

At-A-Glance

- The Nez Perce Tribe, Shoshone-Bannock Tribe, and EPA completed surveys of current Tribal fish consumption during 2014–2015.
- The data collected indicate that Idaho Tribes currently consume more fish than the general population (see Figure 3, page 2).
- This survey indicates increased Tribal fish consumption from a 1994 Columbia River Inter-Tribal Fish Commission (CRITFC) survey which included the Nez Perce Tribe. Increased consumption may be associated with fish restoration work, but also may be due to differences in survey design.
- A 2016 review of heritage (i.e., historic) fish consumption for the Kootenai, Coeur D'Alene, Nez Perce, and Shoshone-Bannock Tribes compiled past harvest and consumption rates¹.
- The heritage fish consumption information assists in quantifying suppression of current Tribal fish consumption relative to historic levels.

Background—Tribal Fish Consumption and Ambient Water Quality Criteria

The Clean Water Act establishes the national goal that water quality should provide for the protection and propagation of fish, shellfish, and wildlife, and recreation in and on the water. It also requires states to develop water quality criteria for all priority toxic pollutants to protect the health of high fish consumers.

EPA's national ambient water quality criteria are currently being developed using a fish consumption rate of 22 grams per day (based on the 90th percentile of a national, general population data set). EPA recognizes the importance of drafting water quality criteria that protect Tribal fish consumers. With EPA and tribal involvement that included review and discussion of tribal fish consumption rates, Oregon and Washington now have water quality criteria using a fish consumption rate of 175 grams per day.

Since December 2012, EPA has been collaborating with Idaho Tribal Governments (Kootenai, Coeur D'Alene, Nez Perce, Shoshone-Bannock Tribes and Shoshone-Paiute Tribes) on a Tribal fish consumption survey. The purpose of the survey was to:

- Build Tribal environmental capacity;
- Determine current and heritage fish consumption rates;
- Understand the causes of and reasons for suppression of fish consumption and Tribal hopes for the future; and
- Collect data to support:
 - Development of Tribal water quality standards;
 - Use by Idaho Department of Environmental Quality (DEQ); and
 - EPA's actions in Idaho.

To ensure unbiased and defensible results, EPA built a team of subcontractors with recognized expertise in facilitation, survey design, survey implementation, statistics, and working with Tribes. EPA shared updates on the survey at all Idaho DEQ negotiated rulemaking meetings and coordinated with DEQ staff on the State's own survey efforts. The survey could not have happened without support of Tribal leadership. Tribal governments provided tremendous leadership and resources to complete the surveys.

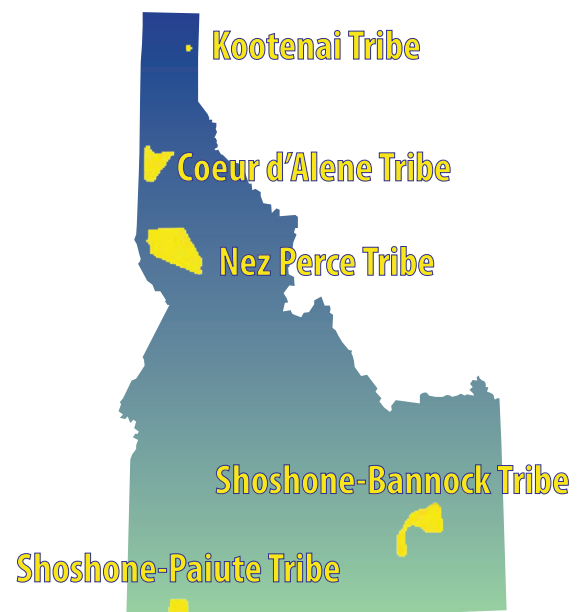


Figure 1. Tribal governments in Idaho.

¹ Heritage fish consumption rates are those Native American fish consumption rates that existed prior to changes in fish consumption associated with the impacts of non-tribal settlement on tribal fisheries resources as well as changes in tribal culture and lifeways.

Methodologies Used

The survey used two methodologies to derive fish consumption rates:

1. State of the art nutritional survey methodology developed by the National Cancer Institute (NCI)².
 - a. Employed a face-to-face and a 2nd phone interview to collect fish consumption information for the previous 24 hours.
 - b. Used statistical modeling to develop usual fish consumption rates.
2. The Food Frequency Questionnaire (FFQ) methodology required individuals to estimate their fish consumption over a calendar year in a single face-to-face interview, usually lasting about an hour.



Figure 2. Interviewers used salmon fillet replicas to help estimate portions.

Tribal consumption data were used to develop fish consumption rate statistics for two different groups:

- Group 1: All fish and shellfish.
- Group 2: Fish and shellfish species that may acquire contaminants from habitat waters that are of concern under the Clean Water Act (CWA) (i.e. near coastal, estuarine, and freshwater).
Note that salmon were included in Group 2.

Interviews ranged over an entire calendar year to assess seasonal changes in fish consumption. The survey methodology was reviewed by two institutional review boards, including one familiar with Tribal traditional lifeways.

Implementation of the Idaho Tribal Fish Consumption Survey

The Shoshone-Bannock and Nez Perce Tribes participated in the quantitative survey. EPA's market research subcontractor hired, trained, and managed Tribal interviewers from each Tribe to improve response rates and protect culturally-sensitive information.

Tribal enrollment records were used to randomly select survey respondents and to insure that results from the individuals surveyed accurately reflected the fish consumption behavior

of the tribal populations. Interviewers utilized computer assisted personal interview technology with error checking to ensure accurate administration of survey and recording of data. Interviewers also used 3-D portion size models and supplemental photos to characterize portion sizes. EPA pilot tested the survey in spring of 2014. Interviews started in May 2014 and ended in April 2015. The Tribes, EPA, and the subcontractor team conducted quality control throughout the survey to ensure the survey stayed on track.

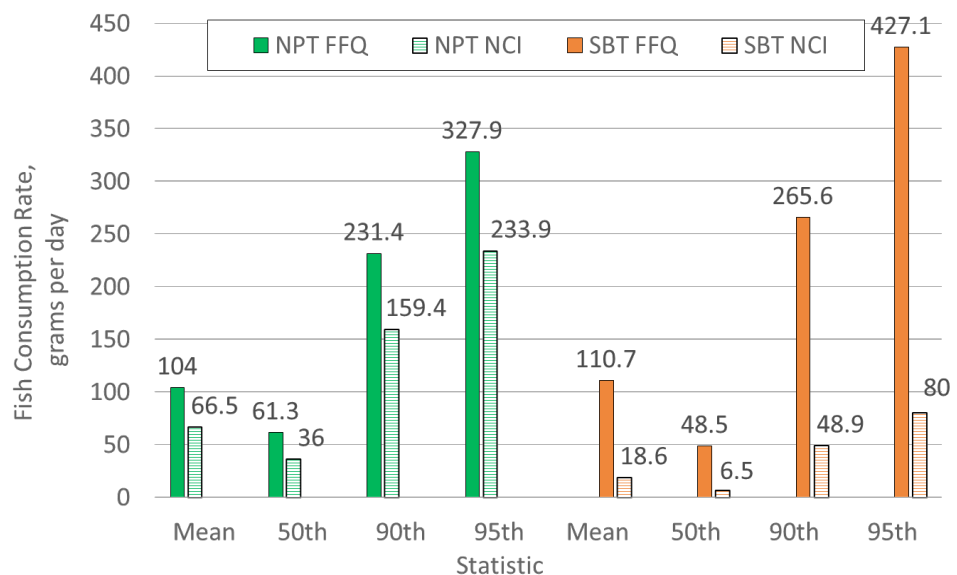


Figure 3. Consumption of near coastal/estuarine/fresh water fish by the Nez Perce (NPT) and Shoshone Bannock (SBT) Tribes. (FFQ-food frequency questionnaire, NCI-National Cancer Institute Method)

Data Collection Challenges and Collaborative Solutions

Because enrollment records did not include necessary contact information, locating and contacting interview subjects was difficult. In response, the interview staff arranged for, and conducted interviews at, central locations and at special events. Further, EPA and CRITFC staff traveled to the Nez Perce Reservation to increase the number of completed interviews. The Nez Perce Tribe granted eligible Tribal employees administrative time to participate in interviews and allowed non-Tribal interviewers from EPA and CRITFC to interview Tribal employees.

Working together, the interview teams conducted enough interviews to support both the FFQ and NCI methodologies. The 717 FFQ interviews collected greatly exceeded the 385 interview project target. To have strong assurance for the NCI methodology to work, there must be approximately 50 respondents who have recorded consumption of the fish species of interest for both of their 24-hour recall interviews. 51 respondents reported consumption for both interviews. The survey effort thus successfully collected the data needed to develop Tribal fish consumption rates.

Quality Assurance

Quality assurance was of major concern throughout the survey effort. The accuracy of interviewer data input was verified. Re-interviews were conducted to assess the accuracy of results. The changes in interview protocol noted in the previous section were evaluated and found not to have a significant effect. Almost all consumption rate calculations per individual respondent were replicated independently by two project statisticians and all respondents' rates used in consumption rate calculations were the same by the two independent calculations. Additionally, a statistician with the NCI—one of the developers of the NCI method—was able to successfully replicate the distribution of usual consumption (all species combined) obtained by project statisticians using the NCI method.

Peer Review and Preliminary Results

An independent peer review panel of experts reviewed the survey of current fish consumption and found the survey was well done. Peer review comments were comprehensively addressed. Where necessary, modifications were incorporated into the final survey report. Peer reviewers supported the methodology and analysis used to obtain FFQ and NCI FCRs. Idaho DEQ found the Tribal survey to be of sufficient quality that it used survey data to calculate Idaho's proposed fish consumption rate.

Tribal Heritage Fish Consumption Rates

EPA and contractors also conducted a review of heritage fish consumption rates for the Kootenai, Coeur D'Alene, Nez Perce, and Shoshone-Bannock Tribes and collaborated with the Tribes and EPA in drafting heritage fish consumption reports for each Tribe. Each report summarized all historical fish harvest and consumption rates by Idaho Tribes as well as Columbia River Tribes. Heritage fish consumption rates were based on direct observation of past tribal fishing activity as well as daily caloric intake requirements, the caloric

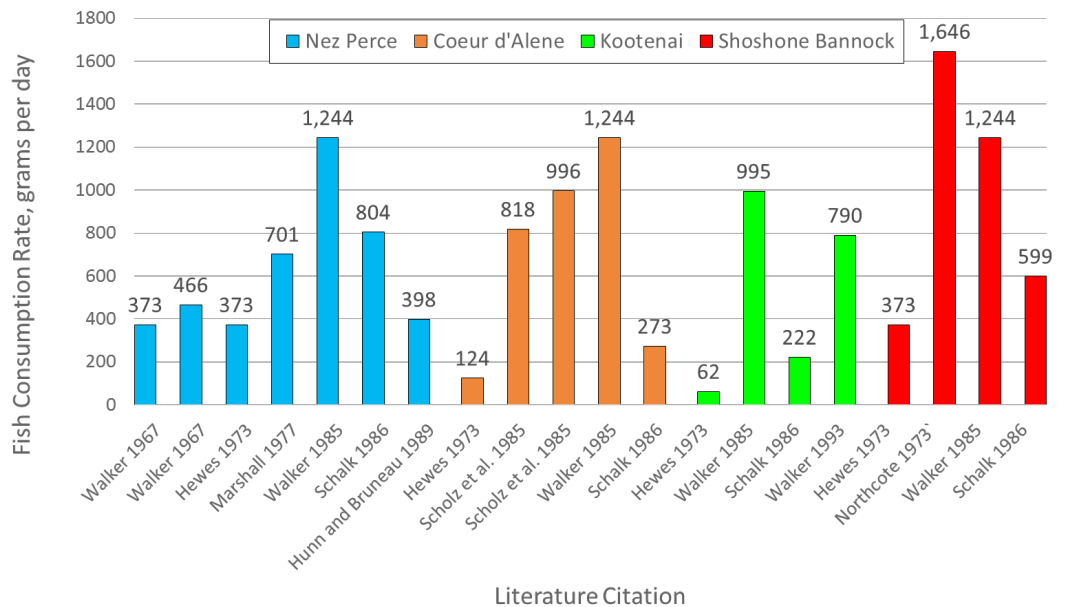


Figure 4. Heritage Fish Consumption Rates for Idaho Tribes and Columbia River Tribes. (Note that full citations for specific heritage rates may be found in the references section of the heritage fish consumption reports.)

content of fish, and the fraction of the diet that consisted of fish. Reports discussed causes for fish population declines, heritage fish consumption information and methods of rate derivation. Heritage fish consumption rates can be used to develop Tribal water quality standards and help inform the State standards. Idaho Tribal heritage fish consumption rates are presented in Figures 4 and 5.

Key Outcomes and Findings

- Fish consumption rates for the participating Idaho Tribes indicate that, in almost all cases, Idaho Tribes currently consume more fish than the general population.
- Idaho Tribes generally consume more fish than previously documented 20 years ago in the 1994 Columbia River Intertribal Fish Commission (CRITFC) survey.
- Tribal members attribute increased fish consumption, in part, due to habitat improvements and an increased availability of fish in local rivers and lakes. Differences in the design of EPA's survey relative to the original CRITFC survey may also contribute to differences in derived fish consumption rates. The current survey comprehensively recorded all fish consumption while the CRITFC survey focused on consumption of Columbia River Basin fish. The Idaho Tribal surveys successfully collected data for and implemented the National Cancer Institute method, the state of the art approach for conducting surveys of current fish consumption.
- The Idaho Tribal surveys successfully collected data for and implemented the National Cancer Institute method, the state of the art approach for conducting surveys of current fish consumption.
- Independent peer review indicated that the Idaho Tribal fish consumption survey information was of high quality and was properly analyzed.
- Current and heritage fish consumption rate information was provided to Idaho DEQ in compliance with the State's rule development schedule, informing the State's water quality criteria development process.
- The heritage survey report documents and quantifies heritage fish consumption rates, providing support for use of this information in developing Tribal water quality standards.
- Comparison of current and heritage fish consumption rate information documents that current consumption is suppressed relative to historic consumption.

All current and heritage tribal fish consumption reports are available at:

www.epa.gov/columbiariver/idaho-tribal-fish-consumption-survey

For More Information

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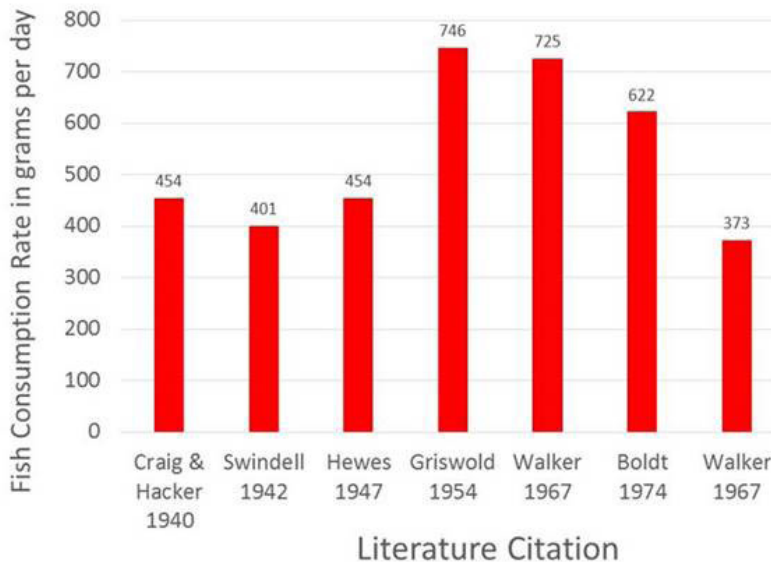


Figure 5. Heritage Fish Consumption Rates for Idaho Tribes and Columbia River Tribes. (Note that full citations for specific heritage rates may be found in the references section of the heritage fish consumption reports.)