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Engaging with women’s knowledge in Bristol Bay fisheries through oral history and participatory ethnography

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Abstract

Research on women’s contributions to Alaska’s salmon fisheries is limited despite their historical engagement in commercial and subsistence fisheries. We interviewed women engaged in salmon fisheries in Bristol Bay, Alaska and illustrate how oral history and participatory ethnography methods contribute to voices being heard, that have been excluded from fisheries research and management. Four broad themes emerged from the interviews; women’s knowledge and leadership; social cohesion; environmental change; and identity and place. Women assume major roles by contributing to the preservation of salmon fishing knowledge and cultural values through cross-generational knowledge transfer. Their participation in fisheries, deep knowledge of local resources, and education of youth of the cultural value of fishing and the environment

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28 are critical to community socio-cultural and economic well-being. We conclude that women's
29 knowledge may be critical in fisheries management decisions, community resilience, and socio-
30 ecological sustainability in a region facing increased threats from climate change.

31 **Emerging voices in Bristol Bay fisheries**

32 Millions of women around the globe are involved in fisheries but their roles are typically
33 overlooked in fisheries management. As research grows documenting these roles, the important
34 question has risen of how to incorporate gender into sustainability research and fisheries
35 management, especially of small-scale fisheries (FAO 2015; Kleiber et al. 2017; Koralagama et
36 al. 2017). With the historically high level of engagement by women in family-oriented
37 commercial and subsistence salmon fisheries, the Bristol Bay region of Alaska is an ideal place
38 to advance such work. For example, since 1974, roughly 33% to 43% of the state's commercial
39 set gillnet permits have been owned by women (Alaska Commercial Fisheries Entry Commission
40 2018), but their voices are unheard and experiences poorly appreciated. Also, local permit
41 ownership has declined over time raising concerns about the sustainability of Alaska fishing
42 communities (Knapp 2011). We therefore interviewed women in commercial and subsistence
43 salmon fisheries in Bristol Bay with oral history and participatory ethnography methods, which
44 provides a platform for women to share their experiences and rich dialogue.

45 When the limited-entry permit system for commercial salmon fishing began in 1973, permits
46 were allocated to families that have historically fished. These include permits for drift gillnet
47 fisheries and set gillnets fisheries, with the former typically conducted by men fishing from boats
48 with longer nets (generally less than 274 m), and the latter conducted by women fishing from
49 shore or small skiffs with shorter nets (generally less than 91 m). Women predominantly
50 participate in set netting from the shore, which generally involves securing a net perpendicular to
51 the shore with one end anchored on shore above the high-water mark. The rising tide then lifts
52 the net in the water column capturing salmon migrating upstream. Women and children
53 laboriously hand pick the fish from the net before low tide. Methods of using set gillnets may
54 vary locally, however, including different net placement on the shore in different commercial
55 fishing districts, and use of skiffs with power reels for valuable species such as Sockeye Salmon
56 *Oncorhynchus nerka*.

57 In Bristol Bay, five of the North Pacific Salmon species are captured in set gillnet fisheries;
58 Chinook Salmon *O. tshawytscha*, Sockeye Salmon, Coho Salmon *O. kisutch*, Chum Salmon *O.*

59 *keta*, and Pink Salmon *O. gorbuscha*, with some species having more cultural and economic
60 value than others, such as Chinook Salmon. Alaska Natives consider salmon to be their lifeblood
61 because they rely on the resource for food security, household economy, and cultural well-being.
62 The inextricable ties between fishing communities and the resources they rely on for sustenance
63 are the *sine qua non* of localized knowledge systems, which are common in small-scale fisheries
64 around the globe (Urquhart 2014; Santos 2015). Here, we focus on the voices of Native women
65 in Bristol Bay salmon fisheries to highlight their contributions to a local knowledge system that
66 preserves fishing knowledge and culture across generations.

67

68 **Oral history and participatory ethnography**

69 This project is in partnership with National Oceanic and Atmospheric Administration
70 (NOAA) Fisheries, Alaska Fisheries Science Center, and Bristol Bay Native Association
71 (BBNA). We apply oral history and participatory visual ethnography methods to develop audio
72 and visual products that participating communities can use to document and share knowledge.
73 This approach and the products, in turn, can advance more inclusive and equitable fisheries
74 management, such as meeting intent of the Magnuson-Stevens Fishery Conservation and
75 Management Act, which calls for taking “into account the importance of fishery resources to
76 fishing communities in order to provide for their sustained participation.”

77 Oral history and participatory ethnography research provides means for voices to be heard
78 that may typically be overlooked in fisheries management. It assumes a political ecology lens
79 that holds that “...the researched are not passive, [but] are knowledgeable agents accepted as
80 ‘experts’ of their own experience” (England 2006). These methods allow for the in-depth
81 documentation of an individual’s experiences and perceptions (Ritchie 2003; Pink 2008; Garrett
82 2011) and subjective and cultural meanings of individual’s relationships with resources. It also
83 captures events that might be missed by other types of research methods, such as surveys and
84 directed interviews. It includes local and traditional knowledge which is increasingly recognized
85 as critical to holistic assessments of environmental change and socio-ecological resilience in
86 Alaska (Raymond-Yakobian et al. 2017, NPFMC 2018). Oral histories, therefore, allow
87 fisherwomen and fishermen to voice their perspectives about the importance of fishery resources
88 in their communities, highlight their knowledge, and inform fishery managers (UNESCO 2007;
89 Colburn and Clay 2012; Calhoun et al. 2016).

90 In this paper we present findings from interviews conducted with twelve women in Bristol
91 Bay during June 2017. We employed a participatory approach (Garrett 2011) in which the
92 women interviewed are involved in shaping final products, such as short thematic and
93 biographical sketch videos, because this approach has the potential to inform fishery
94 stakeholders by providing locally situated knowledge and experience. Interviews took place in
95 the communities of Dillingham, Naknek, and Togiak (Figure 1). Women were selected using a
96 purposive sampling snowball method in which a local key informant recommends potential
97 interviewees, and they, in turn, recommend additional interviewees, based upon participation as
98 fish harvesters and self-identification as native women (Hay 2010). [Insert Figure 2]

99 Interviewees were between the ages of 20 and 70 years and all participated in subsistence and
100 commercial fisheries at one time or another, although some were retired from commercial
101 fishing. We began with broad open-ended questions about their experience fishing and
102 perceptions of environmental change. These allowed women to convey what they felt was
103 important to discuss, rather than the interviewer directing the topic and discussion (Ritchie 2003;
104 Hay 2010). The interviews lasted 1–2 h. Interview content was analyzed using the grounded
105 theory method of inductive coding in which themes emerge from the content of the oral histories
106 (Saldana 2009). All recorded interviews were documented, transcribed, and archived in
107 accordance with the professional standards of NOAA Fisheries' *Voices from the Fisheries*
108 handbook (Bartch et al. 2009). Audio recordings of the interviews are publically available on the
109 NOAA Fisheries *Voices from the Fisheries* website (available:
110 <https://www.st.nmfs.noaa.gov/apex/f?p=213:1.>)
111

112 **Women in Bristol Bay fisheries**

113 Analysis of the oral history interviews of native fisherwomen of Bristol Bay highlighted
114 four broad intersecting themes: women's knowledge and leadership, social cohesion,
115 environmental change, and identity and place. We illustrate these themes using exemplar
116 quotations of what all women discussed in interviews (Saldana 2009; Hay 2010). Figure 3
117 depicts these themes, which are relational within the context of human–environment interactions,
118 where women's knowledge and leadership is central, embedded within the overarching context
119 of identity and place, social relations, and the environment.

120

121 *Women's knowledge and leadership*

122 Women in Bristol Bay have been highly engaged in nearshore subsistence and commercial
123 salmon fishing using set gillnets for generations. Many women explained that with childrearing
124 responsibilities, scheduling, and the safety concerns of being on a boat, it was historically more
125 practical for women to commercial fish from the shore. As one respondent stated:

126 “It’s probably because they had large families and they had young children that they had
127 to care for and you can’t really go out on a boat for 3 weeks if you have eight kids you
128 need to take care of. And so, it was probably practical. You stay on the beach and work
129 with your kids to set net.... I’m sure you’ve heard the men typically drifted and the wives
130 and kids stayed on the beach, and set netted.” – Alannah Hurley, Dillingham, AK

131 The women we interviewed maintained multi-faceted roles in their households and
132 communities. According to the interviewees they were fishers, wives, mothers, leaders, teachers,
133 household managers, business owners, professionals, and elders. These roles required a great
134 deal of knowledge and strength, particularly given the responsibility of undertaking multiple
135 forms of labor simultaneously. As one interviewee stated:

136 “The idea was always to fish like my mom and my grandma and my aunt did, because
137 they were three tough women...kinda up on a pedestal as—and that was before I knew
138 how much work it was, doing what they did. I heard stories, but until you actually do it
139 yourself and see what they are talking about.” – Rhonda Wayner, Naknek, AK

140 [Insert Figure 4]

141 As in other areas of rural Alaska, gathering and preparing subsistence resources requires
142 expert knowledge of resources and the surrounding environment, which is acquired from elder
143 family members and is passed down through generations. Women typically learn to fillet and
144 prepare subsistence salmon for curing or smoking from their mothers and grandmothers.
145 Chinook Salmon is the preferred species of salmon because of their high oil content. Different
146 species of salmon are filleted and cured based upon oil content and flavor produced. The final
147 products are highly valued and provide nutrition over the long, harsh winters in Alaska, and they
148 are often shared with, or bartered between community members to supplement needs.

149 “It’s a very intense process to say the least and so really our entire families take part in
150 putting away fish for the winter as our people have for thousands of years. And, so
151 women primarily now hand down a lot of those skills in terms of how to cut fish, how to,

152 you know, do it right so you don't waste at all, which is very hard. How to make sure you
153 time it with the weather right, you know, all of that is, from my experience has been from
154 my grandma. And I think is the vast majority of everyone else's experience." Alannah
155 Hurley, Naknek, AK

156
157 *Social cohesion*

158 Set net fishing, whether commercial or subsistence, is a family-oriented activity in which all
159 members play a role from a young age. This family-oriented fishing is a way of life that
160 contributes to social cohesion and solidarity within households and communities. The women
161 interviewed were exposed to fishing from an early age. Interviewees joked that they were born
162 on a boat or learned about fishing when they learned to walk, reflecting that fishing was a normal
163 part of their environment during their childhood. Many also discussed their belief that family
164 fishing instills values from a young age by learning to respect the environment, other people, the
165 value of life, and working hard to achieve goals:

166 "I was a little girl. So, I've always been around the fishing splitting table.... Since
167 probably 3 or 4 years old, walking around Grandma and we would be with the fish,
168 watching her do her stuff.... We were always with Grandma and because I had all my
169 siblings and we always would play, but everything revolved around fishing. Everything
170 revolved around putting up the fish, checking the net. We'd all pile in the cars and go
171 check the net, bring the fish back and watch our Grandma for years until we started
172 getting into that role to where we would help." – Gayla Hoseth, Dillingham, AK

173
174 "It's a great way to live. Each one of us has a responsibility and that person knows no
175 matter how young they are they are responsible for that; their job that they're given.
176 Because before the season, we have a meeting. And we talk about who's going to have
177 what job. Because every job is vital. If that person doesn't wake up and doesn't show up,
178 then we can't set or we can't pull. It's team effort. So that's how we teach our kids about
179 life—a good way of life." – June Ingram, Dillingham, AK

180
181 Each summer during the salmon runs, lives, households, and the community revolve around
182 salmon harvesting and preparation. As expressed, fishing is more than a means of feeding

183 families or making money. Rather, fishing is a family practice that develops familial and other
184 social networks, facilitates knowledge production and sharing, and is linked to cultural values.

185

186 *Identity and place*

187 A third major theme was that identity and sense of place were closely tied to everyday
188 practices and experiences of living in fishing households and a fishing community—essentially a
189 way of life maintained with land and waters that has sustained Native communities for millennia.

190

191 “In Clark’s Point where I fish, where my family has fished from the beginning, the entire
192 beach [community] is still people whose parents fished there, whose grandparents fished
193 there. Every single set netter in Clark’s point has ancestral ties to Clark’s Point and to
194 people who have been fishing there for generations. So I think the dedication to not only
195 protecting our fishery, first and foremost for our Alaska Native traditional way of life, but
196 also for a sustainable economy in a commercial fishery is very, very strong and I don’t
197 think I see that changing any time soon.” – Alannah Hurley, Dillingham, AK

198

199 Individuals spoke about how Native peoples, such as the Yup’ik, have been in Bristol Bay
200 for thousands of years, living as stewards of the region’s natural resources. They discussed their
201 pride to carry on their traditional culture, values, and knowledge. The interviews illustrated a
202 belief that their lifestyles, based upon traditional livelihood practices of fishing and hunting, are
203 healthy lifestyles that sustained the health, culture, and economic wellbeing of their
204 communities. Women expressed a deep connection with the earth and natural resources, which
205 they relied on daily for survival.

206 Most of our interviewees did not think of being a fisherwoman as anything out of the
207 ordinary, and they had not really reflected upon themselves in that way. Rather, they associated
208 their Native identities and fishing lifestyles as an embodied way of life that was essential and
209 difficult to express in words.

210 “I guess—you know, it’s who we are. I don’t—I don’t know how to, to really say it cause
211 growing up with it, it’s not nothing—it’s not something that I just learned. It’s something
212 that’s always been with me. Um—so it’s a part of who I am.” – Gayla Hoseth,
213 Dillingham, AK.

214

215 “It’s my life. My lifeblood, it’s in there. I’ll stay in there forever...It’s who I am, I don’t
216 know. I mean, who are you? Who am I? I mean, this is who I am, like you look out the
217 window, and that’s who you are. I get super emotional talking about it I think...I mean as
218 an Alaskan Native, I mean that’s who we are—I mean if you take that away, we’re
219 nothing.” – Leilani Luhrs, Togiak AK

220 [Insert Figure 5]

221 *Environmental change*

222 All of the women interviewed expressed their concerns about ongoing environmental change
223 and climate change that they have experienced over the course of their lifetimes. They witness
224 environmental change first hand during daily practices of fishing, gathering subsistence
225 resources, and hunting. Women observed changes that included warmer and drier weather,
226 warmer water, fewer freezing events, erosion, and change in wildlife distribution and abundance.
227 The lack of a freeze in winter makes travel more difficult and dangerous because frozen water
228 bodies provide travel corridors between communities. Erosion along cliffs have caused
229 relocation of ancestral burial sites. They noticed that drier climate has caused reduced humidity
230 in tundra areas, and the resulting lightning storms posed increased risk of fire in these areas.
231 Decreased precipitation also affects the availability of subsistence berries as expressed in the
232 quote below.

233 “Climate change—I don't know what it's gonna bring this summer. But...this is supposed
234 to be a rainy place. Lot of rain. Damp place. But when we walk, when I walk on the
235 tundra up the hill, it's crunching and dry. And...there's a lot of places where the berries
236 don't grow [anymore].” – June Ingram, Dillingham AK

237

238 The environmental changes have been alarming and caused some women to actively engage in
239 fisheries management. For example, one interviewee discussed broader community impacts and
240 their collective work being done to address a rapidly changing environment.

241

242 “We actually just fought for a proposal—at the Board of Fish to change some different
243 regulations in Clark’s Point in regards to how far out we can fish, because of increased
244 erosion, because of climate change, and we are seeing our rivers change, we are seeing

245 the timing of the fish runs change. These are very real changes that our people can point
246 to because of climate change.” – Alannah Hurley, Dillingham AK

247

248 These example quotations reflect the knowledge women have of their surrounding environments
249 and the changes that women are experiencing first-hand. Given their unique local knowledge
250 based on their relationships with the environment, and active roles promoting sustainability of
251 resources in their communities, their knowledge can inform fisheries management.

252

253 **Concluding remarks**

254 We show how women’s roles are critical to the sociocultural and economic wellbeing of
255 families and communities in Bristol Bay through their active participation in fisheries and cross-
256 generational knowledge transfer. Women’s knowledge and transfer of their knowledge
257 contributes to the resilience of Bristol Bay communities and resources as they instill fishing
258 culture and values in future generations. This is critical to overcome the loss of cultural and
259 biological diversity and rapid environmental changes occurring in the region. Bristol Bay is
260 unique given the region’s Native populations and long history of salmon fishing. Salmon, which
261 provide food security and cultural continuity, are irreplaceable to Alaska communities. Other
262 researchers have demonstrated the significance of commercial and subsistence fishing activity in
263 sustaining culture, family ties, and identity in rural Alaska, including Bristol Bay communities
264 (Holen 2004; Kelty and Kelty 2011), but there is limited research that takes into account the
265 knowledge and perspectives of fisherwomen in Alaska.

266 The women involved in this project expressed a deep connection with natural resources,
267 particularly salmon, which their ancestors have relied upon for thousands of years, and a desire
268 to protect these resources and livelihoods for future generations. The experience and knowledge
269 of these women can inform fishery managers of various aspects of environmental change. For
270 example, their knowledge of change in salmon distribution and abundance over the years, can be
271 used to triangulate data used by managers for decision making regarding the resource. Likewise,
272 their long-term knowledge of tundra and coastline can be used to validate land-change
273 assessments. Moreover, our findings show how women’s participation in Alaska’s salmon
274 fisheries should be directly tied to any management efforts to ensure the long-term participation
275 of communities in Alaska’s salmon fisheries. Specifically, the outmigration of fishing permits

276 has been an issue since inception of the limited entry permit system in Alaska (Knapp 2011), and
277 Alaska's Commercial Fisheries Entry Commission permit database should include a gender
278 descriptor to facilitate progress in this area moving forward.

279 We do recognize that this research would benefit greatly from incorporating interview
280 questions specific to fisheries management actions. However, as a pilot project, our goal here is
281 to promote the inclusion of women in fisheries research and practice as a first step in this area.
282 Beyond Bristol Bay, fisheries research and management have typically included only
283 fishermen's knowledge, overlooking women involved in fisheries who contribute to food
284 security and socio-economic wellbeing (Zhao et al. 2013; Santos 2015; Harper et al 2013; Harper
285 et al. 2017; Koralagama et al. 2017). Efforts to include fisherwomen's knowledge and
286 perspectives in research and management, can lead to more equitable and holistic fishery
287 management.

288 The oral history and participatory ethnography methods we used may be applied in fisheries
289 research elsewhere. They provide a means for gathering qualitative information from individuals
290 with localized knowledge of their environments, providing alternative evidence-based
291 information of the environment (Bennett 2016). Oral history as method may also be used to
292 validate or complement quantitative data. The approach can also serve as an opportunity to
293 develop and build relationships with fishing communities and other stakeholders to develop
294 long-term research that may address broader needs and advance equitable fisheries management.

295

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304

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Figure 1: Bristol Bay region of Alaska, U.S.A.

Author



Figure 2: Jean Lee of Pacific States Marine Fisheries Commission captures video footage of Connie Timmerman picking fish from her subsistence net in Dillingham Alaska in June 2017.

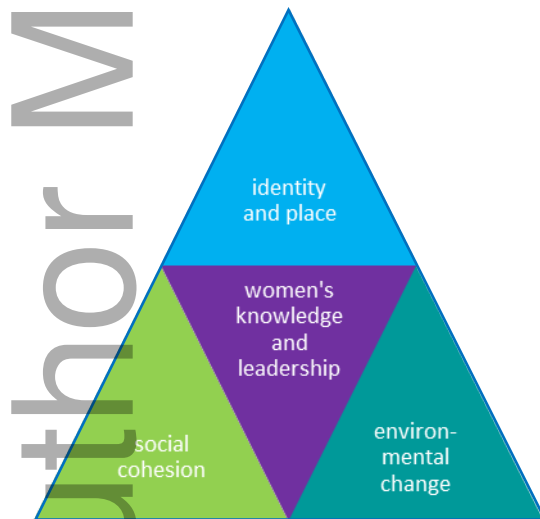


Figure 3: Broad themes representing what women spoke about in interviews.



Figure 4: Jeweline Larson preparing set net rope with grandchildren in Dillingham Alaska, June 2017.



Figure 5: Painted mural in Togiak, June 2017.



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Author Man

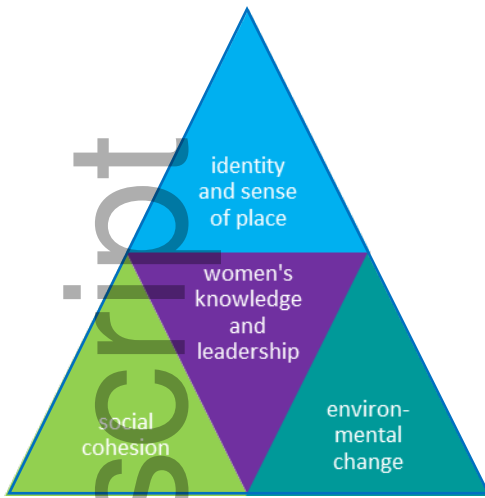


Figure 1: Broad themes representing what women spoke about in interviews.



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