



## Recovery of a Subsistence Way of Life: Assessments of Resource Harvests in Cordova, Chenega, Tatitlek, Port Graham, and Nanwalek, Alaska since the *Exxon Valdez* Oil Spill

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Subsistence foods in Port Graham. Photo by Lisa Hutchinson-Scarborough, ADF&G.

### Study Overview

The 1989 Exxon Valdez oil spill (EVOS) significantly altered wild food harvest practices and ways of life in the coastal communities of Cordova, Chenega, Tatitlek, Nanwalek, and Port Graham. Since the 1980s, the Division of Subsistence at the Alaska Department of Fish and Game (ADF&G) has conducted household harvest surveys to assess subsistence harvest in these communities. In the years following EVOS, surveys specifically assessed concerns with food safety and other oil spill effects on subsistence ways of life. The large amount of survey data collected over three decades created the opportunity to look at changes and trends in subsistence harvest practices over time.

In this project, researchers developed a household-level database of responses to all available survey questions in these five EVOS-affected communities to understand the economic, social, and cultural factors shaping changes in subsistence harvest practices, and whether the communities have recovered from the 1989 EVOS event. The resulting database cataloged a total of 40 community-year records, over 2,100 household records, over 6,500 person records, over 24,000 income records, and over 1 million harvest detail records. Additionally, researchers analyzed qualitative data in the forms of survey responses and key informant interviews to assess changes and trends in subsistence resource use.

### Highlights of Findings

The study provided two key findings.

1. Harvest diversity (the number of types of resources harvested) rebounded from low levels in the years directly following the spill. However, the number of types of resources harvested and used dropped sharply between 2003 and 2014. Levels of resource diversity in 2014 were unexpectedly similar to the low level of resource diversity in the year of the oil spill (Figure 1).
2. The concentration of production increased steadily over study years, where a decreasing percentage of households provided an increasing percentage of the total community harvest. This was especially true for key resources like sockeye salmon, where a small percentage of households harvested more than 90% of the total sockeye salmon harvested for subsistence in Tatitlek (Figure 2) and Port Graham. Other findings of the study included that:
  - In all study communities, one third of households contributed at least 70% of the total community harvest. This concentration of production remained consistent regardless of total harvest quantity;
  - Older age cohorts used and attempted to harvest a greater number of resources than younger cohorts both before and after the oil spill; and
  - Households with the highest levels of subsistence production were often households that participated in commercial fisheries (Figure 3).



Participation in commercial fishing appears to be associated with higher levels of subsistence harvest. Photo by Malla Kukkonen, ADF&G.

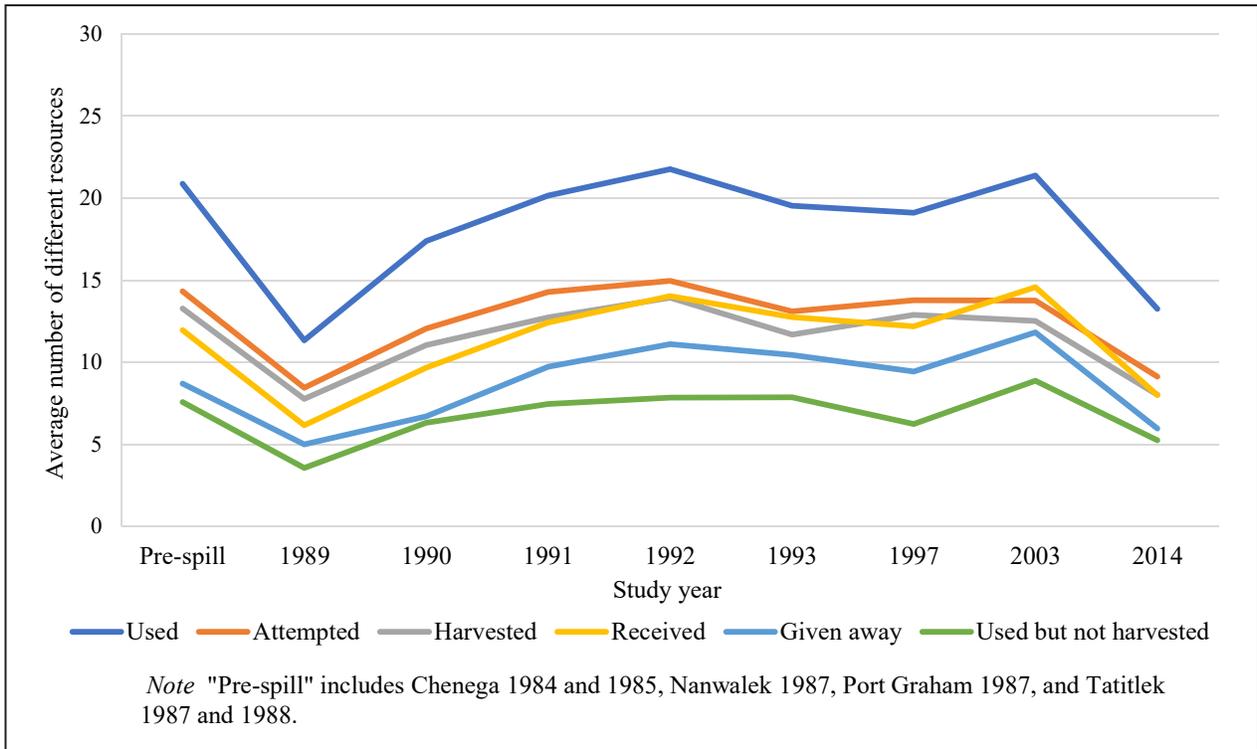


Figure 1.—Average number of subsistence resources households used, attempted to harvest, harvested, received from or gave to others, and used but did not personally harvest, Chenega, Nanwalek, Port Graham, and Tatitlek, combined, pre-spill, 1989–1993, 1997, 2003, and 2014.

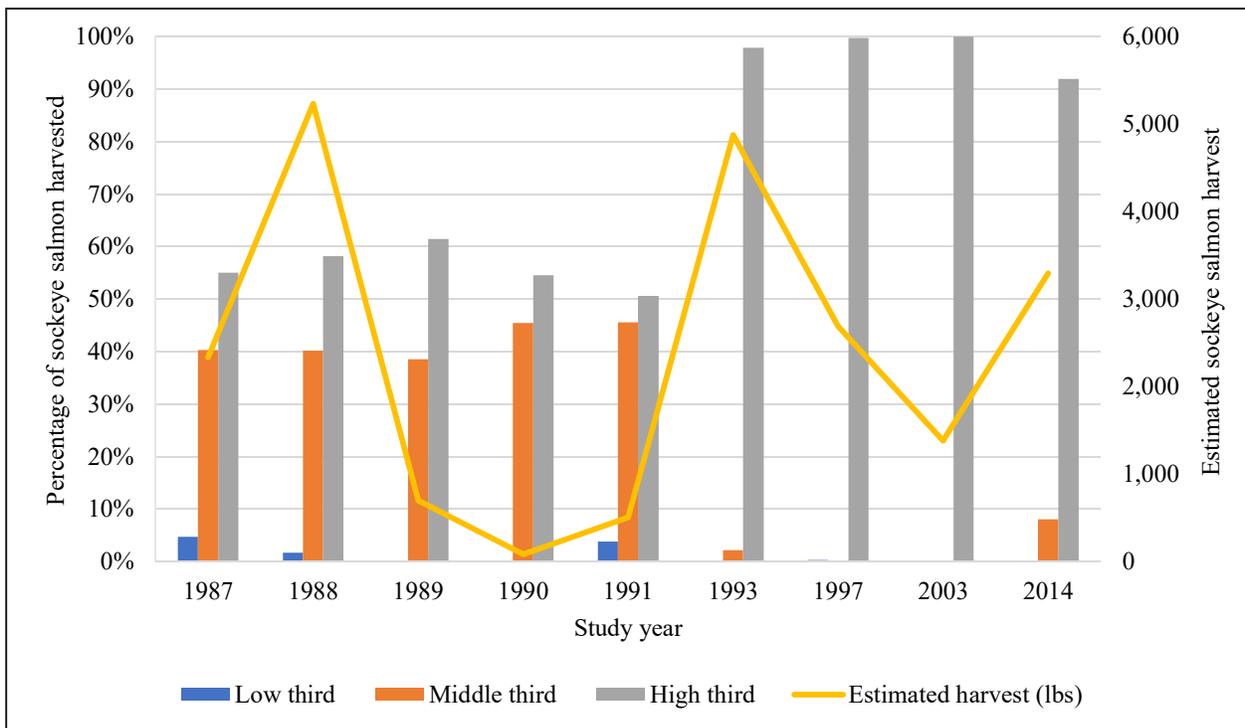


Figure 2.—Estimated by households that fished for sockeye salmon, grouped into thirds according to low, middle, and high levels of harvest productivity, Tatitlek, 1987, 1989–1993, 1997, 2003, and 2014.

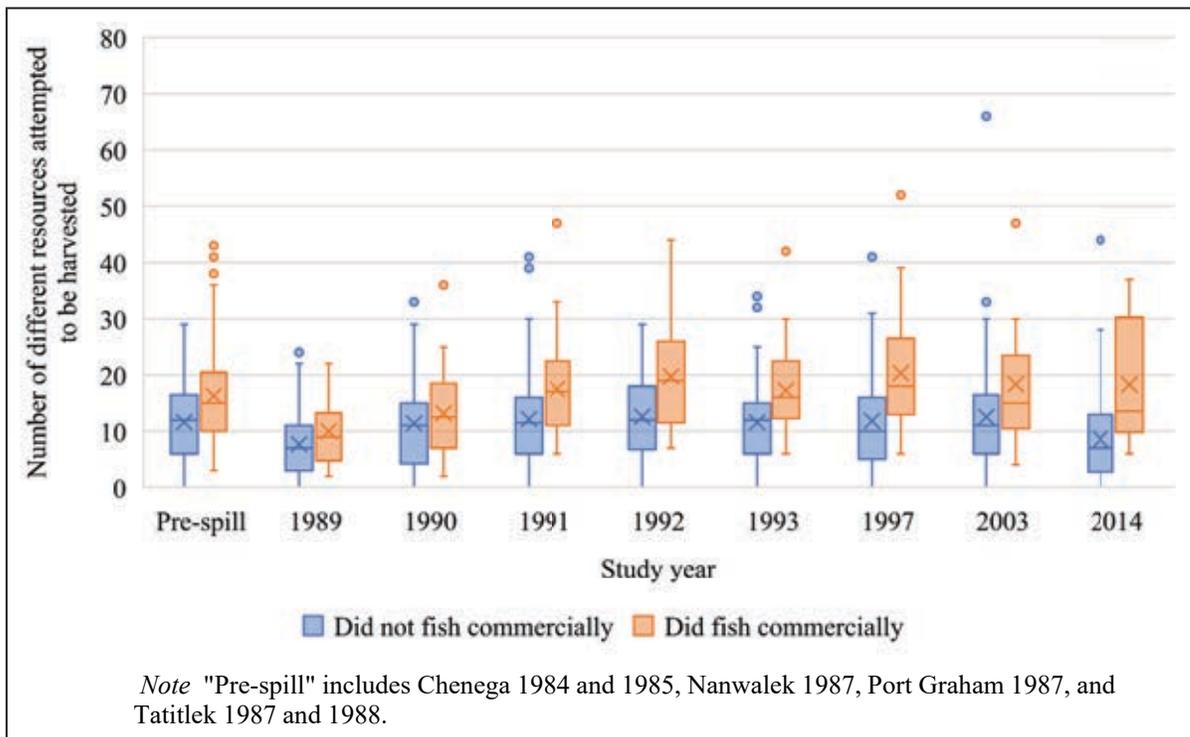


Figure 3.—Comparison of the attempted subsistence harvest by households who did not fish commercially (blue) to households who did fish commercially (orange) in Chenega, Nanwalek, Port Graham, and Tatitlek combined, pre-spill, 1989–1993, 1997, 2003, and 2014.

## Key Respondent Interviews

Qualitative data from household harvest surveys and key respondent interviews offered several explanations for the sharp decline in the number of types of resources harvested and used in 2014. These explanations were mostly related to social and economic factors rather than lingering environmental impacts from EVOS. These included:

- A decrease in resource abundance due to outside pressures from charter boats and sport hunters and localized pressure on readily accessible resources like marine invertebrates;
- A decrease in knowledge transfer from older to younger generations stemming from a

perceived diminished role of elders, younger generations' loss of interest in developing traditional skills (often attributed to the influx of digital technology), and a broader cultural shift where younger generations are perceived to lack traditional values;

- The influx of cash from EVOS settlement payments in the early 1990s, which is attributed to people becoming accustomed to commercial foods and purchasing their own equipment for independent use, rather than engaging in communal resource production; and
- A lack of consistent income to maintain equipment and purchase fuel to continue harvesting resources regularly and reliably.

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*“The oil spill in one way was worse for subsistence and traditional community culture because it gave everyone money, and this gave them the ability for each individual to have their own boat motor. Lots of people ended up doing subsistence only for themselves and overall, people shared lots less together.”*

-Nanwalek Elder, 2014

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## Conclusions

This project contributed to the understanding of changes in subsistence resource production and levels of resource use that have taken place in EVOS-affected communities from a local perspective.

- The recent shift in resource production to a smaller percentage of households is likely attributed to communities concentrating harvest efforts on the most consistently available species like salmon, which requires resources like boats and fuel to harvest.

- Participation in commercial fishing seems to be associated with higher levels of subsistence production due to ownership of essential equipment and proximity to subsistence resources.
- Residents expressed that the sudden influx of cash following EVOS created a cultural shift to individualized equipment ownership and harvesting practices. Many felt that the inability to run and maintain equipment in the long term and younger generations' loss of engagement in subsistence activities were key factors in lower levels of participation in subsistence harvest activities.

## Future Research Needs

Additional years of survey data are needed to determine if the sharp decline in resource diversity in 2014 was an unique occurrence or part of a significant downward trend in subsistence resource use. Research should investigate the influences of digital technology and the specific cost barriers associated with subsistence participation, and the role of commercial fishing in household production, exploring levels of equipment ownership, ability to maintain equipment, and the consequent ability to access more abundant and dependable subsistence resources.

## Where to Find Project Data and Final Report

The Community Subsistence Information System (CSIS) is an online database that hosts Alaska community harvest information gathered by the Alaska Department of Fish and Game, Division of Subsistence. The results of this project's household surveys, as well as data from previous surveys is available through the CSIS. To access the CSIS online: <https://www.adfg.alaska.gov/sb/CSIS/>

*"When every day was a struggle to put food on the table for the people, and every day you accomplished it, you had an accomplishment, you felt good about it, 'I fed my family. I fed my community.'"*

-Port Graham Elder, 2018

The results of this study can be found in the following ADF&G Technical Paper:

Keating, J. M., D. Koster and J. M. Van Lanen. 2021. Recovery of a Subsistence Way of Life: Assessments of Resource Harvests in Cordova, Chenega, Tatitlek, Port Graham, and Nanwalek, Alaska since the Exxon Valdez Oil Spill. Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 471, Anchorage. <http://www.adfg.alaska.gov/techpap/TP471.pdf>

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