 acres, all of which is landlocked. The Rancheria enrollment is 18, all of whom belong to one family. Traditional waterways included the Klamath River.

Like other California Rancheria's, Big Lagoon Rancheria has no acknowledged traditional fishing rights. They do not engage in any commercial nor subsistence fishing. Most of the fishing they do is on the Klamath River, as the Mad River, near which they are located, is considered good only for Lamprey. As such, Big Lagoon people conform to Yurok fishing regulations if they wish to catch for either commercial or take-home purposes.

The loss of fishing holes are of biggest concern with regard to subsistence fishing and the Big Lagoon heritage. Fishing holes were and continue to be a source of family inheritance. All holes now are located on Yurok territory. In order for a Big Lagoon member to exercise a fishing right at a family hole, he/she has to become a Yurok member.

Big Lagoon Tribal Office: Hotel Arcata

12.0 Coastal Washington, Oregon, and Northern California Tribal Subsistence Summary

Each of the groups visited have their own relation to subsistence fishing, their own ways to define subsistence, and their own ways of managing subsistence takes. While different, there are commonalities shared between groups in the particular geographically-defined areas. Many of these commonalities are directly related to the opportunities or limitations set by the environment and the politico-economics of a water body. Other commonalities are related to recent history and relations with U.S. governmental bodies determined by either the presence or absence of a treaty.

Among the Washington tribes, a large portion of fish for subsistence purposes is taken from commercial fishing harvests, which is reported to NWIFC in the Ceremonial and Subsistence section of the fisheries harvest form. Few people go out individually to catch halibut or salmon for subsistence purposes. Of the total fish harvest, only a small portion (an estimation of 5%-10%) goes to subsistence fishing. Treaty rights, coupled with a strong commercial fishery infrastructure, may be linked to the present commercial/subsistence ratio where the reliance on fishing is concerned.

Among the Oregon tribes visited, restricted fishing rights have produced minimal subsistence takes. Commercial activities, which take place on the ocean, operate under the National Marine Fisheries laws, are small and unrelated to subsistence fishing. The reliance on subsistence fishing that these smaller, coastal Oregon tribes have are reported to be significantly different form those of the Columbia River Basin Tribes.

The upper-Klamath River tribes (e.g. Hoopa and Karuk) have a fisheries that is affected by several factors, thus increasing dependency on fish as a food source. First, their location up-river, rather than on the ocean, creates a situation of reduced infrastructure. Shipping and transportation facilities, for example, do not exist on the Klamath and Trinity Rivers and would be difficult to create. Secondly, because these tribes are further up-river, fewer fish are found. This is particularly true when the Klamath is experiencing a low-flow. Thus, although the Yurok, Hoopa, and Karuk access the same water resources for their fish, their location along these resources determines whether a commercial-and-subsistence versus a subsistence-only fishery can be established.

Important, however, is that even the Yurok, who have a commercial fishery, stress subsistence first. This emphasis is similar to the Oregon tribes but is very different from the Washington tribes, which have a well-developed commercial fishing infrastructure and a strong emphasis on commercial fishing. Washington Tribal fisheries, however, also place a priority on subsistence harvests, often with initial catches being allocated to subsistence and ceremonial uses, as well as reserved “end-of-season” periods restricted specifically to subsistence harvests.

13.0 Recommendations

A gap in information about the state of subsistence fishing among northwest tribal communities still exists among the Columbia River Basin tribes. Research among these tribes would render a more complete understanding of the relation between commercial and subsistence fishing. A number of tribes have pointed to the Umatilla Tribe as providing a model for quantitatively documenting tribal fish consumption.

Additional data collection, case study, and mapping recommendations pending – subject to additional discussions with staff.

Table 3: Pacific Northwest Subsistence Data

Publication	Author(s)	Year	Tribe(s)	State	Type of Data
The Effects of Altered Diet on the Health of the Karuk People: A Preliminary Report	Norgaard, K. M.	2004	Karuk	CA	Quant./Qual. (fish consumption)
White Paper on Behalf of the Karuk Tribe of California: A context statement concerning the effect of Iron Gate Dam on Traditional Resource Uses and Cultural Patterns of the Karuk People within the Klamath River Corridor	Salter, J.	2003	Karuk	CA	Socio-cultural impact report
First Salmon: The Klamath Cultural Riverscape and the Klamath River Hydroelectric Project.	King, T.	2004	Yurok, Karuk, Shasta and Hupa Tribes	CA	Impact report
Tribe Fights Dams to get Diet Back: Karuks trying to regain salmon fisheries and their health.	Harden, B.	2005	Karuk	CA	Descriptive (newspaper)
Indians say dams cost them fish, good health.	Bernard, J.	2005	Karuk	CA	Descriptive (newspaper)
Chief Joseph Dam Hatchery Program Master Plan, Executive Summary	Confederated Tribes of the Colville Reservation	2004	Colville	OR	Impact report
A Fish Consumption Survey of the Suquamish Indian Tribe of the Port Madison Indian Reservation, Puget Sound Region	Suquamish Tribe	2003	Suquamish	WA	Quantitative (fish consumption)
Puget Sound Chinook Harvest Resource Management Plan NEPA, Final EIS: Treaty Indian Ceremonial and Subsistence Salmon Uses-Section Three	NOAA	2004	Puget Sound Island Tribes, Samish and Snoqualmie	WA	Qualitative (cultural significance of subsistence fisheries)
Comprehensive Management Plan for Puget Sound Chinook. Harvest Management Component: Annual Postseason Report 2003-04 Fishing Season	WA Dept. of F&W, and Puget Sound Indian Tribes	2004	Puget Sound Indian Tribes	WA	Quantitative (Harvest)
A Fish Consumption Survey of the Tulalip and Squaxin Island Tribes of the Puget Sound Region	Toy, K. A., et al.	1996	Tulalip and Squaxin	WA	Quantitative (fish consumption)
Puget Sound Chinook Harvest Resource Management Plan NEPA, Final EIS: Treaty Indian Ceremonial and Subsistence Salmon Uses-Section Four	NOAA	2004	Snoqualmie and Samish	WA	Technical (impact report)
Project Design and Implementation: Bioaccumulative Toxins in Native American Shellfish	Donatuto, J.	2003	Swinomish	WA	Risk report
Tribal Technical Issues in Risk Reduction through Fish Advisories	Harper, B. & S. Harris	1999	Umatilla & Yakima	WA	Technical (Risk assessment and reduction)
Yakima River Subsistence Fishery	Hollowed, J.	1983	Yakima	WA	Information Report
Interactions of American Indians and Ethnic groups with the natural environment	Hanes, R. & R. Hansis	1995	Klamath, Kootenai,	WA	Descriptive (cultural)

			Coeur d'Alene, & Nez Perce		
Our Culture and History	Confederated Tribes of the Umatilla Indian Reservation	No date	Umatilla	WA	Descriptive (historical)
Resource Allocation and Control on the Lummi Indian Reservation: A Century of Conflict and Change in the Salmon Fishery	Boxberger, D.	1986	Lummi	WA	Descriptive (historical)
In and Out of the Labor Force: The Lummi Indians and the Development of the Commercial Salmon Fishery of North Puget Sound, 1880-1900	Boxberger, D	1988	Lummi	WA	Descriptive (historical)
Subsistence and Survival: The Makah Indian Reservation, 1855-1933	Collins, C.	1996	Makah	WA	Descriptive (historical)
Nch'i-Wana, "The Big River": Mid-Columbia Indians and their Land	Hunn E. & J. Selam	1991	Mid-Columbia	WA	Descriptive/ theoretical
A survey of the Nez Perce subsistence fishery for spring chinook salmon, North Fork Clearwater River, Idaho	Mauney, J.	1992	Nez Perce	ID	Quantitative (Harvest)
Nez Perce ceremonial and subsistence fisheries for chinook salmon in upper Snake River system tributaries, 1998	Mauney, J.	1998	Nez Perce	ID	Quantitative (Harvest)
Nez Perce ceremonial and subsistence fisheries for chinook salmon in the upper Snake River system tributaries, 1993	Mauney, J. et al.	1993	Nez Perce	ID	Quantitative (Harvest)
Survey of Nez Perce subsistence fishery for steelhead trout near the Dworshak National Fish Hatchery fish ladder, North Fork, Clearwater River, Idaho	Statler, D. & J.F. Marek	1986	Nez Perce	ID	Quantitative (Harvest)
A survey of Nez Perce subsistence fishery for steelhead trout along the North Fork, Clearwater River, Idaho, 1987-1988	Mauney, J. et al.	1990	Nez Perce	ID	Quantitative (Harvest)
A survey of Nez Perce subsistence fishery for steelhead trout along the North Fork, Clearwater River, Idaho, 1988 & 1989	Mauney, J. & W. Antell	1991	Nez Perce	ID	Quantitative (Harvest)
A survey of Nez Perce subsistence fishery for steelhead trout along the North Fork, Clearwater River, Idaho, 1990 & 1991	Mauney, J. & W. Antell	1992	Nez Perce	ID	Quantitative (Harvest)
A survey of Nez Perce subsistence fishery for steelhead trout along the North Fork, Clearwater River, Idaho, 1992-1993	Mauney, J. & W. Antell	1993	Nez Perce	ID	Quantitative (Harvest)
A survey of Nez Perce subsistence fishery for steelhead trout along the North Fork, Clearwater River, Idaho, 1993 & 1994	Mauney, J. et al.	1995	Nez Perce	ID	Quantitative (Harvest)
A survey of Nez Perce subsistence fishery for steelhead trout along the North Fork, Clearwater River, Idaho, 1994 & 1995	Mauney, J. et al.	1996	Nez Perce	ID	Quantitative (Harvest)
A survey of Nez Perce subsistence fishery for steelhead trout along the North Fork, Clearwater River, Idaho, 1995	Mauney, J. & W. Antell	1997	Nez Perce	ID	Quantitative (Harvest)
Survey of Nez Perce subsistence fishery for spring chinook salmon at Rapid River, Idaho	Statler, D. et al.	1986	Nez Perce	ID	Quantitative (Harvest)

Survey of Nez Perce subsistence fishery for spring chinook salmon at Rapid River, Idaho	Statler, D. et al.	1987	Nez Perce	ID	Quantitative (Harvest)
A survey of Nez Perce subsistence fishery for spring chinook salmon at Rapid River, Idaho, 1990	Mauney, J. et al.	1990	Nez Perce	ID	Quantitative (Harvest)
A survey of the Nez Perce ceremonial and subsistence fishery for spring chinook salmon in Zone 6 of the Columbia River, 1988 &1989	Mauney, J. & J. Gould	1989	Nez Perce	ID	Quantitative (Harvest)
A survey of the Nez Perce ceremonial and subsistence fishery for spring chinook salmon in Zone 6 of the Columbia River, 1991	Mauney, J. & M. Villalobos	1992	Nez Perce	ID	Quantitative (Harvest)
A survey of Nez Perce subsistence fishery for spring chinook salmon at Rapid River, Idaho, 1992	Mauney, J. et al.	1992	Nez Perce	ID	Quantitative (Harvest)
A survey of the Nez Perce ceremonial and subsistence fishery for spring chinook salmon in Zone 6 of the Columbia River, 1993	Mauney, J. et al.	1993	Nez Perce	ID	Quantitative (Harvest)
Salmon and his People: Fish & Fishing in Nez Perce Culture.	Landeen, D. & A.V. Pinkham	1999	Nez Perce	ID	Descriptive (historical/ cultural)
Symbolic and Political Ecology among Contemporary Nez Perce Indians in Idaho, USA: functions and meanings of hunting, fishing, and gathering practices.	Kawamura, H.	2004	Nez Perce	ID	Theoretical
Conservation of Columbia Basin Fish: Harvest Appendix (Draft).	Federal Caucus	1999	CRB Tribes	WA, OR	Quantitative (Harvest)
Columbia River Treaty Ceremonial Fishing, 1980	Bowers, W.	1981	CRB Tribes	WA, OR	Quantitative (Harvest)
Status Report: Columbia River Fish Runs and Fisheries, 1938-2002	WA & OR Depts. of F&W	2002	CRB Treaty Tribes	WA, OR	Quantitative (Harvest)
Child-specific exposure factors handbook.	EPA	2002	Tulalip, Squaxin, Suquamish, & CRB	WA, OR	Quantitative (fish consumption)
Fish Consumption and Environmental Justice: A report developed from the National Environmental Justice Advisory Council Meeting of December 3-6, 2001.	National Environmental Justice Advisory Council	2002	CRB Tribes, Nisqually, Suquamish, Duwamish, Squaxin, and Tulalip	WA, OR	Quantitative (fish consumption)
Analysis and Selection of Fish Consumption Rates for Washington State Risk Assessments and Risk-Based Standards.	Keill, L. and L. Kissenger	1999	Tulalip, Squaxin, and CRB	WA, OR	Quantitative (fish consumption)
A fish consumption survey of the Umatilla, Nez Perce, Yakama and Warm Springs Tribes of the Columbia River Basin.	CRITFC	1994	CRB Treaty Tribes	WA, OR	Quantitative (fish consumption)
Columbia River spring dip-net tribal subsistence fishery.	CRITFC	1986	CRB Treaty Tribes	WA, OR	Qualitative (cultural significance of subsistence fisheries)
First Salmon Feast	CRITFC	No Date	CRB Treaty Tribes	WA, OR	Qualitative (cultural significance of

					salmon)
Wy-Kan-Ush-Mi Wa-Kish-Wit: Spirit of the Salmon: Cultural Context. Vol. I	CRITFC	1995	CRB Treaty Tribes	WA, OR	Qualitative (cultural significance of salmon)
Tribes Gather for Salmon Celebration	Turnquist, K.	2001	CRB Treaty Tribes	WA, OR	Descriptive (cultural significance of salmon)
Chemical in Fish: Consumption of Fish and Shellfish in California and the United States.	California EPA	2001	Tulalip and Squaxin, Elam & CRB	WA, OR, CA	Quantitative (fish consumption)
Review of 2003 Ocean Salmon Fisheries	Pacific Fishery Management Council	2004	Puget Sound, CRB, Yurok & Hupa.	WA, OR, CA	Quantitative (Harvest)
Status review of chum salmon from Washington, Oregon and California	Johnson, O.W. et al., /NOAA	1997	N/A	WA, OR, CA	Quantitative (Harvest/status report)
Status review of chinook salmon from Washington, Idaho, Oregon, and California.	Myers, J. et al./NOAA	1998	N/A	WA, OR, CA, ID	Quantitative (Harvest/status report)
A Computerized Survey Questionnaire to Assist Tribal Representatives in Gathering Data on Tribal Fish Consumption for Risk Assessment	Williams, A., et al.	2004	N/A	AK, WA, OR, ID	Descriptive (software for standardizing harvest data collection methods)
Analysis of the First Salmon Ceremony	Gunther, E.	1926	N/A	N/A	Qualitative (theoretical/ descriptive)
Impacts of Fish Contamination on Native American Culture	Harris, S.	2001	N/A	N/A	Technical (impact report)

N/A = Not available

BIBLIOGRAPHIC SOURCES

Pacific Northwest Fishing Communities Bibliography

Banach, Michael J., Mauney, James L., and Paul K. Cowley. 1991. Surveys of the Nez Perce subsistence fisheries for chinook salmon on the North Fork Clearwater River and Clear Creek, Idaho in 1990: Nez Perce subsistence fishery for steelhead trout. Dept of Fisheries Management, Nez Perce Tribe.

Bowers, Wayne L. 1981. Columbia River Treaty ceremonial fishing, 1980. Oregon Dept. of Fish and Wildlife, Columbia River Management.

Boxberger, Daniel L. 1986. Resource Allocation and Control on the Lummi Indian Reservation: A Century of Conflict and Change in the Salmon Fishery. University of British Columbia, September.

Boxberger, Daniel L. 1988. In and Out of the Labor Force: The Lummi Indians and the Development of the Commercial Salmon Fishery of North Puget Sound, 1880-1900. Ethnohistory 35:2 (Spring 1988): 161-190.

Busiahn, T. R. 1984. An introduction to native people's fisheries issues in North America. Fisheries 9(5):8–11. Marsh, J. H., and J. H. Johnson. 1985. The role of Stevens Treaty tribes in the management of anadromous fish runs in the Columbia Basin. Fisheries 10(4): 2-5.

California Environmental Protection Agency. 2001. Chemical in Fish: Consumption of Fish and Shellfish in California and the United States. Final Report. Pesticide and Environmental Toxicology Section, Office of Environmental Health Hazard Assessment. Available online at: www.oehha.ca.gov/fish/special_reports/fishy.html.

Collins, Cary C. 1996. Subsistence and Survival: The Makah Indian Reservation, 1855-1933. Pacific Northwest Quarterly. Fall 1996: 180-193.

Confederated Tribes of the Colville Reservation. 2004. Chief Joseph Dam Hatchery Program Master Plan, Executive Summary. Bonneville Power Administration and the Northwest Power and Conservation Council. Portland, Oregon.

Confederated Tribes of the Umatilla Indian Reservation. No Date. Our Culture and History. Available online at: http://www.umatilla.nsn.us/hist1.html.

Cowley, Paul K. and James L. Mauney. 1989. A survey of Nez Perce subsistence fishery for the chinook salmon of the North Fork Clearwater River, Idaho, 1989. Nez Perce Tribe.

CRITFC (Columbia River Inter-Tribal Fish Commission). 1994. A fish consumption survey of the Umatilla, Nez Perce, Yakama and Warm Springs Tribes of the Columbia River

Basin. CRITFC Technical Report No. 94-3. Portland, Oregon. Available online at: http://www.critfc.org/tech/94-3report.pdf.

CRITFC (Columbia River Inter-Tribal Fish Commission). 1995. Wy-Kan-Ush-Mi Wa-Kish-Wit: Spirit of the Salmon: Cultural Context. The Columbia River Anadromous Fish Plan of the Nez Perce, Umatilla, Warm Springs, and Yakama Tribes. Vol. I. Available online at: http://www.critfc.org/oldsite/text/TRP_text.htm.

CRITFC. No Date. First Salmon Feast. Available online at: www.critfc.org/text/ceremony.html.

Federal Caucas. 1999. Conservation of Columbia Basin Fish: Harvest Appendix (Draft). Prepared by the Federal Caucas.

Gordon, Joel. Historical Fishing. Available online at: http://home.earthlink.net~jandsgordon/Essays/fishdam.htm.

Grader, W.F. and Glen Spain. 2001. Why the Klamath Basin Matters to Fishermen. Fishermen's News, August 2001. Available online: www.pcffa.org/klamath.htm.

Gunther, Erna. 1926. Analysis of the First Salmon Ceremony. American Anthropologist 28.

Hanes, Richard C. (Bureau of Land Management) and Richard Hansis (Washington State University). June 1995. Interactions of American Indians and Ethnic groups with the natural environment. Interior Columbia Basin. Available online at: www.icbemp.gov/science/hanesrichard_95.pdf.

Harden, Blaine. 2005. Tribe Fights Dams to get Diet Back: Karuks trying to regain salmon fisheries and their health. Washington Post. January 30, 2005; A-03.

Harris SG and BL Harper. 1997. A Native American exposure scenario. Risk Anal. 1997 Dec., :17(6):789-95.

Harris, Stuart. 2001. "Impacts of Fish Contamination on Native American Culture." Annual Forum on Contaminants in Fish. , Chicago, IL, US EPA; MN Dept of Health.

Harris, Suquamish, T. 2003. "A Fish Consumption Survey of the Suquamish Indian Tribe of the Port Madison Indian Reservation, Puget Sound Region." F. Department. Suquamish, WA, Suquamish Tribe. P.O. Box 498 Suquamish, WA 98392.

Hewes, Gordon. 1973. Indian Fisheries Productivity in Pre-Contact Times in the Pacific Salmon Area. Northwest Anthropological Research Notes. Fall, Vol. 7(2).

Hill, Jim. 1980. Judge signs decree on Siletz hunting. *The Sunday Oregon*. May 4, 1980.

Hollowed, J.J. 1983. Klickitat River Subsistence Fishery. Yakama Indian Nation.

Jenkins, Dennis L. 1994. Subsistence-Settlement Patterns in the Fort Rock Basin: A Cultural-Ecological Perspective on Human Responses to Fluctuating Wetlands Resources of the Last 5000 Years. In Archaeological Researches in the Northern Great Basin: Fort Rock Archaeology Since Cressman, edited by C. Melvin Aikens and Dennis L. Jenkins. University of Oregon Anthropological Papers 50.

Johnson, O.W., W.S. Grant, R.G. Kope, K. Neely, F.W. Waknitz, and R.S. Waples. 1997. Status review of chum salmon from Washington, Oregon and California. NOAA Tech. Memo. NMFS NWFSC-32, 280 p.

Judd NL, Griffith WC, Faustman EM. 2004. Consideration of cultural and lifestyle factors in defining susceptible populations for environmental disease. Toxicology. 2004 May 20;198(1-3):121-33.

Kawamura, Hiroaki. 2004. Symbolic and Political Ecology among Contemporary Nez Perce Indians in Idaho, USA: functions and meanings of hunting, fishing, and gathering practices. Agriculture and Human Values 21:157-169.

Keill, Leslie and Lon Kissenger. 1999. DRAFT: Analysis and Selection of Fish Consumption Rates for Washington State Risk Assessments and Risk-Based Standards. Department of Ecology in conjunction with the Risk Assessment Forum. March 1999. #99-200. Available online at: http://www.ecy.wa.gov/pubs/99200.pdf.

Kew, J.E. Michael. 1990. Central and Southern Coast Salish ceremonies since 1900. Handbook of North American Indians. Vol. 7. Northwest Coast, Wayne Suttles, volume editor. Washington, D.C.: Smithsonian Institution; 1990. p. 476-480.

King, Thomas. 2004. First Salmon: The Klamath Cultural Riverscape and the Klamath River Hydroelectric Project. Klamath River Intertribal Fish and Water Commission. Available online at: http://elibrary.ferc.gov/idmws/File_listasp?document_id=4205564.

Masten, Sue and Troy Fletcher. History of the Yurok Fisheries and Current Challenges (Tribal View Panel). Abstract. Contact authors for full text. Both are Yurok tribal members.

Mauney, James L. 1992. A survey of the Nez Perce subsistence fishery for spring chinook salmon, north fork Clearwater River, Idaho, 1992. Nez Perce Tribe.

Mauney, James L. 1998. Nez Perce ceremonial and subsistence fisheries for chinook salmon(Oncorhynchus tshawytscha) in upper Snake River system tributaries, 1997: Nez Perce subsistence fishery. Dept of Fisheries Management, Nez Perce Tribe.

Mauney, James L. and Wendall Antell. 1991. A survey of Nez Perce subsistence fishery for steelhead trout (Oncorhynchus mykiss) along the North Fork, Clearwater River, Idaho, 1988-89. Nez Perce Tribe.

Mauney, James L. and Wendall Antell. 1991. A survey of Nez Perce subsistence fishery for steelhead trout (Oncorhynchus mykiss) along the North Fork, Clearwater River, Idaho, 1989-90. Nez Perce Tribe.

Mauney, James L. and Wendall Antell. 1992. A survey of the Nez Perce subsistence fishery for steelhead trout (Oncorhynchus mykiss) along the north fork Clearwater River, Idaho, 1990-91: Nez Perce subsistence fishery. Dept of Fisheries Management, Nez Perce Tribe.

Mauney, James L. and Wendall Antell. 1992. A survey of the Nez Perce subsistence fishery for steelhead trout (Oncorhynchus mykiss) along the north fork Clearwater River, Idaho, 1991-92: Nez Perce subsistence fishery. Dept of Fisheries Management, Nez Perce Tribe.

Mauney, James L. and Wendall Antell. 1993. A survey of Nez Perce subsistence fishery for steelhead trout (Oncorhynchus mykiss) along the North Fork, Clearwater River, Idaho, 1992-93. Nez Perce Tribe.

Mauney, James L. and Wendall Antell. 1997. A survey of the Nez Perce subsistence fishery for steelhead trout (Oncorhynchus mykiss) along the north fork Clearwater River, Idaho, 1995-96: Nez Perce subsistence fishery. Dept of Fisheries Management, Nez Perce Tribe.

Mauney, James L. and Justin Gould. 1989. A survey of the Nez Perce ceremonial and subsistence fishery for spring chinook salmon in zone 6 of the Columbia River. Nez Perce Tribe.

Mauney, James L. and Manuel Villalobos. 1990. A survey of the Nez Perce ceremonial and subsistence fishery for spring chinook salmon in zone 6 of the Columbia River, 1989. Nez Perce Tribe.

Mauney, James L. and Manuel Villalobos. 1992. A survey of the Nez Perce ceremonial and subsistence fishery for spring chinook salmon in zone 6 of the Columbia River, 1991: Nez Perce ceremonial and subsistence fishery. Fisheries Management, Nez Perce Tribe

Mauney, James L., Cowley, Paul K., and Manuel P. Villalobos. 1990. A survey of Nez Perce subsistence fishery for steelhead trout (Oncorhynchus mykiss) North Fork of the Clearwater River, Idaho, 1987-88. Nez Perce Tribe.

Mauney, James L., Gould, Justin and Wendall Antell. 1989. A survey of the Nez Perce subsistence fishery for spring chinook salmon at Rapid River, Idaho, 1988 : Nez Perce subsistence fishery for spring chinook salmon. Nez Perce Tribe.

Mauney, James L., Villalobos, Manuel P., and Tony Williams. 1991. A survey of Nez Perce subsistence fishery for spring chinook salmon at Rapid River, Idaho, 1990. Nez Perce Tribe.

Mauney, James L., Skahan, April, and Wendall Antell. 1996. A survey of the Nez Perce subsistence fishery for steelhead trout (Oncorhynchus mykiss) along the north fork Clearwater River, Idaho, 1994-95. Nez Perce Tribe.

Mauney, James L., Antell, Wendall and April Skahan. 1995. A survey of the Nez Perce subsistence fishery for steelhead trout (Oncorhynchus mykiss) along the north fork Clearwater River, Idaho, 1993-94: Nez Perce subsistence fishery. Dept of Fisheries Management, Nez Perce Tribe.

Mauney, James L., Watters, April, and Wendall Antell. 1992. A survey of the Nez Perce subsistence fishery for spring chinook salmon, Rapid River, Idaho, 1992 . Nez Perce Tribe.

Mauney, James L., Watters, April, and Wendall Antell. 1993. A survey of the Nez Perce ceremonial and subsistence fishery for spring chinook salmon in zone 6 of the Columbia River, 1993 : Nez Perce ceremonial and subsistence fishery. Dept of Fisheries Management, Nez Perce Tribe.

Mauney, James L., Antell, Wendall and April Williams. 1993. Nez Perce ceremonial and subsistence fisheries for chinook salmon(Oncorhynchus tshawytscha) in the upper Snake River system tributaries, 1993 : Nez Perce subsistence fishery. Dept of Fisheries Management, Nez Perce Tribe.

Miller, Marc. 1993. Genetic stock identification analysis and associated biological data of the 1993 Columbia River spring chinook ceremonial and subsistence fishery. Washington Dept. of Fisheries.

Myers, J., R.G. Kope, G.J. Bryant, D. Teel, L.J. Lierheimer, T.C. Wainwright, W.S. Grant, F.W. Waknitz, K. Neely, S.T. Lindley, and R.S. Waples. 1998. Status review of chinook salmon from Washington, Idaho, Oregon, and California. US Dept. Commer. NOAA Tech. Memo. NMFS-NWFSC 35, 443 p.

National Environmental Justice Advisory Council. 2002. Fish Consumption and Environmental Justice: A report developed from the National Environmental Justice Advisory Council Meeting of December 3-6, 2001.

National Marine Fisheries Service. 2004. Puget Sound Chinook Harvest Resource Management Plan: Final Environmental Impact Statement. NOAA. Available online at: www.nwr.noaa.gov/1sustfsh/salmon/PSSalEIS/FEIS .

Norgaard, Kari, M. 2004. The Effects of Altered Diet on the Health of the Karuk People: A Preliminary Report. The Karuk Tribe of California: Department of Natural Resources Water Quality Program.

Northwest Power and Conservation Council. 1994. Columbia River Basin Fish and Wildlife Program: Council Document 94-95; Section 8.2, E-1. Available online at: http://www.nwppc.org/library/1994/8_2.htm.

Northwest Power Planning Council. 2002. Tribal Briefing Book: U.S. Tribes and Tribal Organizations. Council Document 2002-4.

Pacific Fishery Management Council. 2004. Review of 2003 Ocean Salmon Fisheries. (Document prepared for the Council and its advisory entities.) Pacific Fishery Management Council, 7700 NE Ambassador Place, Suite 200, Portland, Oregon 97220-1384. Available online at: www.pcouncil.org/salmon/salsafe03/salsafe03.html.

Salter, John. 2003. White Paper on Behalf of the Karuk Tribe of California: A context statement concerning the effect of Iron Gate Dam on Traditional Resource Uses and Cultural Patterns of the Karuk People within the Klamath River Corridor. Written under contract with PacifiCorp in Connection with the Federal Energy Relicensing Commission Proceedings concerning the relicensing of Iron Gate Dam. Contract No. 3000020357.

Sepez-Aradanas J. 2002. Treaty Rights and the Right to Culture: Native American Subsistence Issues in US Law. Cultural Dynamics, July 2002, vol. 14, no. 2, pp. 143-159: (17).

Schaller, Howard A. 1986. Columbia River spring dip-net tribal subsistence fishery. Columbia River Inter-Tribal Fish Commission.

Smith, Courtland. 1979. Salmon Fishers of the Columbia. Corvalis: Oregon State University Press.

Statler, David P ; Marek, Joanna F. 1986. Survey of Nez Perce subsistence fishery for steelhead trout (salmo gairdneri) near the Dworshak National Fish Hatchery fish ladder, North Fork, Clearwater River, Idaho. Nez Perce Tribe.

Statler, David P., Villalobos, Manuel P. Jr., Marek, Joanna F. 1986. Survey of Nez Perce subsistence fishery for spring chinook salmon at Rapid River, Idaho. Nez Perce Tribe.

Statler, David P., Villalobos, Manuel P. Jr., Marek, Joanna F. 1987. Survey of Nez Perce subsistence fishery for spring chinook salmon at Rapid River, Idaho. Nez Perce Tribe.

Stern, Theodore. 1966. The Klamath Tribe: A People and their Reservation. American Ethnological Society, Monograph 41. University of Washington Press, Seattle.

Suquamish Tribe. 2003. A Fish Consumption Survey of the Suquamish Indian Tribe of the Port Madison Indian Reservation, Puget Sound Region. F. Department. Suquamish, WA, Suquamish Tribe. P.O. Box 498 Suquamish, WA 98392.

Suttles, Wayne Prescott. 1987. Coping with abundance: subsistence on the Northwest Coast. Coast Salish Essays.Vancouver, BC; Seattle, WA; and London: Talonbooks and University of Washington Press; 1987. p. 45-63.

Swidell, Edward G. 1942. Report on Source, Nature, and Extent of the Fishing, Hunting, and Misc. Related Rights of Certain Indian Tribes. Office of Indian Affairs, U.S. Dept. of the Interior, Los Angeles, 1942.

Toy, K. A., N. L. Polissar, et al., 1996. "A Fish Consumption Survey of the Tulalip and Squaxin Island Tribes of the Puget Sound Region." Department of the Environment. Marysville, WA, Tulalip Tribe.

Turnquist, Kristi. 2001. Tribes Gather for Salmon Celebration. The Oregonian, April 16, 2001. Available online at: www.bluefish.org/celebrat.htm.

Toy, K. A., N. L. Polissar, et al., 1996. "A Fish Consumption Survey of the Tulalip and Squaxin Island Tribes of the Puget Sound Region." Department of the Environment. Marysville, WA, Tulalip Tribe.

U.S. Environmental Protection Agency (EPA). 2002. Child-specific exposure factors handbook. National Center for Environmental Assessment, Washington, DC; EPA/600/P-00/002B. Available from: National Information Service, Springfield, VA; PB2003-101678 and http://www.epa.gov/ncea.

Washington Department of Fish and Wildlife and Oregon Department of Fish and Wildlife. 2002. Status Report: Columbia River Fish Runs and Fisheries, 1938-2000. Available online at: http://wdfw.wa.gov/fish/columbia/2000_status_report_table.pdf.

Washington State Division of Health (WADOH). 1985. Recreational and Subsistence Catch and Consumption of Seafood from Three Urban Industrial Bays of Puget Sound: Port Gardner, Elliot Bay, and Sinclair Inlet. Olympia, WA January.

Weitkamp, L., T.C. Wainwright, G.J. Bryant, G.B. Milner, D.J. Teel, R.G. Kope, and R.S. Waples. 1995. Status review of coho salmon from Washington, Oregon, and California. NOAA Tech. Memo. NMFS-NWFSC-24, 258 p.

Williams, Ann H., R.M. Lorenzana, L. Kissenger, and P. Mendola. 2004. A Computerized Survey Questionnaire to Assist Tribal Representatives in Gathering Data on Tribal Fish Consumption for Risk Assessment. Presented at 19th Annual EPA Regional Risk Assessors Meeting, Bostoin, MA, May 3-7, 2004. **(**Environmental Information Management System Metadata Report, Entry ID# 82397).

Wolfley, Jeanette. 1998. , "Ecological Risk Assessment: Their Failure to Value Indigenous Traditional Ecological Knowledge and Protect Tribal Homelands. ," *American Indian Culture and Research Journal,* Vol. 22, Issue 2, p. 152-169.

Yurok Tribe. 1993. *Constitution of the Yurok*.October 22, 1993

U.S. District Court for the District of Oregon. 1980. Final Decree and Order. Civil No. 80-433. May 2 1980

Pacific Northwest Bibliography, Data by State, Watershed and Tribe:

Multiple States

Publication: Williams, Ann H., R.M. Lorenzana, L. Kissenger, and P. Mendola**.** 2004. A Computerized Survey Questionnaire to Assist Tribal Representatives in Gathering Data on Tribal Fish Consumption for Risk Assessment. Presented at 19th Annual EPA Regional Risk Assessors Meeting, Boston, MA, May 3-7, 2004. **(**Environmental Information Management System Metadata Report, Entry ID# 82397).
States: AK, WA, ID, and OR (EPA Region 10)
Watershed: N/A
Tribes: N/A
Data Source/Type: Gov Pub.; Poster explaining pilot software for standardizing tribal fish consumption collection methodology.

Publication: Myers, J., R.G. Kope, G.J. Bryant, D. Teel, L.J. Lierheimer, T.C. Wainwright, W.S. Grant, F.W. Waknitz, K. Neely, S.T. Lindley, and R.S. Waples. 1998. Status review of chinook salmon from Washington, Idaho, Oregon, and California. US Dept. Commer. NOAA Tech. Memo. NMFS-NWFSC 35, 443 p.
State(s): WA, ID, OR, and CA
Watershed: CRB, Klamath River Basin
Tribes: N/A
Data Source/Type: Gov. Pub.; Harvest/catch.

Publication: Pacific Fishery Management Council. 2004. Review of 2003 Ocean Salmon Fisheries. (Document prepared for the Council and its advisory entities.) Pacific Fishery Management Council, 7700 NE Ambassador Place, Suite 200, Portland, Oregon 97220-1384. Available online at: www.pcouncil.org/salmon/salsafe03/salsafe03.html.
State(s): WA, OR, and CA
Watershed: Puget Sound, CRB, Klamath River Basin
Tribes: Puget Sound Indian Tribes, CRB Treaty Tribes, Yurok and Hupa.
Data Source/Type: PFMC publications; Harvest/catch.

Publication: California Environmental Protection Agency. 2001. Chemical in Fish: Consumption of Fish and Shellfish in California and the United States. Final Report. Pesticide and Environmental Toxicology Section, Office of Environmental Health Hazard Assessment. Available online at: www.oehha.ca.gov/fish/special_reports/fishy.html.
State(s): WA, OR, CA
Watershed: Puget Sound, CRB, and Clear Lake
Tribes: Tulalip and Squaxin Island Tribes of the Puget Sound region, the Elam Tribe, and the four CRB Treaty Tribes.
Data Source/Type: Gov Pub.; Fish consumption study.

Publication: Johnson, O.W., W.S. Grant, R.G. Kope, K. Neely, F.W. Waknitz, and R.S. Waples. 1997. Status review of chum salmon from Washington, Oregon and California. NOAA Tech. Memo. NMFS NWFSC-32, 280 p.

State(s): WA, OR, CA
Watershed: Puget Sound, CRB, Klamath River Basin
Data Source/Type: Gov Pub.; Technical report.

Publication: Pacific Fishery Management Council. 2004. Review of 2003 Ocean Salmon Fisheries. (Document prepared for the Council and its advisory entities.) Pacific Fishery Management Council, 7700 NE Ambassador Place, Suite 200, Portland, Oregon 97220-1384. Available online at: www.pcouncil.org/salmon/salsafe03/salsafe03.html.
State(s): WA, OR, and CA
Watershed: Puget Sound, CRB, Klamath River Basin
Tribes: Puget Sound Indian Tribes, CRB Treaty Tribes, Yurok and Hupa.
Data Source/Type: PFMC publications; Harvest/catch.

Publication: Bowers, Wayne L. 1981. Columbia River Treaty ceremonial fishing, 1980. Oregon Dept. of Fish and Wildlife, Columbia River Management.
State(s): WA, OR.
Watershed: Columbia River Basin
Tribes: Four CRB Treaty Tribes (Nez Perce, Umatilla, Yakama, and Warm Springs).
Data Source/Type: Gov. Pub.; Harvest/qualitative.

Publication: CRITFC (Columbia River Inter-Tribal Fish Commission). 1994. A fish consumption survey of the Umatilla, Nez Perce, Yakama and Warm Springs Tribes of the Columbia River Basin. CRITFC Technical Report No. 94-3. Portland, Oregon. Available online at: http://www.critfc.org/tech/94-3report.pdf.
State(s): WA, OR.
Watershed: Columbia River Basin: Clearwater, Deschutes, Columbia, Sandy River, Klickitat and Yakima Rivers.
Tribes: Four CRB Treaty Tribes (Nez Perce, Umatilla, Yakama, and Warm Springs).
Data Source/Type: CRITFC publications; Fish consumption study.

Publication: CRITFC (Columbia River Inter-Tribal Fish Commission). 1995. Wy-Kan-Ush-Mi Wa-Kish-Wit: Spirit of the Salmon: Cultural Context. The Columbia River Anadromous Fish Plan of the Nez Perce, Umatilla, Warm Springs, and Yakama Tribes. Vol. I. Available online at: http://www.critfc.org/oldsite/text/TRP_text.htm.
State(s): WA, OR.
Watershed: Columbia River Basin: Clearwater, Deschutes, Columbia, Sandy River, Klickitat and Yakima Rivers.
Tribes: Four CRB Treaty Tribes (Nez Perce, Umatilla, Yakama, and Warm Springs).
Data Source/Type: CRITFC publications; Descriptive/qualitative.

Publication: Bowers, Wayne L. 1981. Columbia River Treaty ceremonial fishing, 1980. Oregon Dept. of Fish and Wildlife, Columbia River Management.
State(s): WA, OR.
Watershed: Columbia River Basin
Tribes: Four CRB Treaty Tribes (Nez Perce, Umatilla, Yakama, and Warm Springs).
Data Source/Type: Gov. Pub.; Harvest/qualitative

Publication: CRITFC. No Date. First Salmon Feast. Available online at: www.critfc.org/text/ceremony.html.
State(s): WA, OR.
Watershed: Columbia River Basin
Tribes: Four CRB Treaty Tribes (Nez Perce, Umatilla, Yakama, and Warm Springs).
Data Source/Type: CRITFC website; Descriptive/qualitative.

Publication: Federal Caucas. 1999. Conservation of Columbia Basin Fish: Harvest Appendix (Draft). Prepared by the Federal Caucas.
State(s): WA, OR
Watershed: CRB, Puget Sound,
Tribes: CRB Tribes.
Data Source/Type: Gov. Pub.; Harvest/catch.

Publication: Keill, Leslie and Lon Kissenger. 1999. DRAFT: Analysis and Selection of Fish Consumption Rates for Washington State Risk Assessments and Risk-Based Standards. Department of Ecology in conjunction with the Risk Assessment Forum. March 1999. #99-200. Available online at: http://www.ecy.wa.gov/pubs/99200.pdf.
State(s): WA, OR
Watershed: Puget Sound and the CRB
Tribes: Tulalip and Squaxin Island Tribes, plus the four CRB Treaty Tribes.
Data Source/Type: Gov. Pub.; Fish consumption study.

Publication: National Environmental Justice Advisory Council. 2002. Fish Consumption and Environmental Justice: A report developed from the National Environmental Justice Advisory Council Meeting of December 3-6, 2001.
State(s): WA, OR
Watershed: CRB, Puget Sound,
Tribes: Warm Springs, Nez Perce, Umatilla, Yakama, Nisqually, Suquamish, Duwamish, Squaxin, and Tulalip.
Data Source/Type: Gov. Pub.; Fish consumption impact study.

Publication: Schaller, Howard A. 1986. Columbia River spring dip-net tribal subsistence fishery. Columbia River Inter-Tribal Fish Commission.
State(s): WA, OR.
Watershed: Columbia River Basin
Tribes: Four CRB Treaty Tribes (Nez Perce, Umatilla, Yakama, and Warm Springs).
Data Source/Type: CRITFC website; Harvest/descriptive.

Publication: Turnquist, Kristi. 2001. Tribes Gather for Salmon Celebration. The Oregonian, April 16, 2001. Available online at: www.bluefish.org/celebrat.htm.
State(s): WA, OR.
Watershed: Columbia River Basin
Tribes: Four CRB Treaty Tribes (Nez Perce, Umatilla, Yakama, and Warm Springs).
Data Source/Type: Newspaper article; descriptive.

Publication: Keill, Leslie and Lon Kissenger. 1999. DRAFT: Analysis and Selection of Fish Consumption Rates for Washington State Risk Assessments and Risk-Based Standards. Department of Ecology in conjunction with the Risk Assessment Forum. March 1999. #99-200. Available online at: http://www.ecy.wa.gov/pubs/99200.pdf.
State(s): WA, OR
Watershed: Puget Sound and the CRB
Tribes: Tulalip and Squaxin Island Tribes, plus the four CRB Treaty Tribes.
Data Source/Type: Gov. Pub.; Fish consumption study

Publication: U.S. Environmental Protection Agency (EPA). 2002. Child-specific exposure factors handbook. National Center for Environmental Assessment, Washington, DC;EPA/600/P-00/002B. Available from: National Information Service, Springfield, VA; PB2003-101678 and http://www.epa.gov/ncea.
State(s): WA, OR
Watershed: Puget Sound and the CRB
Tribes: Tulalip, Squaxin Island, and Suquamish Tribes, plus four CRB Treaty Tribes.
Data Source/Type: Gov. Pub.; Fish consumption study.

Publication: Washington Department of Fish and Wildlife and Oregon Department of Fish and Wildlife. 2002. Status Report: Columbia River Fish Runs and Fisheries, 1938-2002.
2000 Report available online at: http://wdfw.wa.gov/fish/columbia/2000_status_report_table.pdf.
State(s): WA, OR
Watershed: CRB (Zone 6 for Treaty Tribe fisheries)
Tribes: CRB Treaty Tribes
Data Source/Type: Gov. Pub.; Harvest/catch.

Publication: National Environmental Justice Advisory Council. 2002. Fish Consumption and Environmental Justice: A report developed from the National Environmental Justice Advisory Council Meeting of December 3-6, 2001.
States: WA, OR
Watershed: CRB, Puget Sound,
Tribes: Warm Springs, Nez Perce, Umatilla, Yakama, Nisqually, Suquamish, Duwamish, Squaxin, and Tulalip.
Data Source/Type: Gov. Pub.; Fish consumption impact study.

Publication: Federal Caucas. 1999. Conservation of Columbia Basin Fish: Harvest Appendix (Draft). Prepared by the Federal Caucas.
States: WA, OR
Watershed: CRB, Puget Sound,
Tribes: CRB Tribes.
Data Source/Type: Gov. Pub.; Harvest/catch.

Washington

Publication: Boxberger, Daniel L. 1986. Resource Allocation and Control on the Lummi Indian Reservation: A Century of Conflict and Change in the Salmon Fishery. University of British Columbia, September.
State: WA
Watershed: Puget Sound
Tribe: Lummi
Data Source/Type: Academic Journal; Historical.

Publication: Boxberger, Daniel L. 1988. In and Out of the Labor Force: The Lummi Indians and the Development of the Commercial Salmon Fishery of North Puget Sound, 1880-1900. Ethnohistory 35:2 (Spring 1988): 161-190.
State: WA
Watershed: Puget Sound
Tribe: Lummi
Data Source/Type: Academic Journal; Historical.

Publication: Collins, Cary C. 1996. Subsistence and Survival: The Makah Indian Reservation, 1855-1933. Pacific Northwest Quarterly. Fall 1996: 180-193.
State: WA
Watershed: Puget Sound
Tribe: Makah
Data Source/Type: Academic Journal; Historical.

Publication: Confederated Tribes of the Umatilla Indian Reservation. Our Culture and History. Available online at: http://www.umatilla.nsn.us/hist1.html.
State: WA
Tribe: Umatilla
Data Source/Type: Tribal website; Descriptive.

Publication: Hanes, Richard C. (Bureau of Land Management) and Richard Hansis (Washington State University). June 1995. Interactions of American Indians and Ethnic groups with the natural environment. Interior Columbia Basin. Available online at: www.icbemp.gov/science/hanesrichard_95.pdf.
State: WA
Watershed: Interior CRB
Tribe: Klamath, Kootenai, Coeur d'Alene, Nez Perce
Data Source/Type: Gov Pub; Academic/descriptive.

Publication: Hollowed, J.J. 1983. Klickitat River Subsistence Fishery. Yakama Indian Nation.
State: WA
Watershed: Klickitat River
Tribe: Yakama
Data Source/Type: Tribal Pub.; Harvest/catch.

Publication: Kew, J.E. Michael. 1990. Central and Southern Coast Salish ceremonies since 1900. Handbook of North American Indians. Vol. 7. Northwest Coast, Wayne Suttles, volume editor. Washington, D.C.: Smithsonian Institution; 1990. p. 476-480.
State: WA
Watershed: Puget Sound
Tribe: Salish
Data Source/Type: Gov. Pub.; Descriptive.

Publication: Miller, Marc. 1993. Genetic stock identification analysis and associated biological data of the 1993 Columbia River spring chinook ceremonial and subsistence fishery. Washington Dept. of Fisheries.
State: WA
Watershed: Columbia River
Tribe: N/A
Data Source/Type: Gov. Pub.; Harvest/catch.

Publication: Toy, K. A., N. L. Polissar, et al**.** 1996. "A Fish Consumption Survey of the Tulalip and Squaxin Island Tribes of the Puget Sound Region." Department of the Environment. Marysville, WA, Tulalip Tribe.
State: WA
Watershed: Puget Sound
Tribe: Tulalip and Squaxin
Data Source/Type: Tribal Pub.; Fish consumption study.

Publication: Washington Department of Fish and Wildlife and Puget Sound Indian Tribes. 2004. Comprehensive Management Plan for Puget Sound Chinook. Harvest Management Component: Annual Postseason Report 2003-04 Fishing Season.
State: WA
Watershed: Puget Sound
Tribe: Puget Sound Indian Tribes
Data Source/Type: Gov. Pub.; Harvest/catch.

Publication: NOAA. 2004. Puget Sound Chinook Harvest Resource Management Plan NEPA, Final EIS: Treaty Indian Ceremonial and Subsistence Salmon Uses-Section Three. April 2004. 3-109-124.
State: WA
Watershed: Puget Sound
Tribe: Puget Sound Island Tribes (Northwest Indian Fisheries Commission Tribes); Samish and Snoqualmie
Data Source/Type: Gov. Pub.; EIS – Affected environment report.

Publication: NOAA. 2004. Puget Sound Chinook Harvest Resource Management Plan NEPA, Final EIS: Treaty Indian Ceremonial and Subsistence Salmon Uses-Section Four. December 2004. 4-125-134.
State: WA
Watershed: Puget Sound

Tribes: Snoqualmie and Samish
Data Source/Type: Gov. Pub.; EIS - Environmental consequences report.

Publication: Boxberger, Daniel L. 1986. Resource Allocation and Control on the Lummi Indian Reservation: A Century of Conflict and Change in the Salmon Fishery. University of British Columbia, September.
State: WA
Watershed: Puget Sound
Tribe: Lummi
Data Source/Type: Academic; historical

Publication: Boxberger, Daniel L. 1988. In and Out of the Labor Force: The Lummi Indians and the Development of the Commercial Salmon Fishery of North Puget Sound, 1880-1900. Ethnohistory 35:2 (Spring 1988): 161-190.
State: WA
Watershed: Puget Sound
Tribe: Lummi
Data Source/Type: Academic; historical

Publication: Collins, Cary C. 1996. Subsistence and Survival: The Makah Indian Reservation, 1855-1933. Pacific Northwest Quarterly. Fall 1996: 180-193.
State: WA
Watershed: Puget Sound
Tribe: Makah
Data Source/Type: Academic; historical

Publication: Harris, Suquamish, Tribe. 2003. "A Fish Consumption Survey of the Suquamish Indian Tribe of the Port Madison Indian Reservation, Puget Sound Region." F. Department. Suquamish, WA, Suquamish Tribe. P.O. Box 498 Suquamish, WA 98392.
State: WA
Watershed: Puget Sound
Tribe: Suquamish
Data Source/Type: Tribal Pub.; Fish Consumption.

Publication: Hollowed, J.J. 1983. Klickitat River Subsistence Fishery. Yakama Indian Nation.
State: WA
Watershed: Klickitat River
Tribe: Yakama
Data Source/Type: Tribal Pub.; Harvest/catch

Publication: Toy, K. A., N. L. Polissar, et al**.** 1996. "A Fish Consumption Survey of the Tulalip and Squaxin Island Tribes of the Puget Sound Region." Department of the Environment. Marysville, WA, Tulalip Tribe.
State: WA
Watershed: Puget Sound
Tribe: Tulalip and Squaxin

Data Source/Type: Tribal Pub.; Fish consumption study.
Publication: Confederated Tribes of the Umatilla Indian Reservation. Our Culture and History. Available online at: http://www.umatilla.nsn.us/hist1.html.
State: WA
Tribe: Umatilla
Data Source/Type: Tribal website; descriptive

Publication: Hanes, Richard C. (Bureau of Land Management) and Richard Hansis (Washington State University). June 1995. Interactions of American Indians and Ethnic groups with the natural environment. Interior Columbia Basin. Available online at: www.icbemp.gov/science/hanesrichard_95.pdf.
State: WA
Watershed: Interior CRB
Tribe: Klamath, Kootenai, Coeur d'Alene, Nez Perce
Data Source/Type: Gov Pub/Academic; descriptive

Publication: Kew, J.E. Michael. 1990. Central and Southern Coast Salish ceremonies since 1900. Handbook of North American Indians. Vol. 7. Northwest Coast, Wayne Suttles, volume editor. Washington, D.C.: Smithsonian Institution; 1990. p. 476-480.
State: WA
Watershed: Puget Sound
Tribe: Salish
Data Source/Type: Gov. Pub.; Descriptive

Publication: Miller, Marc. 1993. Genetic stock identification analysis and associated biological data of the 1993 Columbia River spring chinook ceremonial and subsistence fishery. Washington Dept. of Fisheries.
State: WA
Watershed: Columbia River
Tribe: N/A
Data Source/Type: Gov. Pub.; Harvest/catch
Publication: Washington Department of Fish and Wildlife and Puget Sound Indian Tribes. 2004. Comprehensive Management Plan for Puget Sound Chinook. Harvest Management Component: Annual Postseason Report 2003-04 Fishing Season.
State: WA
Watershed: Puget Sound
Tribe: Puget Sound Indian Tribes
Data Source/Type: Gov. Pub.; Harvest/catch.

Oregon

Publication: Confederated Tribes of the Colville Reservation. 2004. Chief Joseph Dam Hatchery Program Master Plan, Executive Summary. Bonneville Power Administration and the Northwest Power and Conservation Council. Portland, Oregon.
State: OR
Watershed: Columbia River below Chief Joseph Dam and the Okanogan Subbasin

Tribe: Colville
Data Source/Type: Tribal website; Impact report

California

Publication: Bernard Jeff. 2005. Indians say dams cost them fish, good health. San Diego Union Tribune. March 6, 2005; A: 5-6.
State: CA
Watershed: Ishi Pishi Falls
Tribes: Karuk
Data Source/Type: Newspaper article; Descriptive
Publication: Confederated Tribes of the Colville Reservation. 2004. Chief Joseph Dam Hatchery Program Master Plan, Executive Summary. Bonneville Power Administration and the Northwest Power and Conservation Council. Portland, Oregon.
State: OR
Watershed: Columbia River below Chief Joseph Dam and the Okanogan Subbasin
Tribe: Colville
Data Source/Type: Tribal website; Impact report
Publication: Harden, Blaine. 2005. Tribe Fights Dams to get Diet Back: Karuks trying to regain salmon fisheries and their health. Washington Post. January 30, 2005; A-03.
State: CA
Watershed: Ishi Pishi Falls
Tribes: Karuk
Data Source/Type: Newspaper article; Descriptive.

Publication: King, Thomas. 2004. First Salmon: The Klamath Cultural Riverscape and the Klamath River Hydroelectric Project. Klamath River Intertribal Fish and Water Commission. Available online at: http://elibrary.ferc.gov/idmws/File_listasp?document_id=4205564.
State: CA
Watershed: Klamath River Basin
Tribes: Yurok, Karuk, Shasta and Hupa Tribes
Data Source/Type: Gov. Pub.; Impact report/recommendation.

Publication: Norgaard, Kari, M. 2004. The Effects of Altered Diet on the Health of the Karuk People: A Preliminary Report. The Karuk Tribe of California: Department of Natural Resources Water Quality Program.
State: CA
Watershed: Ishi Pishi Falls
Tribes: Karuk
Data Source/Type: Tribal; /Academic; Fish consumption/health.

Publication: Harden, Blaine. 2005. Tribe Fights Dams to get Diet Back: Karuks trying to regain salmon fisheries and their health. Washington Post. January 30, 2005; A-03.
State: CA
Watershed: Ishi Pishi Falls
Tribes: Karuk

Data Source/Type: Newspaper article; Descriptive

Publication: Bernard Jeff. 2005. Indians say dams cost them fish, good health. San Diego Union Tribune. March 6, 2005; A: 5-6.
State: CA
Watershed: Ishi Pishi Falls
Tribes: Karuk
Data Source/Type: Newspaper article; Descriptive

Publication: Salter, John. 2003. White Paper on Behalf of the Karuk Tribe of California: A context statement concerning the effect of Iron Gate Dam on Traditional Resource Uses and Cultural Patterns of the Karuk People within the Klamath River Corridor. Written under contract with PacifiCorp in Connection with the Federal Energy Relicensing Commission Proceedings concerning the relicensing of Iron Gate Dam. Contract No. 3000020357.
State: CA
Watershed: Klamath River Basin; Ishi Pishi Falls
Tribes: Karuk
Data Source/Type: Gov. Pub.; /Academic; socio-cultural impact

Idaho

Publication: Kawamura, Hiroaki. 2004. Symbolic and Political Ecology among Contemporary Nez Perce Indians in Idaho, USA: functions and meanings of hunting, fishing, and gathering practices. Agriculture and Human Values 21:157-169.
State: ID
Watershed: Snake River
Tribe: Nez Perce
Data Source/Type: Academic; Theory and description.

Publication: Banach, Michael J., Mauney, James L., and Paul K. Cowley. 1991. Surveys of the Nez Perce subsistence fisheries for chinook salmon on the North Fork Clearwater River and Clear Creek, Idaho in 1990: Nez Perce subsistence fishery for steelhead trout. Dept of Fisheries Management, Nez Perce Tribe.
State: ID
Watershed: North Fork Clearwater River and Clear Creek
Tribe: Nez Perce
Data Source/Type: Tribal Pub.; Harvest/catch.

Publication: Cowley, Paul K. and James L. Mauney. 1989. A survey of Nez Perce subsistence fishery for the chinook salmon of the North Fork Clearwater River, Idaho, 1989. Nez Perce Tribe.
State: ID
Watershed: North Fork Clearwater River
Tribe: Nez Perce
Data Source/Type: Tribal Pub.; Harvest/catch.

Publication: Harris SG and BL Harper. 1997. A Native American exposure scenario. Risk Anal. 1997, Dec.17 (6):789-95.
States: PNW
Watershed: N/A
Tribe: N/A
Data Source/Type: Academic/technical/Fish consumption/health

Publication: Harris, Stuart. 2001. "Impacts of Fish Contamination on Native American Culture." Annual Forum on Contaminants in Fish, Chicago, IL, US EPA; MN Dept of Health.
States: PNW
Watershed: N/A
Tribe: N/A
Data Source/Type: Academic/technical/Fish consumption/health**Publication:** Kawamura, Hiroaki. 2004. Symbolic and Political Ecology among Contemporary Nez Perce Indians in Idaho, USA: functions and meanings of hunting, fishing, and gathering practices. Agriculture and Human Values 21:157-169.
State: ID
Watershed: Snake River
Tribe: Nez Perce
Data Source/Type: Academic Journal ; Theory and description.

Publication: Mauney, James L. 1992. A survey of the Nez Perce subsistence fishery for spring chinook salmon, North Fork Clearwater River, Idaho, 1992. Nez Perce Tribe.
States: ID
Watershed: Clearwater River
Tribe: Nez Perce
Data Source/Type: Tribal Pub.; Harvest/catch**.**

Publication: Mauney, James L. 1998. Nez Perce ceremonial and subsistence fisheries for chinook salmon(Oncorhynchus tshawytscha) in upper Snake River system tributaries, 1997: Nez Perce subsistence fishery. Dept of Fisheries Management, Nez Perce Tribe.
States: ID
Watershed: Snake River
Tribe: Nez Perce
Data Source/Type: Tribal Pub.; Harvest/catch.

Publication: Mauney, James L. and Wendall Antell. 1991. A survey of Nez Perce subsistence fishery for steelhead trout (Oncorhynchus mykiss) along the North Fork, Clearwater River, Idaho, 1988-89. Nez Perce Tribe.
States: ID
Watershed: Clearwater River
Tribe: Nez Perce
Data Source/Type: Tribal Pub.; Harvest/catch.

Publication: Mauney, James L. and Wendall Antell. 1991. A survey of Nez Perce subsistence fishery for steelhead trout (Oncorhynchus mykiss) along the North Fork, Clearwater River, Idaho, 1989-90. Nez Perce Tribe.
States: ID
Watershed: Clearwater River
Tribe: Nez Perce
Data Source/Type: Tribal Pub.; Harvest/catch.

Publication: Mauney, James L. and Wendall Antell. 1992. A survey of the Nez Perce subsistence fishery for steelhead trout (Oncorhynchus mykiss) along the North Fork Clearwater River, Idaho, 1990-91: Nez Perce subsistence fishery. Dept of Fisheries Management, Nez Perce Tribe.
States: ID
Watershed: Clearwater River
Tribe: Nez Perce
Data Source/Type: Tribal Pub.; Harvest/catch.

Publication: Mauney, James L. and Wendall Antell. 1992. A survey of the Nez Perce subsistence fishery for steelhead trout (Oncorhynchus mykiss) along the North Fork Clearwater River, Idaho, 1991-92: Nez Perce subsistence fishery. Dept of Fisheries Management, Nez Perce Tribe.
States: ID
Watershed: Clearwater River
Tribe: Nez Perce
Data Source/Type: Tribal Pub.; Harvest/catch.

Publication: Mauney, James L. and Wendall Antell. 1993. A survey of Nez Perce subsistence fishery for steelhead trout (Oncorhynchus mykiss) along the North Fork, Clearwater River, Idaho, 1992-93. Nez Perce Tribe.
States: ID
Watershed: Clearwater River
Tribe: Nez Perce
Data Source/Type: Tribal Pub.; Harvest/catch.

Publication: Mauney, James L. and Wendall Antell. 1997. A survey of the Nez Perce subsistence fishery for steelhead trout (Oncorhynchus mykiss) along the North Fork Clearwater River, Idaho, 1995-96: Nez Perce subsistence fishery. Dept of Fisheries Management, Nez Perce Tribe.
States: ID
Watershed: Clearwater River
Tribe: Nez Perce
Data Source/Type: Tribal Pub.; Harvest/catch.

Publication: Mauney, James L. and Justin Gould. 1989. A survey of the Nez Perce ceremonial and subsistence fishery for spring chinook salmon in Zone 6 of the Columbia River. Nez Perce Tribe.

States: ID
Watershed: Columbia River
Tribe: Nez Perce
Data Source/Type: Tribal Pub.; Harvest/catch.

Publication: Mauney, James L. and Manuel Villalobos. 1990. A survey of the Nez Perce ceremonial and subsistence fishery for spring chinook salmon in Zone 6 of the Columbia River, 1989. Nez Perce Tribe.
States: ID
Watershed: Columbia River
Tribe: Nez Perce
Data Source/Type: Tribal Pub.; Harvest/catch.

Publication: Mauney, James L. and Manuel Villalobos. 1992. A survey of the Nez Perce ceremonial and subsistence fishery for spring chinook salmon in Zone 6 of the Columbia River, 1991: Nez Perce ceremonial and subsistence fishery. Dept of Fisheries Management, Nez Perce Tribe.
States: ID
Watershed: Columbia River
Tribe: Nez Perce
Data Source/Type: Tribal Pub.; Harvest/catch.

Publication: Mauney, James L., Cowley, Paul K., and Manuel P. Villalobos. 1990. A survey of Nez Perce subsistence fishery for steelhead trout (Oncorhynchus mykiss) North Fork of the Clearwater River, Idaho, 1987-88. Nez Perce Tribe.
States: ID
Watershed: Clearwater River
Tribe: Nez Perce
Data Source/Type: Tribal Pub.; Harvest/catch.

Publication: Mauney, James L., Gould, Justin and Wendall Antell. 1989. A survey of the Nez Perce subsistence fishery for spring chinook salmon at Rapid River, Idaho, 1988 : Nez Perce subsistence fishery for spring chinook salmon. Nez Perce Tribe.
States: ID
Watershed: Rapid River
Tribe: Nez Perce
Data Source/Type: Tribal Pub.; Harvest/catch.

Publication: Mauney, James L., Villalobos, Manuel P., and Tony Williams. 1991. A survey of Nez Perce subsistence fishery for spring chinook salmon at Rapid River, Idaho, 1990. Nez Perce Tribe.
States: ID
Watershed: Rapid River
Tribe: Nez Perce
Data Source/Type: Tribal Pub.; Harvest/catch.

Publication: Mauney, James L., Skahan, April, and Wendall Antell. 1996. A survey of the Nez Perce subsistence fishery for steelhead trout (Oncorhynchus mykiss) along the North Fork Clearwater River, Idaho, 1994-95. Nez Perce Tribe.
States: ID
Watershed: Clearwater River
Tribe: Nez Perce
Data Source/Type: Tribal Pub.; Harvest/catch.

Publication: Mauney, James L., Antell, Wendall and April Skahan. 1995. A survey of the Nez Perce subsistence fishery for steelhead trout (Oncorhynchus mykiss) along the north fork Clearwater River, Idaho, 1993-94: Nez Perce subsistence fishery. Dept of Fisheries Management, Nez Perce Tribe.
States: ID
Watershed: Clearwater River
Tribe: Nez Perce
Data Source/Type: Tribal Pub.; Harvest/catch.

Publication: Mauney, James L., Watters, April, and Wendall Antell. 1992. A survey of the Nez Perce subsistence fishery for spring chinook salmon, Rapid River, Idaho, 1992 . Nez Perce Tribe.
States: ID
Watershed: Rapid River
Tribe: Nez Perce
Data Source/Type: Tribal Pub.; Harvest/catch.

Publication: Mauney, James L., Watters, April, and Wendall Antell. 1993. A survey of the Nez Perce ceremonial and subsistence fishery for spring chinook salmon in Zone 6 of the Columbia River, 1993 : Nez Perce ceremonial and subsistence fishery. Dept of Fisheries Management, Nez Perce Tribe.
States: ID
Watershed: Columbia River
Tribe: Nez Perce
Data Source/Type: Tribal Pub.; Harvest/catch.

Publication: Mauney, James L., Antell, Wendall and April Williams. 1993. Nez Perce ceremonial and subsistence fisheries for chinook salmon(Oncorhynchus tshawytscha) in the upper Snake River system tributaries, 1993 : Nez Perce subsistence fishery. Dept of Fisheries Management, Nez Perce Tribe.
States: ID
Watershed: Snake River
Tribe: Nez Perce
Data Source/Type: Tribal Pub.; Harvest/catch.

Publication: Statler, David P. and Joanna F, ; Marek, Joanna F. 1986. Survey of Nez Perce subsistence fishery for steelhead trout (salmo gairdneri) near the Dworshak National Fish Hatchery fish ladder, North Fork, Clearwater River, Idaho. Nez Perce Tribe.

States: ID
Watershed: Clearwater River
Tribe: Nez Perce
Data Source/Type: Tribal Pub.; Harvest/catch.

Publication: Statler, David P., Villalobos, Manuel P. Jr., and Joanna F, Marek.Marek, Joanna F. 1986. Survey of Nez Perce subsistence fishery for spring chinook salmon at Rapid River, Idaho. Nez Perce Tribe.
States: ID
Watershed: Rapid River
Tribe: Nez Perce
Data Source/Type: Tribal Pub.; Harvest/catch.

Publication: Statler, David P., Villalobos, Manuel P. Jr., and Joanna F, Marek. Marek, Joanna F. 1987. Survey of Nez Perce subsistence fishery for spring chinook salmon at Rapid River, Idaho. Nez Perce Tribe.
States: ID
Watershed: Rapid River
Tribe: Nez Perce
Data Source/Type: Tribal Pub.; Harvest/catch.

Publication: Gunther, Erna. 1926. Analysis of the First Salmon Ceremony. American Anthropologist 28.
State(s): PNW
Watershed: N/A
Tribe: N/A
Data Source/Type: Academic Journal; /Historical; qualitative.

Publication: Harris, Stuart. 2001. Impacts of Fish Contamination on Native American Culture. Annual Forum on Contaminants in Fish, Chicago, IL, US EPA; MN Dept of Health.
State(s): PNW
Watershed: N/A
Tribe: N/A
Data Source/Type: Academic Journal; Technical/fish consumption/health.

Publication: Harris SG and BL Harper. 1997. A Native American exposure scenario. Risk Anal. 1997, Dec.17 (6):789-95.
State(s): PNW
Watershed: N/A
Tribe: N/A
Data Source/Type: Academic Journal; Technical/fish consumption/health.

Annotated Bibliography

CRITFC (Columbia River Inter-Tribal Fish Commission). 1994. A fish consumption survey of the Umatilla, Nez Perce, Yakama and Warm Springs Tribes of the Columbia River Basin. CRITFC Technical Report No. 94-3. Portland, Oregon. Available online at: http://www.critfc.org/tech/94-3report.pdf.
States: WA and OR.
Watershed: Columbia River Basin: Clearwater, Deschutes, Columbia, Sandy River, Klickitat and Yakima Rivers.
Tribes: Four CRB Treaty Tribes
Study Purpose: To determine the level and nature of fish consumption among individual tribal members, and to test the hypothesis that tribal members consume more fish than non-Indians and thus may be more exposed to dioxin and other poor quality water contaminants. Includes fish consumed for dietary and ceremonial purposes.
Methodology: Questionnaire and interview (N=717).
Summary and significant findings and conclusions: Adult tribal members eat 1.71 fish meals per week on average, with 75 percent consuming up to eight ounces of fish per meal (28). Approximately half of all adult tribal members catch fish for personal consumption or tribal use (30). Eighty-seven percent of respondents obtained the fish they and their families consumed from the following sources: self-harvesting, harvesting by family members, friends, ceremonies, and tribal distributions (44), with the majority of fish obtained through self- or family-member harvesting (45). Nearly 88 percent of this fish originated from the CRB (46). Almost 50 percent of respondents harvested fish for personal or tribal consumption (46). Of the 93 percent of respondents who indicated that they attend tribal ceremonies, 73 percent ate fish at nearly every ceremony and 84 percent ate fish at least half of the ceremonies they attended (56). Sixty percent indicated that they consumed one to two six ounce servings at each event (57). This survey concludes that CRB Treaty Tribe members consume nine times more fish than the general U.S. population (59). This consumption rate is driven, in part, by the tribes' ceremonial use of fish (62). Tribal ceremonies at which fish is consumed occur year round with the highest number of events (58 percent) occurring between April and September (63-64).

Seventy percent of individuals over thirty years old believed they and their families now consumed different amounts of fish than they did two decades ago. Of these respondents, some 69 percent believed they ate less fish, 26 percent believed they consumed more fish, and five percent saw no change (38). Respondents attribute consumption decreases to a diminished availability of fish in the CRB, less catch, and more fishing restrictions (65). Fish count and harvest data collected for this region support these subjective reports (65). This study concludes that ceremonial and subsistence catches have been sharply curtailed as fish populations dwindle (65). Further, "a significant number of tribal members consume less fish today than they did twenty years ago mainly because fewer fish exist in the river system" (66).

Finally, the CRITFC recommends that federal, state and tribal regulatory agencies incorporate ceremonial and subsistence fish consumption patterns when developing and re-evaluating regulatory and policy decisions relating to risk management, pollution prevention, remediation and environmental justice (15).

CRITFC (Columbia River Inter-Tribal Fish Commission). 1995. Wy-Kan-Ush-Mi Wa-Kish-Wit: Spirit of the Salmon: Cultural Context; Cost Implementation. The Columbia River Anadromous Fish Plan of the Nez Perce, Umatilla, Warm Springs, and Yakama Tribes. Vol. I. Available online at: http://www.critfc.org/oldsite/text/TRP_text.htm.
States: WA and OR.
Watershed: Columbia River Basin: Clearwater, Deschutes, Columbia, Sandy River, Klickitat and Yakima Rivers.
Tribes: Four CRB Treaty Tribes
Brief synopsis: A section of this article describes the spiritual and cultural importance of salmon to the four CRB Treaty Tribes and how this importance informs their approach to anadromous fish restoration. These tribal people fish for ceremonial, subsistence and commercial purposes to the extent the resource permits. Salmon remains the preferred dietary fish and "its role in ceremonial life remains preeminent. Salmon is important for physical health and spiritual well-being" (Cultural Context p.1). Restoration of the salmon and shared spiritual tradition is the cultural glue of these tribes, "Over a dozen longhouses and churches on the reservations and in ceded areas rely on salmon for their religious services" (Cultural Context p. 3). The preeminent salmon celebration is the annual "First Salmon Ceremony" which honors the seasonal return of the salmon. This religious celebration helps transmit cultural values from generation to generation and affirms the tribal peoples' sense of self.

Since the development of hydropower systems, agriculture, grazing, forestry and navigation along the Columbia River, all anadromous fish stocks (chinook, coho, sockeye, steelhead, chum, Pacific lamprey eel, and sturgeon) have precipitously decreased above the Bonneville Dam. "Annual tribal catches of salmon have dwindled from millions to thousands of fish. In 1995, the tribes will take fewer than 600 spring Chinook from the Columbia River needed to support "first salmon" religious ceremonies for thousands of tribal members" (Cost Implementation p.2). In 1988, 6,800 fish were harvested by tribal members for ceremonial purposes; by 1994 this number declined to 1,300.

CRITFC. No Date. First Salmon Feast. Available online at: www.critfc.org/text/ceremony.html.
States: WA and OR.
Watershed: Columbia River Basin: Clearwater, Deschutes, Columbia, Sandy River, Klickitat and Yakima Rivers.
Tribes: Four CRB Treaty Tribes
Summary: An ethnographic description of the First Salmon Feast and its religious/spiritual importance.

California Environmental Protection Agency. 2001. Chemical in Fish: Consumption of Fish and Shellfish in California and the United States. Final Report. Pesticide and Environmental Toxicology Section, Office of Environmental Health Hazard Assessment.
Available online at: www.oehha.ca.gov/fish/special_reports/fishy.html.
States: WA, OR, and CA
Watershed: Puget Sound, CRB, and Clear Lake
Tribes: Tulalip and Squaxin Island Tribes of the Puget Sound region, plus four CRB Treaty Tribes, and Elam Tribe.
Relevant findings: This study reviews three fish and shellfish consumption studies of Native American Fishing populations in the coastal Pacific Northwest: the CRITFC survey (1994), the Toy et al. survey (1996) of the Tulalip and Squaxin Island Tribes of the Puget Sound region, and the Clear Lake, CA (Hanley et al. 1997) freshwater survey. The CRITFC study reports that adult members of the four Columbia River Basin Treaty Tribes consume an average of 63 grams of freshwater fish per day (59 grams per capita). The Clear Lake survey conducted in 1992 surveyed 63 members of the Elam Tribe (sport and commercial fishing; non-reservation). Its authors determined that sport fishermen consumed approximately 60 grams of fish per day on average while commercial fishermen ate an average of 24 grams per day (134). A health advisory recommending limited consumption of Clear Lake fish was in effect at the time of the survey, which may account for lower commercial consumption rates (55).

This study supports previous research suggesting that fish consumption rates vary by demographic characteristics, including race, age, sex, region, cultural preferences, traditions, type of fisher, access to water bodies, and seasonal availability of fish (77). Subsistence fishers-those who fish regularly to provide food for self and family-are considered "high-end consumers" (77). However, this definition does not provide criteria by which to identify subsistence fishers within a population (e.g., income earned from fishing, frequency of fishing, level of consumption proportional to the total diet). Also, subsistence fishers do not always identify themselves as such. Thus, "it may be difficult to define and represent subsistence fishers in a quantifiable way" (78). This report also notes other problems with self-report surveys that attempt to identify subsistence fishers. These authors recommend that "subsistence fishers" be "locally defined, characterized, and targeted," rather than "globally defined" due to the problems in developing a universal criteria for identifying subsistence populations (81).

Keill, Leslie and Lon Kissenger. 1999. DRAFT: Analysis and Selection of Fish Consumption Rates for Washington State Risk Assessments and Risk-Based Standards. Department of Ecology in conjunction with the Risk Assessment Forum. March 1999. #99-200. Available online at: http://www.ecy.wa.gov/pubs/99200.pdf.
State: WA, OR
Watershed: Puget Sound and the CRB
Tribes: Tulalip and Squaxin Island Tribes, plus the four CRB Treaty Tribes,
.**Relevant Findings:** This report draws upon the CRITFC and Toy fish consumption studies to identify regional differences in tribal fish consumption. It also compares and contrasts methods and findings of three other Washington area consumption studies. They find that Native Americans consume greater amounts of salmon and other anadromous species than non-Indian populations, but that species preferences vary between populations. The CRITFC study reports that the four Columbia River Basin Treaty Tribes consume an average of 63 grams of freshwater

fish per day. The Toy et al. survey (Tulalip and Squaxin Island Tribes) finds that tribal members eat an average daily consumption of 61 grams of finfish (42 grams) and shellfish (19 grams), combined (35).

Northwest Power and Conservation Council. 1994. Columbia River Basin Fish and Wildlife Program: Council Document 94-95; Section 8.2,E-1. Available online at: http://www.nwppc.org/library/1994/8_2.htm.
States: WA and OR
Watershed: CRB
Tribes: CRB Treaty Tribes
Relevant Findings: Tribal ceremonial and subsistence and non-treaty incidental catches of summer chinook have been fewer than 1,000 and 100 fish each year, respectively, since the mid-1980s.

U.S. Environmental Protection Agency (EPA). 2002. Child-specific exposure factors handbook. National Center for Environmental Assessment, Washington, DC; EPA/600/P-00/002B. Available from: National Information Service, Springfield, VA; PB2003-101678 and http://www.epa.gov/ncea.
State: WA
Watershed: Puget Sound and the CRB
Tribes: Tulalip, Squaxin Island, and Suquamish Tribes, plus four CRB Treaty Tribes.
Relevant findings: Based on a review of several Native American subsistence studies (CRITFC 1994; Toy et al. 1996; and the Suquamish Tribal Council Study 2000), these authors conclude that fishing families consume more fish than the general population and, therefore, are at greater risk for contaminants – especially children.

Washington Department of Fish and Wildlife and Oregon Department of Fish and Wildlife. 2005. Status Report: Columbia River Fish Runs and Fisheries, 1938-2002. Available online at: http://wdfw.wa.gov/fish/columbia/2000_status_report_table.pdf.
State: WA, OR
Watershed: CRB (Zone 6 for Treaty Tribe fisheries)
Tribes: Nez Perce, Umatilla, Warm Springs, Yakama
Notes: Contains aggregated tribal catch data for the four CRB Treaty Tribes, with separate categories for ceremonial and subsistence (C/S) landings.

Confederated Tribes of the Colville Reservation. 2004. Chief Joseph Dam Hatchery Program Master Plan, Executive Summary. Bonneville Power Administration and the Northwest Power and Conservation Council. Portland, Oregon.
State: OR
Watershed: Columbia River below Chief Joseph Dam and the Okanogan Subbasin
Tribe: Colville
Significant conclusions: Construction of the Grand Coulee Dam extirpated salmon from most of the Colville Reservation. Nine other hydropower projects downstream from the reservation have further incurred tremendous anadromous fish mortalities (iii). Consequently, the Colville Reservation tribal members must rely on fish from the remaining and limited fisheries in the Okanogan subbasin and Columbia River below Chief Joseph Dam. "These fish are not adequate

to meet even the most cursory ceremonial and subsistence need…and the Colville Tribes are no longer able to celebrate the important First Salmon Ceremony welcoming the return of the first spring Chinook of the season" (iv).

King, Thomas. 2004. First Salmon: The Klamath Cultural Riverscape and the Klamath River Hydroelectric Project. Klamath River Intertribal Fish and Water Commission. Available online at: http://elibrary.ferc.gov/idmws/File_listasp?document_id=4205564.
State/Watershed: Klamath River Basin
Tribes: Yurok, Karuk, Shasta and Hupa Tribes
Relevant Summary: Based on primary Hupa documents and studies done by and for the Yurok, Karuk, and Shasta Tribes, this report argues that the cultural significance of the Klamath Riverscape makes it eligible for inclusion in the National Registry of Historic Places. In addition to delineating its cultural resources, King includes ethnographic discussion of the River's cultural and spiritual importance. For instance, the Karuk people "manage their resources by way of ceremonies and traditional rituals. … We believed that if we took care of our fishery we would always have food. If we didn't manage our fishery right something bad would happen. People would die. So we evolved with that concept. Conservation was the goal of the ceremonies, was the goals of the way of life and it continues that way today" (20). The majority of Karuk ceremonies involves fish and are of central importance to traditional tribal cultural life and beliefs along the river. Locally conducted surveys indicate that the quantity of fish has decreased. Respondents attribute this decrease to "[t]he Klamath Hydroelectric Project and other projects in the Klamath Basin [that] have changed the river, and continue to change it, in ways that are deleterious to tribal religious practice….They do this by altering the habits and habitats of fish that play central roles in religious belief" (50).

Norgaard, Kari, M. 2004. The Effects of Altered Diet on the Health of the Karuk People: A Preliminary Report. The Karuk Tribe of California: Department of Natural Resources Water Quality Program.
State: CA
Watershed: Klamath River Basin: Ishi Pishi Falls
Tribes: Karuk
Relevant findings: This report discusses the physical and mental repercussions of the loss of traditional food sources in the historically, fish-based diet of the Karuk Tribe. Norgaard argues that "Karuk people face significant and costly health consequences as a result of denied access to many of their traditional foods. Not only does a traditional diet prevent the onset of conditions such as diabetes, obesity, heart disease, kidney trouble and hypertension, a traditional diet of salmon and other foods is one of the best treatments for such conditions" (13). Further, she notes, consumption of traditional foods contribute to mental health and cultural morale (10).

Further, the tribal cultural biologist asserts that the Karuk's salmon consumption has dropped from over a pound per person per day to an average of less than five pounds per person per year; "even the availability of salmon for ceremonial purposes in severely limited" (10). Pre-contact fish consumption is estimated at 675,000 fish caught for a tribal population of 1,500. In contrast, the estimated present fish consumption from tribal catch in 2003-4 was less than 1,000 fish for a tribal population of 3,300. Fishing sites have dwindled from over one hundred to one fishery. The loss of traditional fishing for food impacts the transmission of skills, and cultural and moral

values from generation to generation, as this activity is the forum where fathers and elders instruct their sons. Fishing is a physical and cultural rite of passage; among the consequences of this loss is the disruption to the social order, and changes in individual and community meaning and identity.

Pacific Fishery Management Council. 2004. Review of 2003 Ocean Salmon Fisheries. (Document prepared for the Council and its advisory entities.) Pacific Fishery Management Council, 7700 NE Ambassador Place, Suite 200, Portland, Oregon 97220- 1384. Available online at: www.pcouncil.org/salmon/salsafe03/salsafe03.html.
States: WA,OR, and CA
Watersheds: CRB, Puget Sound (ocean plus inside fisheries), and Klamath River Basin.
Tribes: Hoh, Quinault, Quileute, Makah, S'Klallam, Hupa, and Yurok.
Brief Description: Presents aggregated catch data by species and watershed for 2003. Includes a breakdown of ceremonial and subsistence catch by watershed

Pacific Fishery Management Council. 1999. Appendix B: Description of the Ocean Salmon Fishery and its Social and Economic Characteristics (Amendment 14 to the Pacific Coast Salmon Plan). Pacific Fishery Management Council. August 1999.
Relevant Summary: Describes the Harvest Managers and Management Forums (CRITFC, NWIFC), their jurisdictions and functions. Also describes some of the cultural importance of salmon to tribes in the Northwest, and some of the ceremonies that center on salmon. It additionally lists some of the fisheries regulations for the Quinault, Quileute, Hoh, Makah, Muckleshoot, Hoopa and Yurok Tribes (B-22, 23).

Williams, Ann H., R.M. Lorenzana, L. Kissenger, and P. Mendola. 2004. A Computerized Survey Questionnaire to Assist Tribal Representatives in Gathering Data on Tribal Fish Consumption for Risk Assessment. Presented at 19th Annual EPA Regional Risk Assessors Meeting, Boston, MA, May 3-7, 2004. **(**Environmental Information Management System Metadata Report, Entry ID# 82397).
Study Area: AK, WA, ID, and OR (EPA Region 10)
Significant Conclusions and findings: Native American tribal members consume more fish than the general, non-Indian population. Thus, Native Americans are at greater risk from exposure to fish and shellfish tissue contaminants than the general population.
Notes: This is a poster explaining pilot software for standardizing tribal fish consumption collection methodology. Survey is currently being piloted with a Peninsular tribe in Olympia, WA. "The primary purpose is to develop and test an easy to use electronic survey instrument and database to facilitate the collection of tribal fish and shellfish consumption information." The software will also help standardize data collection methodology across tribes. This product should be ready for distribution by April 2005.

Confederated Tribes of the Umatilla Indian Reservation. Our Culture and History. Available online at: http://www.umatilla.nsn.us/hist1.html.
Summary: This article describes the historical/cultural importance of fishing to the Umatilla Tribe from the local perspective.

Grader, W.F. and Glen Spain. 2001. Why the Klamath Basin Matters to Fishermen. Fishermen's News, August 2001. Pacific Coast Federation of Fishermen's Associations. Available online: www.pcffa.org/klamath.htm.
Relevant Summary: Discusses the primary issues affecting fish decline in the Klamath Basin, including hydroelectric development, irrigation, mismanagement of water resources, and water pollution. These authors argue that commercial/sport/recreational fishermen and tribal fishermen share a vested interest in forming legal and political alliances to challenge these issues and push for reforms.

Hanes, Richard C. (Bureau of Land Management) and Richard Hansis (Washington State University). June 1995. Interactions of American Indians and Ethnic groups with the natural environment. Interior Columbia Basin. Available online at: www.icbemp.gov/science/hanesrichard_95.pdf.
State: WA
Watershed: Interior CRB
Tribe: Klamath, Kootenai, Coeur d'Alene, Nez Perce
Relevant Summary: Describes the general symbolic importance of place and natural resources to Native American worldview and identity, and in "terms of subsistence, survival, culture, religion or social status."

Harden, Blaine. 2005. Tribe Fights Dams to get Diet Back: Karuks trying to regain salmon fisheries and their health. Washington Post. January 30, 2005; A-03.
Relevant Summary: Pre-contact fish consumption of the Yaruk Tribe is estimated at about 1.2 pounds of fish per person per day. Fish disappeared as a dietary staple during the 1960s and 1970s due to irrigation and dams. Salmon are now too few in number to catch.

Turnquist, Kristi. 2001. Tribes Gather for Salmon Celebration. The Oregonian, April 16, 2001. Available online at: www.bluefish.org/celebrat.htm.
Summary: Members of the Yakama, Umatilla, and Warm Springs Tribes gathered at Celilo Falls in Celilo Village to celebrate the Celilo Wyam Salmon Feast and Pow-Wow. Held in April 2001, this was the first fish run on the Columbia River in 23 years. Historically, Celilo Falls has been the site of the "first salmon" feast. The old Celilo Falls was buried in water following the completion of the Dalles Dam in 1957.

Kawamura, Hiroaki. 2004. Symbolic and Political Ecology among Contemporary Nez Perce Indians in Idaho, USA: functions and meanings of hunting, fishing, and gathering practices. Agriculture and Human Values 21:157-169.
Relevant Summary: While subsistence hunting, fishing, and gathering are no longer the primary means of procuring sustenance for the Nez Perce, these activities are "key symbols of Nez Perce ethnic identity, traditional education, and Indian Religion" (163).

Sepez-Aradanas J. 2002. Treaty Rights and the Right to Culture: Native American Subsistence Issues in US Law. Cultural Dynamics, July 2002, vol. 14 (2): 143-159.
Summary: This article "compares the controversy over whaling by the Makah Indian tribe with similar conflicts to elucidate some of the common difficulties Native American resource users

face in enacting the right to culture, and the treatment these issues have received under US law" (143).

Wolfley, Jeanette. 1998. Ecological Risk Assessment: Their Failure to Value Indigenous Traditional Ecological Knowledge and Protect Tribal Homelands. American Indian Culture and Research Journal, Vol. 22, Issue 2, p. 152-169.
Summary: This author discusses the "critical role that indigenous ecological knowledge can and should play in protecting and preserving ecosystems and tribal communities" (153). It also explores "the threats to tribal homelands and treaty rights, and explains the role tribes should play in their protection" (153). Wolfley is a tribal member of the Shoshone-Bannock Tribes of the Fort Hall Indian Reservation.

National Environmental Justice Advisory Council. 2002. Fish Consumption and Environmental Justice: A report developed from the National Environmental Justice Advisory Council Meeting of December 3-6, 2001. 169 pps.
Relevant Summary: The first two sections explore tribal fish consumption and its cultural importance.

Toy, K. A., Polissar, N. L. Liao, S., and Mittelstaedt, G.D. 1996. A Fish Consumption Survey of the Tulalip and Squaxin Island Tribes of the Puget Sound Region. Tulalip Tribes, Department of the Environment, 7615 Totem Beach Road, Marysville, WA 98271.

Judd NL, Griffith WC, Faustman EM. 2004. Consideration of cultural and lifestyle factors in defining susceptible populations for environmental disease. Toxicology. 198(1-3):121-33.
Summary and significant findings: This review examines cultural and lifestyle factors that help define potentially susceptible populations in two groups, Asian and Pacific Islanders (API) and members of Tribal Nations in the Pacific Northwest region of the US and Western Canada. These authors assert that these groups may consume as much as ten times more fish and seafood than average US consumers and, therefore, have special dietary practices that can lead to significant exposures to persistent pollutants and biotoxins found in fish and shellfish. Their research suggest that regulatory agencies' evaluation of fish consumption for average US populations do not always adequately consider unique consumption and cooking practices of APIs and the Tribes of the Pacific Northwest.

NOAA. 2004. Puget Sound Chinook Harvest Resource Management Plan NEPA, Final EIS: Treaty Indian Ceremonial and Subsistence Salmon Uses-Section Three. April 2004. 3-109-124.
State: WA
Watershed: Puget Sound
Tribe: Puget Sound Island Tribes (Northwest Indian Fisheries Commission Tribes); Samish and Snoqualmie
Summary: This section of the EIS describes in great detail the cultural, spiritual, religious, and social importance of salmon to tribes for ceremonial and subsistence purposes. It also describes changes to area fisheries from 1899 through to the present.

NOAA. 2004. Puget Sound Chinook Harvest Resource Management Plan NEPA, Final EIS: Treaty Indian Ceremonial and Subsistence Salmon Uses-Section Four. December 2004. 4-125-134.
State: WA
Watershed: Puget Sound
Tribes: Puget Sound Island Tribes; Snoqualmie and Samish
Summary: Describes the potential impact of the Puget Sound Chinook Harvest Resource Management Plan and alternatives on the subsistence and ceremonial fishing activities of the 17 treaty tribes of the Puget Sound region and the Snoqualmie and Samish. It concludes that there will be no effect on these traditional resources.

Publication: Washington Department of Fish and Wildlife and Puget Sound Indian Tribes. 2004. Comprehensive Management Plan for Puget Sound Chinook. Harvest Management Component: Annual Postseason Report 2003-04 Fishing Season.
State: WA
Watershed: Puget Sound
Tribe: Puget Sound Indian Tribes
Summary: Tables for the 2003-2004 harvest/catch, including ceremonial and subsistence landings.

Exhibit 2: Tulalip Tribal Catch Reporting Procedures

Kit Rawson
Marla Maxwell
September 16, 2003

The Tulalip General Fishing Regulation includes the following:

6 CATCH REPORTING REQUIREMENTS

6.1 Reporting of all commercial sales required. . All fish or shellfish, or parts of fish and shellfish, including eggs, caught and sold commercially must be reported on Treaty Indian Fish Receiving Tickets. The catch reporting area, the number or weight of fish sold by species, and the total ex-vessel receipts must be reported on the fish ticket.

6.2 Reporting of take-home catch of certain species required. All salmon (including steelhead), halibut, rockfish, lingcod, Pacific cod, Dungeness crab, or shrimp caught under commercial fishing regulations must be recorded on Treaty Indian Fish Receiving tickets. All salmon (including steelhead), halibut, rockfish, lingcod, Pacific cod, Dungeness crab and shrimp which are not sold for commercial purposes must be recorded in the "take-home" portion of the fish ticket. If only eggs or other parts of salmon (including steelhead) or halibut are sold, the total number of fish harvested whether or not sold must be recorded in the "take-home" portion of the fish ticket. The owner and operator of the vessel or gear are jointly responsible for assuring that the number or weight of fish caught is accurately reported on fish tickets.

6.3 Reporting of ceremonial and subsistence salmon catch required. Salmon (including steelhead) caught under ceremonial and/or subsistence fishing regulations must be reported directly to the Tulalip Fisheries Department within twenty-four(24) hours of the closure of the fishery. For hook-and-line recreational fishing this requirement may be met by recording the catch on a Catch Record Form provided by Tulalip Fisheries as long as all procedures for recording catch established by regulation are followed.

6.4 Reporting of ceremonial and subsistence halibut catch required. Halibut or other bottom fish caught under ceremonial or subsistence regulations must be reported directly to the Tulalip Fisheries Department within three (3) days of catching the fish.

6.5 Reporting of subsistence harvest of hardshell clams required. Recording of the subsistence harvest of hard shell clams shall be by means of the issuance of daily clam permits for a given number of pounds per day per digger, the exact number of pounds per permit to be stated in the preseason clam regulations.

6.6 Reporting of subsistence harvest of crabs and shrimp required. Recording of the subsistence harvest of crab and shrimp shall be by verbal report to Tulalip Fisheries personnel within 24 hours after landing the catch. The exact method for subsistence crab and shrimp harvest reporting shall be given in the annual preseason regulations for these fisheries.

6.7 Other catch reporting requirements. Other catch reporting requirements may be issued by the Fisheries Director subject to review by the Board of Directors.

According to the above, all Tulalip harvest of salmon and steelhead must be reported on fish tickets, with the exception of hook-and-line recreational fishing, which is reported on Tulalip Catch Record Cards (TCRC). This category amounts to less than 100 salmon per year. We currently have no way to coordinate the estimates of catch on these cards with the existing tribal/state catch database, and we would like to work with the other comanagers to develop a system for doing this.

Other than TCRCs, there are several categories of salmon harvest we must address to implement the above:

1) *Catch sold to licensed fish buyers*. All buyers are licensed by either the state or the Tulalip Tribes. These buyers are required to accurately fill out fish tickets, including the number and weight of fish purchased, by species and area. In addition, we annually remind fish buyers to ask fishermen about take-home catch associated with fish sold to buyers. These fish are recorded by the buyer in the "take-home" portion of the fish ticket.

2) *Eggs sold to licensed fish buyers*. During some seasons, the only market our fishermen have is for direct sales of roe to fish buyers. In these cases, the fish tickets are filled out as usual, but the product sold is usually recorded only in terms of the weight of eggs. During these seasons, we contact the eggs buyers frequently to be sure they are asking the fishermen to report all fish captured inc conjunction with the eggs sold to these buyers. These are reported in the "take-home" portion of the fish ticket.

3) *Direct sales of fish*. During some seasons, licensed fish buyers are not available, or they are paying a very low price for salmon. Under these conditions, our fishermen often sell fish directly to the public, bypassing the normal fish buyer route. To account for this catch, we take advantage of the fact that the vast majority of Tulalip salmon harvest from Areas 8A, 8D, and 10 that is not sold to licensed buyers, ifs offloaded from the fishing boats at the Tulalip marina where it can be observed by Tulalip fisheries staff. During the salmon season we attempt to have staff on hand from 7 AM until 6:30 PM to sample catch for coded-wire tags and to record catch. We also typically know who is fishing so that we can contact those who have been seen by our sampling staff. All harvest not sold to buyers is recorded on fish tickets by Tulalip staff in the "take-home" portion of the fish tickets.

4) *Ceremonial and subistence*. During some seasons we open ceremonial and subsistence-only fisheries. These fisheries require special permits each week. We contact fishermen as above, and, if they are missed by our samplers, they are contacted directly by phone or in-person when they come into the office for their next week's permit. All harvest is recorded on fish tickets by Tulalip staff in the "take-home" portion of the fish ticket by Tulalip staff.

5) *Ceremonial.* On some occasions there are ceremonial fisheries for events such as funerals, naming ceremonies and the like. These fisheries require special permits and those participating are required to contact the fisheries office to report their catch soon after the fishery ends. Also in this category are special ceremonial fisheries conducted by the tribe to provide a supply of fish for ceremonies throughout the year. All harvest is recorded on fish tickets by Tulalip staff in the "take-home" portion of the fish ticket.

The following tables, from the Tulalip fish ticket database for the year 2002, illustrate the importance of catch reporting in categories 2 through 5 above. The percentage of fish tickets with catch reported as take-home ranged from 10% for sockeye salmon to 100% for steelhead (Table 1), while the percentage of fish reported as take-home ranged from 21.4%

for sockeye salmon to 100% for steelhead (Table 2). The commercial catch category in these tables is any catch where the fish ticket reported a non-zero value for the price. The "take-home" category includes all other categories, including ceremonial, subsistence, barter, direct sales, etc. In all, approximately 33% of the Tulalip salmon catch was accounted for in the take-home category (Table 2). The percentage of tickets written by Tulalip staff ranged from 1% for chum salmon to 100% for Steelhead (Table 3), and the percentage of the catch on tickets written by Tulalip staff ranged from 0.1% for chum salmon to 100% for steelhead (Table 4). In all, Tulalip staff wrote approximately 17% of the salmon fish tickets (Table 3), accounting for approximately 5% of the salmon catch (Table 4).

Table 1. Number of Tulalip fish tickets for year 2002 with catch reported as commercial and take-home, by salmon species. Note that in some cases commercial and take-home catch is reported on the same ticket.

Species	Comm	TakeHm	% TkHm
chinook salmon	97	180	65.0%
chum salmon	84	490	85.4%
coho salmon	559	201	26.4%
pink salmon	4	5	55.6%
sockeye salmon	108	12	10.0%
steelhead	0	16	100.0%

Table 2. Number of fish on Tulalip fish tickets for year 2002 reported as commercial and take-home catch by salmon species.

Species	Comm	TakeHm	% TkHm
chinook salmon	2282	3546	60.8%
chum salmon	9276	141105	93.8%
coho salmon	48606	19216	28.3%
pink salmon	5	20	80.0%
sockeye salmon	24240	6612	21.4%
steelhead	0	64	100.0%
Total	84409	170563	33.1%

Table 3. Number of fish tickets written by Tulalip Fisheries staff (Dlr 4005) and total Tulalip fish tickets by salmon species for year 2002.

Species	Dlr 4005	Total	%4005
chinook salmon	166	277	59.9%
chum salmon	6	574	1.0%
coho salmon	99	761	13.0%
pink salmon	5	9	55.6%
sockeye salmon	10	120	8.3%
steelhead	16	16	100.0%
Total	302	1757	17.2%

Table 4. Number of fish on tickets written by Tulalip Fisheries staff (Dlr 4005) and total fish on all Tulalip fish tickets by salmon species for year 2002.

Species	Dlr 4005	Total	%4005
chinook salmon	2956	5828	50.7%
chum salmon	92	150381	0.1%
coho salmon	5419	67847	8.0%
pink salmon	20	25	80.0%
sockeye salmon	5520	30852	17.9%
steelhead	64	64	100.0%
Total	14071	254997	5.5%

Examination of the above tables shows that different reporting categories are important for different fisheries. The sockeye salmon fishery is perhaps the only one where catch reporting generally follows the typical model (category 1). Nearly all of the take-home fish are from 4 landings in Areas 7A and 10 that were harvested for tribal ceremonial use (category 5). In contrast, the steelhead fishery has zero catch in category 1; all steelhead harvest is either direct sales (category 3) or personal ceremonial and subsistence use (category 4). Thus, reporting of all steelhead harvest depends upon a good system for reporting of catch to Tulalip staff. In the case of chum salmon, only about 6% of the catch is sold to buyers (category 1), yet almost none of the catch is recorded on fish tickets by Tulalip staff. This is because most of the chum catch is recorded by the dealers who buy roe directly from the fishermen (category 2). The reliability of harvest reported in this category depends upon accurate reporting of catch to the buyer by the fishermen.

In summary, the current realities of the salmon fishery have required us to develop a complex and flexible system for recording harvest by the Tulalip fleet. The fish ticket system is well designed for the formerly most common situation where the vast majority of catch in all fisheries was sold to licensed fish buyers who were required to fill out fish tickets at the point of first sale. We have adapted this system to accommodate several other categories of salmon harvest, which are more or less important depending upon the particular fishery. Much of our salmon catch reporting at Tulalip is dependent upon direct reports of harvest to Tulalip staff who then record the catch on fish tickets. This works reasonably well here because most of the fish harvested in these categories is first brought to shore at the Tulalip marina on reservation where we can station staff to observe and record the catch. Other important features of our system include licensing of individuals for certain specific fisheries so that they can be personally contacted afterwards for a catch report and personal communication between tribal staff and egg dealers to be certain they remember to record category 2 catch. Careful annual planning and constant monitoring and flexibility is necessary for successful implementation of this system.

The tribal and state co-managers should consider the potential benefits of a major redesign of the salmon catch reporting system given the changes in the fisheries that have occurred since the fish ticket system was originally set up.
