Sources of Data on Subsistence Harvests of Fish and Wildlife in Alaska

James A. Fall
Marilynne L. Kostick
Division of Subsistence, ADF&G

Human Health Criteria Public Workshop Anchorage, AK October 30, 2015

Meal of salmon, salmonberries, and rice, Sleetmute, Alaska
Division of Subsistence: Statutory Duties

• Alaska Statute 16.05.094 lists “duties”
  1. Research and data compilation
  2. Data reporting and education
  3. Application of study findings

Subsistence fishing and processing, Chignik Lake
Types of research projects

- Goal: “holistic” understanding of mixed economy and way of life
- Community “baseline” studies (focus on one year)
- Special topic research
- Local and Traditional Knowledge
- Harvest monitoring (multi-year)

- Most projects are partnerships
- Guided by ethical principles
Methods: Introducing a project in Togiak
Methods: Local assistant orientation in Noatak
Methods: Administration of survey in Emmonak
Community Subsistence Information System or “CSIS”

- Searchable by resource, area, or community
- Export data into Excel file
- U.S. Census: 355 named communities in Alaska
  - 86 in nonsubsistence areas, 269 in “rural” areas
- Of 263 rural places with a population and not a military base or industrial area, data in CSIS for 197 places (75%); 225+ total Alaska places
- Number of data sets in CSIS = ~440 (community/year combinations)
Wild food harvests in Alaska by area, 2012
(pounds usable weight per person per year)

Rural harvest: 295 lb per person per year
Urban harvest: 22 lb per person per year
Composition of wild food harvest by rural Alaska residents, 2012

- Salmon: 32%
- Other Fish: 21%
- Land Mammals: 23%
- Marine Mammals: 14%
- Shellfish: 3%
- Birds and Eggs: 3%
- Wild Plants: 4%
Per Capita Harvests of Wild Resources by Category and Area, 2012

Pounds Usable Weight per Person

- Wild Plants
- Birds and Eggs
- Marine Mammals
- Land Mammals
- Shellfish
- Other Fish
- Salmon

Urban, Kodiak, Rural Southcentral, Rural Southeast, Southwest, Rural Interior, Western, Arctic
Annual harvest monitoring programs

- Permit systems or post-season surveys
- Most subsistence and personal use salmon fisheries
- Few other subsistence fisheries
- Database (salmon)
- Annual report (salmon)
Consumption Rate Estimates

1. Mean Per Capita Harvest
2. Mean Per Capita Use
   - 95th Percentile Use (High-end User)
Mean Per Capita Harvest

\[
\frac{\text{Total Harvest in Community}}{\text{Community Population}} = \text{Mean Per Capita Harvest}
\]

Assumes that wild foods are …
- Equally distributed among and consumed by all residents of a community
- Not exported from or imported into a community
- Consumed equally across each day of the year, when expressed as grams per day

Limitations …
- Lower/Higher than actual levels
- Not age-specific May not be sensitive to cultural use patterns
- “High-end” consumers underestimated, “low-end” consumers overestimated
Mean Per Capita Use

\[
\frac{\text{Community's Mean Per Capita Harvest}}{\text{Percentage of Community's Households Using the Resource}} = \text{Mean Per Capita Use}
\]

- More precise measure of mean consumption rates, constructed from both harvest and use information

- Mean per capita use > Mean per capita harvest

- Captures differences among household consumption rates related to cultural food patterns
Mean Per Capita Use

\[
\text{Community's Mean Per Capita Harvest} \quad \frac{\text{Percentage of Community's Households Using the Resource}}{\text{Mean Per Capita Use}} = \]

Assumes that wild foods are …
- Equally distributed among and consumed by all residents of households that report sharing and using the wild food category
- Not exported from or imported into a community
- Consumed equally across each day of the year, when expressed as grams per day

Limitations …
- Lower/Higher than actual levels
- Not age-specific
- “High-end” consumers underestimated, “low-end” consumers overestimated
95th Percentile Per Capita Use

*An estimate for “high-end” consumers in a community.*

- A way for quantifying the potential exposure levels of the segment of a community’s population at greatest health risk.

- Higher than mean per capita use for most resource categories.

- Captures variation in the dietary patterns in the population related to dietary breadth, sharing patterns, and cultural use patterns.

- “Dietary Breadth” is the relative number of different types of wild foods within a resource category consumed by a household. Households using a comparatively larger number of different types of wild foods have a greater dietary breadth.*
95th Percentile Per Capita Use

**Group 1**
- Households that “harvested and did not give”
  
- *Harvest by each household / Household size = Use level*

**Group 2**
- Households that “harvested and gave” + households that “did not harvest and used”
  
- *Harvest by the group of households / People in the group of households = Use level*

**Group 3**
- Households that “did not use”
  
- *Use level = 0*

Uses of members are rank ordered from the lowest value to the highest value. The community resident occupying the 95th percentile rank is identified.*
95th Percentile Per Capita Use

Assumptions …
- Group 1 – Wild food harvested by the household was consumed only by members of that household
- Group 2 – The group of “user” households comprised a distribution network in which wild foods were shared equally among all members of the group
- Wild foods are not exported from or imported into a community
- Wild foods are consumed equally across each day of the year, when expressed as grams per day

Limitations …
- Not age-specific
- Complexity of calculating the measure, requires access to project databases
  - Standard resource categories are accessible through CSIS
  - Specific groupings of wild foods require further analysis*
Consumption Rate Estimate Comparisons

95th Percentile Per Capita Use and Average Per Capita

Division of Subsistence, ADF&G and Seldovia Village Tribe
Nanwalek Subsistence Harvests/Consumption Estimates, Fish and Shellfish, Average Per Capita

Nanwalek Subsistence Harvests/Consumption Estimates, Fish and Shellfish, 95th Percentile Per Capita Use & Average Per Capita
Port Graham Subsistence Harvests/Consumption Estimates, Fish and Shellfish, Average Per Capita

Pounds per person per year

- Shellfish
- Fish

<table>
<thead>
<tr>
<th>Year</th>
<th>Average</th>
<th>95th Percentile</th>
<th>1987 (n=155)</th>
<th>1989 (n=127)</th>
<th>1990 (n=137)</th>
<th>1991 (n=136)</th>
<th>1992 (n=138)</th>
<th>1993 (n=146)</th>
<th>1997 (n=109)</th>
<th>2003 (n=111)</th>
<th>2012 SVT weekly (n=19)</th>
<th>2012 SVT monthly (n=18)</th>
<th>2014 (n=105)</th>
</tr>
</thead>
</table>

Port Graham Subsistence Harvests/Consumption Estimates, Fish and Shellfish, 95th Percentile Per Capita Use & Average Per Capita

Pounds per person per year

- Shellfish
- Fish

<table>
<thead>
<tr>
<th>Year</th>
<th>Average</th>
<th>95th Percentile</th>
<th>2003 (n=111)</th>
<th>2012 SVT weekly (n=19)</th>
<th>2012 SVT monthly (n=18)</th>
<th>2014 (n=105)</th>
</tr>
</thead>
</table>
Thank you.