# Summary report of Cook Inlet Tribes' Subsistence Consumption Assessment

September 30, 2013

Prepared by
Tracie Merrill
Michael Opheim
Environmental Department
Seldovia Village Tribe, Seldovia, Alaska

## Background of assessment

Between November 2011 and September 2012, Seldovia Village Tribe (SVT) staff undertook a subsistence consumption assessment (i.e. survey) of Cook Inlet tribal members through EPA IGAP Unmet Needs funding. This assessment involved an interview-based survey that examined subsistence food consumption rates, and patterns, of Alaska Natives residing in Seldovia, Port Graham, Nanwalek, and Tyonek. Community members of these villages frequently consume and harvest traditional foods from the waters of Cook Inlet and therefore this assessment was conducted due to concerns of contaminants in Cook Inlet waters and that current fish consumption rates used and/or recommended by agencies, such as the US Environmental Protection Agency (EPA) and Alaska Department of Environmental Conservation (ADEC), for developing human health based water quality criteria in Alaska may greatly be underestimating the amount of fish eaten, on a daily basis, by Cook Inlet tribal members. The assessment mainly focused on fish consumption although non-fish subsistence foods were also included. In total, 76 interviews were completed (19 from each village and all from different tribal households). Only adult tribal members (≥ 18 years old) were interviewed and all were selected randomly. If children (≤ 17 years old) resided in the household of a respondent, that respondent was asked to provide fish consumption information for the youngest child. Information was obtained for 35 children.

## Results of assessment

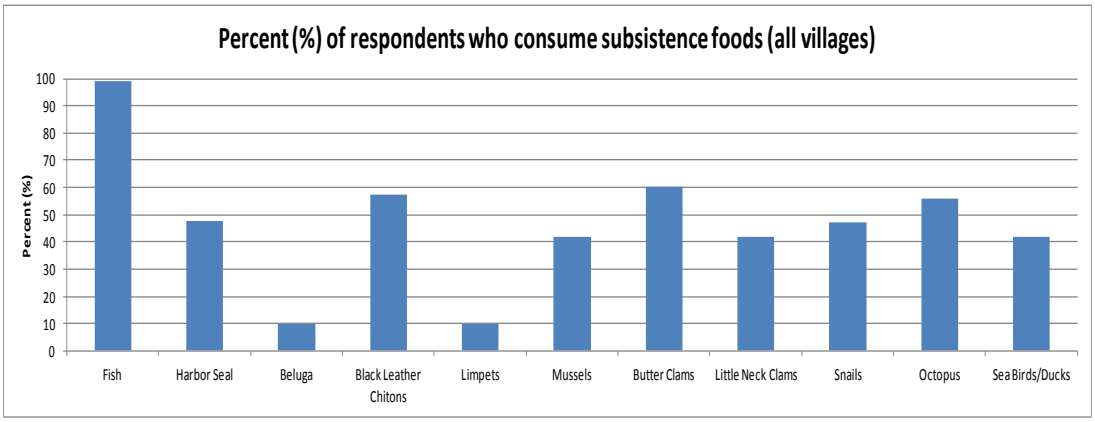
An equal number (n=38) of adult males and females participated in the assessment. Average fish consumption rates (grams/day) found in this assessment are as follows:

| Group/Category | Average fish consumption rate (weighted, grams/day) |
|---|---|
| All respondents (n=76) | 94.8 (± 23.5 SE) |
| Fish consumers (n=75) | 95.5 (± 23.8 SE) |
| Non-fishers (n=8) | 45.8 (± 19.4 SE) |
| Fishers (n=68) | 99.0 (± 26.1 SE) |
| Males (n=38) | 109.5 (± 39.2 SE) |
| Females (n=38) | 79.8 (± 26.3 SE) |
| Females who are currently breast-feeding or have breast-fed (n=25) | 100.1 (± 38.5 SE) |
| 18-39 years old (n=24) | 99.4 (± 41.6 SE) |
| 40-59 years old (n=30) | 109.6 (± 48.9 SE) |
| 60+ years old (n=22) | 62.5 (± 13.6 SE) |
| Months of lowest fish consumption (n=75) | 41.0 (± 6.4 SE) |
| Months of highest fish consumption (n=75) | 116.4 (± 19.3 SE) |
| All children (n=34) | 58.0 (± 16.3 SE) |
| Only children who eat fish (n=30) | 67.0 (± 17.5 SE) |
| All children five years old and younger (n=17) | 34.9 (± 17.4 SE) |
| Only children five years old and younger who eat fish (n=13) | 47.1 (± 20.9 SE) |
| All children six to seventeen years old (n=17) | 83.3 (± 25.8 SE) |

Based upon the data obtained in this assessment, males consumed more fish, on average, than females; fishers consumed more fish, on average, than non-fishers; women who have breast-fed or are breast-feeding consumed more fish than women who have never breast-fed; and respondents between the ages of 40-59 years old consumed the most fish than any other age groups (18-39, 60+) with respondents 18-39 years old coming in second. Of those children who

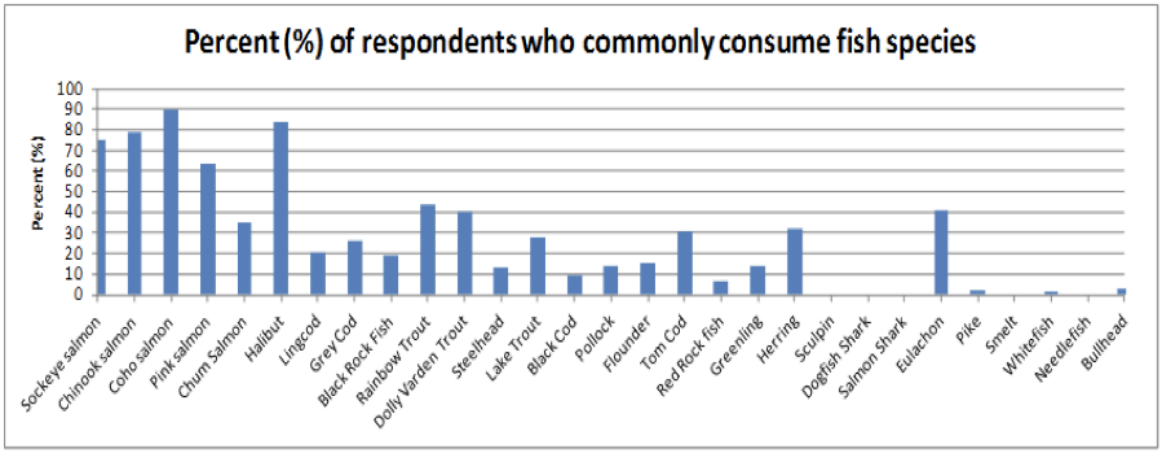
were breast-fed (n=25), the average age that the children stopped breast-feeding was 11.5 (± 2.3 SE) months. The average shellfish consumption rate for all respondents (n=76) was 12.0 (± 3.4 SE) g/d and the average seafood consumption rate (fish + shellfish) was 106.8 (± 23.9 SE) g/d.

Overall, fish was determined to be the most important subsistence food (in terms of the percent of tribal members who consume that subsistence food), although clams, chitons, octopus, and harbor seal also were very popular food items.




***Percent (%) of respondents (n=76) who consume subsistence foods.*** *Weighted data. Seldovia data not included for beluga (n=57) or snails (n=57).*

In terms of priority fish species, salmon species (coho, sockeye, chinook, and pink) plus halibut came in as the most consumed species, both in terms of popularity and in average grams per day (g/d) consumed.




***Percent (%) of respondents (n=76) who commonly consume fish species****. Weighted data. Seldovia data not included in this graph for the following species: pike, smelt, whitefish, needlefish, and bullhead.*

Fish consumption patterns of children "mimicked" that of their parents since they often shared the same meals. For those children who consume fish, the average age they began eating meals that included fish was 11.8 (± 2.6 SE) months (n=30). For both children and adults in Cook Inlet tribal households, fillet was the popular fish part consumed although skin, eggs, and belly flaps/meat were also frequently eaten. The most popular fish preparation methods were smoking, canning, and pan-frying. For harbor seal, the most common ways to cook meat/parts were boiling and baking although frying, roasting/singeing over open fire, fermenting, and

pickling were mentioned. The majority (25.2% or 10/35) of respondents who eat harbor seal consume the equivalent of half a dinner plate full per meal. The meat, ribs, and blubber/fat were the most popular parts eaten from seals by respondents (44.3% or 34/76, 39.7% or 30/76, and 36.6% or 27/76, respectively).

## Discussion of results

Currently, EPA recommends a fish consumption rate of 17.5 grams per day (g/d) for developing human health based water quality criteria in Alaska. The Alaska Department of Environmental Conservation (ADEC) uses a fish consumption rate of only 6.5 g/d to calculate human health based water quality criteria. The findings of this assessment support that Cook Inlet tribal members have much higher fish consumption rates (approximately 5 to 15 times higher), on average, than what EPA and the Department of Environmental Conservation uses. These results are exciting since they may subsequently have beneficial and far-reaching impacts for Alaska tribes. We wish to thank the villages of Port Graham, Nanwalek, and Tyonek; the IGAP and tribal council members of each village; the interviewers; all the tribal members who participated in this assessment; and EPA. This assessment would not have been possible without their support.

## Future endeavors

In partnership with the Alaska Department of Environmental Conservation (ADEC), we have been awarded an EPA IGAP Unmet Needs grant to conduct fish tissue sampling for contaminants for Seldovia, Port Graham, Nanwalek, and Tyonek in the summer of 2015. Sampling would involve the training and hiring of two local samplers from each village and the collection of nine fish from around each village. In total, 36 whole body samples of sockeye salmon would be tested for the following contaminants (PCBs, chlorinated phenolics, flame-retardant PBBEs, and metals (mercury, arsenic, cadmium, copper, lead, and selenium)). The proposed project is limited to sockeye salmon and a sample size of 36 due to logistical and financial constraints. In future years, it is our hope to continue seeking funding to conduct contaminant testing of other priority subsistence species and whenever possible, to partner with other tribes to protect and preserve our shared resources.