

# QUALITATIVE SOCIAL SCIENCE APPROACHES & UTILITY FOR NPFMC PROCESSES

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# RATIONALE & PLAN

- Rationale
  - Desire by SSPT for overview of qualitative methods (& assess for SSC, Council)
  - Less familiarity with qualitative social science approaches, methods, data, analyses
- Plan
  - Courtney – broad overview qualitative approaches – methods
  - Jim – specific examples of utility of qualitative approaches
  - Mike – connecting to NPFMC processes, challenges & opportunities

# QUALITATIVE SOCIAL SCIENCES

- High-quality science starts with foundational understanding of the approaches and assumptions that ground specific research designs and methods of data collection and analysis
  - Just as we would not use linear regression without an understanding of central limit theorem, we should not assess qualitative methods and analysis without understanding the theoretical assumptions that underlie them.
- Natural sciences tend to be unified in approach to scientific process & assumptions
- Social science disciplines have varied approaches and different assumptions
- Understanding approaches and assumptions important for understanding methodology and assessing the quality of qualitative social science methods & data
  - Many of the measures for assessing high quality natural science (e.g., experimental design, random sampling, statistical representation/generalization, and quantification) are not appropriate for assessing qualitative methods, data, and analysis.

# EXAMPLE – ASSUMPTIONS & APPROACH

Discipline	Ontology (nature of being)	Epistemology (theory of knowledge)	Philosophical perspective (assumptions that guide research)	Research Approach
Economics	<b>Realism</b> (only one reality exists)	<b>Objectivism</b> (facts about objects of study can be gathered by scientists without influencing the facts collected)	<b>Positivism</b> (generalizable knowledge, or truth, is acquired through unprejudiced use of the deductive scientific method)	Hypothesis testing, random sampling, generalizability, statistical analysis, modeling
Anthropology (some)	<b>Relativism</b> (multiple realities exist based on culture)	<b>Constructivism</b> (scientists are not wholly separate from the object of study, so facts are shaped, or constructed, by the scientific processes)	<b>Interpretivism</b> (deductive scientific methods do not produce universal knowledge; inductive empiricism reveals more; all data and interpretation are contextual; and history and culture influence how information is interpreted, and meaning produced)	Purposive sampling, case studies/exemplars of diversity across human groups / contexts; grounded theory

## EXAMPLE: HOW DO WE EXPECT FISHING PRACTICES CHANGE DUE TO NEW POLICY?

- Economists may approach this question from rational choice theory where all individuals make decisions in essentially the same way; assumption that individuals act to maximize their utility; collectives, sub-groups and distributional effects may not be central. A random fleet-wide survey may be appropriate methodology.
- Anthropologists may approach this from cultural relativism theory where culture and worldview fundamentally shape fishing practices and decision-making. They may also draw on theories of power and marginalization to recognize some sub-groups of fishermen or communities are likely to experience differential impacts, may be harder to engage for research purposes and may be less visible in policy processes. Ethnographic appraisal may be appropriate methodology for this question.

# DIVERSITY OF FOCAL AREAS OF STUDY AND METHODOLOGY

Discipline	Focus of Study	Data gathering methods (Quantitative)	Analysis Methods (Quantitative)	Data gathering methods (Qualitative)	Analysis Methods (Qualitative)
<b>Anthropology</b>	Humans and their culture, both past and present	Surveys, behavioral observation, secondary data gathering	Statistical analysis, social network analysis, geographic information systems (GIS)	Ethnography, participant observation, interviews, visual methods, archival research, focus groups	Coding, discourse analysis, thick description, cultural consensus analysis, qualitative modeling
<b>Economics</b>	How people make decisions about resource allocation & implications for society	Behavioral experiments, surveys, secondary data gathering, mathematical programming	Econometrics, computer modeling, statistical analysis, behavioral modeling, economic valuation		

<b>Discipline</b>	<b>Focus of Study</b>	<b>Data gathering methods (Quantitative)</b>	<b>Analysis Methods (Quantitative)</b>	<b>Data gathering methods (Qualitative)</b>	<b>Analysis Methods (Qualitative)</b>
<b>Human Geography</b>	Interactions between people and their environments	Surveys, secondary data gathering	Statistical analysis, GIS, qualitative comparative analysis	Ethnography, participant observation, interviews, archival research, participatory mapping & GIS	Coding, content analysis, qualitative modeling
<b>Political Science</b>	The structure, distribution and exercise of power	Surveys, experiments	Statistical analysis, modeling	Interviews, ethnography	Coding, content analysis
<b>Psychology</b>	Mental and behavioral characteristics of individuals and groups	Controlled experiments, surveys	Statistical analysis	Focus groups, structured experiments, interviews, observations	Coding, content analysis
<b>Sociology</b>	Social life and institutions	Surveys, secondary data gathering, longitudinal studies	Statistical analysis, social network analysis, qualitative comparative analysis	Archival research, interviews, some ethnography, focus groups, participant observation	Coding, content analysis, qualitative modeling Charnley et al. 2017

# ASSESSING BEST AVAILABLE SCIENCE

Phase I: Research Design and Data Collection	
Best Science	Best Qualitative Social Science
<ul style="list-style-type: none"> <li>• Clear statement of objectives</li> <li>• Adheres to well-established scientific process</li> <li>• Thorough review of literature and other relevant information</li> <li>• Inquiry grounded in observation and deductive hypothesis testing about the basic principles that underlie cause and effect relationships</li> <li>• Standardized methods for data collection</li> <li>• <b>Experimental research design</b></li> <li>• There are standards for controlling the operation of the technique</li> <li>• Replication and repetition occur or are possible to verify results</li> <li>• Data gathered are objective, value-free</li> <li>• Addresses policy-relevant questions</li> </ul> <p data-bbox="0 1206 1261 1263"><small>Sources = Bisbal 2002, Cook et al. 2013, Corn et al. 2013, Doremus 2004, Holland 2008, Lowell &amp; Kelly 2016, Murphy &amp; Weiland 2016, Sullivan et al. 2006, Van Cleve et al. 2004, Wolters et al. 2016</small></p> <p data-bbox="38 1363 420 1406"><b>Charnley et al. 2017</b></p>	<ul style="list-style-type: none"> <li>• Clear research purpose and questions</li> <li>• <b>Justification of methods and research design (incl. sampling approach) are appropriate to the research questions</b></li> <li>• Relevant literature reviewed</li> <li>• Sufficient/appropriate theoretical constructs guide inquiry</li> <li>• Adequate data are gathered to identify patterns &amp; saturation</li> <li>• Variety in types of evidence gathered; evidence comes from multiple sources</li> <li>• Contradictory evidence or cases are sought for comparison to understand complexity of the topic</li> <li>• Research conducted in a manner sensitive to the social and cultural context in which it occurs, and in an ethical manner</li> <li>• The research topic is relevant, timely, significant</li> </ul> <p data-bbox="1274 1349 2509 1406"><small>Sources: Cohen and Crabtree 2008, Elliott et al. 1999, Freeman et al. 2007, Kitto et al. 2008, Malterud 2001, Morrow 2005, Tracy 2010, Whittemore et al. 2001</small></p>



## Phase 2: Data Analysis and Interpretation

### Best Science

- Sound logic and rigorous **statistical methods used for analyzing and interpreting data and making inferences from samples**
- A conceptual model provides a framework for characterizing system relationships, testing hypotheses, making predictions
- Other analytical models used, as appropriate

Sources: Corn et al. 2013, Doremus 2004, Glicksman 2008, Joly et al. 2010, Murphy & Weiland 2016, Sullivan et al. 2006, Van Cleve et al. 2004

### Best Qualitative Social Science

- An analytical or theoretical framework is articulated for making sense of the data
- **Data immersion & saturation is sufficient for understanding and providing a meaningful account of the diverse experiences, perspectives and understandings of reality that people hold**
- Researcher critically appraises alternative explanations, hypotheses, biases, and personal interpretations
- Researcher takes steps to ensure rigor of observations and data interpretation so that they accurately reflect the meanings and experiences of research participants and the research context (e.g., **triangulation**, debriefing to peers, checking data and its interpretation with research participants, considering negative cases)

Sources: Cohen and Crabtree 2008, Elliott et al. 1999, Malterud 2001, Morrow 2005, Whitemore et al. 2001

Phase 3: Data Representation in Final Products	
Best Science	Best Qualitative Social Science
<ul style="list-style-type: none"> <li>• Values and assumptions underlying the research are made explicit</li> <li>• Conclusions are well supported by the data</li> <li>• Data and information limitations, sampling biases, scientific uncertainties, known or potential rates of error are disclosed</li> <li>• Clear documentation of methods, results, and conclusions to provide transparency</li> <li>• Findings communicated in a manner that is accessible and understandable</li> <li>• Findings published in peer-reviewed outlets</li> <li>• Impact factor or stature of scientific journal in which research is published</li> <li>• Research is perceived as legitimate (ie, politically unbiased)</li> </ul>	<ul style="list-style-type: none"> <li>• Researcher is <b>self-reflexive</b> about his/her values, assumptions, biases, and limitations and their potential influence on the research</li> <li>• Data collection techniques clearly documented, data analysis methods transparent</li> <li>• <b>Multiple voices are reported to provide a meaningful account of the diverse perspectives and understandings that people hold</b></li> <li>• Writing combines researcher’s interpretations and supporting quotes from participants; provides rich and evocative description, including examples, to help reader experience and understand the phenomena described</li> <li>• Writing is clear and coherent</li> <li>• Literature, research questions, methods, and findings are coherent and connected to each other in a meaningful way; research accomplishes its purposes</li> <li>• Ethical considerations in sharing research results considered</li> <li>• Findings are published in peer-reviewed outlets</li> <li>• Research contributes to theory/scholarship, has practical application, and has value in other settings (transferability), which are specified</li> </ul>
<p>Sources: Doremus 2004, Holland 2008, Lowell &amp; Kelly 2016, Murphy &amp; Weiland 2016, Nylen 2011, Sullivan et al. 2006, Van Cleve et al. 2004</p>	<p>Sources: Cohen and Crabtree 2008, Elliott et al. 1999, Freeman et al. 2007, Kitto et al. 2008, Malterud 2001, Morrow 2005, Tracy 2010, Whittemore et al. 2001</p> <p style="text-align: right;"><b>Charnley et al. 2017</b></p>

# EXAMPLES OF QUALITATIVE METHODS & DATA

Methods	Purpose	Examples of Data
<b>Ethnography</b>	Provides in-depth characterization of people, places, or social organization, revealing operating principles, norms, or cultural logics about how the world does or ought to work	<ul style="list-style-type: none"> <li>• Extensive field notes containing detailed observations alongside reflective or interpretive notes</li> <li>• Meticulous detail on setting, space, formal and informal social rules</li> <li>• Descriptions of how power is exercised or operates</li> <li>• Information on pressures or ‘external’ meso- or macro-scale effects on setting</li> <li>• Data from multiple-linked sites where needed</li> </ul>
<b>Rapid Ethnographic Assessment</b>	For time-limited observations of routines, events (e.g., decision making fora), site uses (e.g., food harvesting)	<ul style="list-style-type: none"> <li>• Short descriptive field observations</li> <li>• Topically and temporally bounded interview data (e.g., on site and uses only);</li> <li>• Maps with notations (e.g., in situ recordings of key locations with judgments of importance)</li> </ul>
<b>Participant observation</b>	Used for gathering a variety of data about people’s lives and activities, social processes and institutions, and cultural practices via direct participation, observation, and experience in order to gain in-depth understanding of a phenomenon	<ul style="list-style-type: none"> <li>• Descriptions of events, activities, institutions, behavior and their meaning</li> <li>• Photographs, videos, audio recordings</li> </ul>

<p><b>In-Depth Interviewing</b></p>	<p>Addresses topics poorly served by didactic or direct questions and answers; key for individual or collective experience; meaning (e.g., experience and importance of phenomena such as pain, a hunting ritual, or wilderness). Uses big questions. Also aims to provide exposition and detail where articulacy is thin or knowledge held is '2<sup>nd</sup> nature' and so less amenable to consciousness</p>	<ul style="list-style-type: none"> <li>• Good quality narratives of experience or explanation that are rich in impressionistic, metaphorical, or analogic detail</li> <li>• Has quality of 'showing' or 'describing' the phenomena in question, not telling or classifying</li> </ul>
<p><b>Structured Interviewing (mental models)</b></p>	<p>Highly structured with several well-tested interview protocols used for understanding cognition or how people think about a problem (e.g., climate change). Relevant to studying beliefs about how things work, what something is, or how a system is organized and operates. Often but not solely used to confirm or disconfirm lay-expert differences</p>	<ul style="list-style-type: none"> <li>• Data tend to be organized into units of descriptive models (e.g., ideas about how an institution governing resource access, or a restoration practice, is thought to work and its effects), including verbal probabilities (belief in frequency, magnitude or consequences)</li> </ul>
<p><b>Semi-structured interviews</b></p>	<p>Similar to structured interviews except interview protocols are less structured, containing open-ended questions following a general script that covers several topics to obtain detailed information about them within a limited period of time. Allows for exploration of unexpected topics that may arise during the interview process.</p>	<ul style="list-style-type: none"> <li>• Same as above</li> </ul>

## Focus Groups

Used to address questions of what society or groups collectively want (vs. aggregation of individual opinion), where the entity of interest is the group and/or the quality of answers may be better because of group discussion. Particularly useful when a topic is new, knowledge about a topic is nascent, or information is needed for policy design and evaluation.

- Qualitative data points, indicators, and/or subjective or constructed scales where none exist (e.g., those used for place value or aesthetic importance in a restoration context);
- Thinking about new topics or technologies as they emerge (e.g., how people take up and respond to renewable energy technologies about which they know very little as yet)

## Archival research

Common applications:  
(a) document past social or ecological conditions; (b) document past institutional or organizational structure; (c) illuminate development or change of a construct of interest (e.g., management paradigm, institution, agency); (d) illuminate foundational roots or precedent of a social construct (e.g., legislation); (e) reveal unintended consequences of decisions or programs; (f) reveal influence of individuals or programs on variable of interest; (g) reveal points of disagreement among social group and resolution.

- Textual records
- Environmental data
- Maps
- Audial media, e.g., cassette tapes
- Visual media: films, photographic prints and negatives

**TABLE 1** Examples of how common social science methodologies can be applied to conservation decision-making

Methodology	Research question	Broad application to decision-making context	Specific application to decision-making context
Biography	How can we integrate individuals' lived experiences to create a history of political decision-making and its outcomes in this location?	How might the history of this area influence resource users' willingness to participate in conservation decision-making processes?	How can we design conservation programmes that meet the needs of resources users and are sensitive to context?
Phenomenology	How do Pacific Islanders experience rising sea level?	How does the experience of rising sea levels influence individuals' and communities' perceptions of the importance of different conservation decisions and initiatives?	How does experiential and contextual knowledge influence prioritisation of local-, regional-, and global-scale conservation actions?
Case study	How are the livelihoods of farmers affected by changes to tree clearing legislation?	What structures and policy instruments are needed to support legislative change for vegetation management?	When, and how, should landholders be compensated for changes to their property rights?
Grounded theory	What is the theory of conservation intention and commitment?	Who are the types of people that have an intention to conserve and why?	What combination of policy instruments could stimulate conservation behaviour in a given social-political context?
Ethnography	What role do stories play in shaping decisions about "Country" among Indigenous Australians?	How compatible are rationales for traditional and Western "resource" practices?	Can decision-making processes engage with different ways of seeing and managing "resources" and if so, how? <b>Moon et al. 2019</b>

# INDIGENOUS KNOWLEDGE SYSTEMS

- Some of the methods described above may collect traditional knowledge and local knowledge; these would be western science approaches to data collection and analysis
- Indigenous knowledge systems are valid and time-tested knowledge systems and need not be validated with western science methods
  - Indigenous Knowledge: acquired and sustained through unique worldviews and “associated core values, beliefs, and practices that have survived and are beginning to be recognized as being just as valid for today's generations as they were for generations past. The depth of Indigenous knowledge rooted in the long inhabitation of a particular place offers lessons that can benefit everyone, from educator to scientist, as we search for a more satisfying and sustainable way to live on this planet” (Barnhardt and Kawagley, 2005: 9).
- The best available information about environmental systems is often indigenous knowledge; e.g. in the case of Alaska fishery systems this knowledge is living practice 12,000+ years deep



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# Round Island Walrus Hunt

Restoring subsistence hunting in a wildlife sanctuary



- Long tradition of land-based subsistence hunting on *Qayassiq*
- 1962: sanctuary created, hunting prohibited
- Efforts to restore access
- Documentation of traditional management: *cakarpeknaki*
- Key respondent, round table discussion; supplemented with historical sources
- 1995: successful, sustainable co-managed hunt
- Technical Paper 212; Fall and Chythlook, *Cultural Survival Quarterly* (1998)

# Yellow-billed Loon

## Ethnotaxonomy informing management

- Possible listing under ESA in part due to reported subsistence harvest levels
- Ethnographic interviews
- Revision (correction) of harvest estimates
- No ESA listing
- Naves and Zeller, *Journal of Fish and Wildlife Management* (2017)



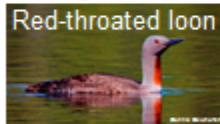
Yuwayu (any loon)

Yuwayu  
(small loon,  
breeding plumage)

Melqupak



Eghqaaq



Yuwayaaghaq  
(small loon,  
non-breeding plumages)

Pacific-Arctic loons



Red-throated loon



Nangqwalek  
(large loon, breeding plumage)

Yellow-billed loon



Common loon



Nangqwalgaaghaq  
(large loon, non-breeding plumages)

Yellow-billed loon



Common loon



# Alaska Board of Fisheries C&T Findings

## Identifying subsistence use patterns

- Subsistence priority and statutory definition: “customary and traditional”
- Formal process: the “eight criteria”
- Qualitative topics: history, harvest and processing methods, efficiency, social organization, values
- Mixed methods: key respondents, participant observation, case studies
- Findings rely on a mix of quantitative and qualitative information
- Helped inform NPFMC’s development of subsistence halibut regulations

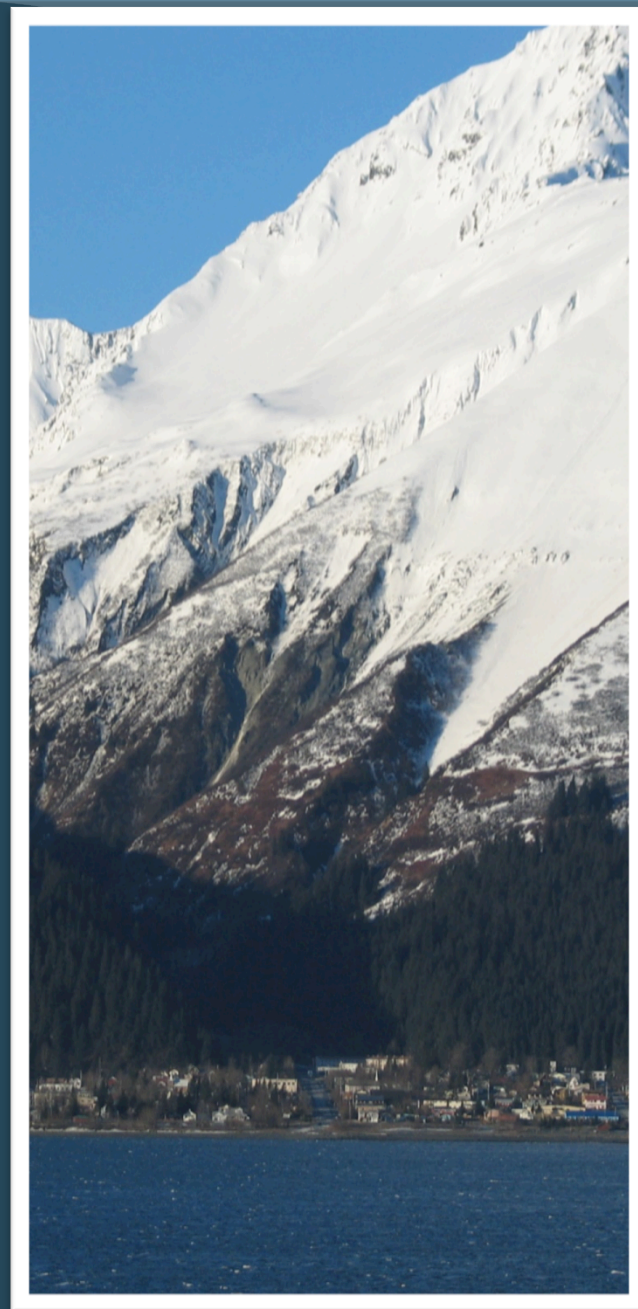


# Qualitative Data Opportunities: Better Context Characterization Fleet Characterization

- Linkage of vessels to communities
- Annual round and vessel diversity
- Vessel crew opportunities and characteristics
- Links to subsistence networks

## Processor Characterization

- Nature of relationship to larger community
- Annual round and processor diversity
- Processing crew opportunities and characteristics



# Qualitative Data Opportunities: Better Context Characterization

## Support Service Sector

- Nature and magnitude of local sector
- Sectors supported, including offshore
- Employee/owner characteristics and opportunities

## Public Revenues

- Local and shared state tax revenues
- Fees (e.g., moorage, gear storage)
- Infrastructure, utilities, and services demand



# Qualitative Data Challenges

## Nature of the fishing communities

- Number relevant to a given management action
- Size/Scale variation
- Regional considerations

## Time and resources available for analyses

- Long-term, broad data collection needs
- Short-term, focused analytic needs



# Qualitative Data Challenges

## Analytic challenges

- Causal linkages to specific actions
- Larger trends and externalities
- Quality of potential community level social indicator data
- Effective use of social dimensions data as indicator of ecosystem status

