

Larger Than Life: The Emergent Nature of Conflict in Alaska's Upper Cook Inlet Salmon Fisheries

SAGE Open
October-December 2014: 1–14
© The Author(s) 2014
DOI: 10.1177/2158244014555112
sgo.sagepub.com


Hannah L. Harrison¹ and Philip A. Loring²

Abstract

Conflicts over natural resources are often misunderstood as being driven primarily by economic concerns or failings of human nature. However, human dimensions research has shown that conflicts are more often driven by problems and shortcomings in institutions for governance and management. In this article, we explore long-standing conflicts over the salmon fisheries of the Kenai River and Upper Cook Inlet region of Southcentral Alaska, fisheries that are embroiled in a long-standing conflict and controversy. We engaged in ethnographic research with participants from commercial, sport, and personal use fisheries in the region to understand their perceptions of these local “salmon wars.” We find that these disputes are more nuanced than is captured by existing typologies of natural resource conflicts, and argue that conflicts can take on a life of their own wherein people stop responding to each other and start responding to the conflict itself, or at least the conflict as they understand it. This perspective is helpful for understanding how conflict in the region has escalated to a point of apparent dysfunction via a process known as schismogenesis. We conclude with a discussion that considers this conflict as an indicator of institutional failure from a social justice perspective, and argue that attempts for conflict management and/or resolution in cases such as these must focus first on protecting the human rights of all participants.

Keywords

Alaska, complex systems, conflict, dehumanization, environmental values, fisheries, salmon, schismogenesis, social imaginaries

Introduction

In this article, we report on ethnographic research in one of the most hotly contested set of fisheries in Alaska: the salmon fisheries of the Upper Cook Inlet and Kenai River. These fisheries, which target multiple species of wild Pacific salmon (*Oncorhynchus* spp.), support active commercial fleets, a thriving tourism industry, and contribute to food security for numerous households (Loring, Gerlach, & Harrison, 2012). Recent declines in king salmon (*O. tshawytscha*) and the management actions taken by fisheries managers in response have fanned long-standing debates over which sectors should have priority and which bring the most benefits to the region, economic or otherwise. Although fishers across sectors are unified in their reliance on salmon for their lives and livelihoods, disagreements and ill will have persisted among these groups for decades. Despite sharing a core set of values, these groups disagree on multiple points, including the status of the fisheries (whether sustainable or not), the nature of any problem(s) being experienced, and the relative merits of the various solutions being explored (Loring, Harrison, & Gerlach, 2014).

Conflicts over natural resources are a ubiquitous challenge for resource managers and governance regimes. Our definition of conflict follows that of Redpath et al. (2013):

“situations that occur when two or more parties with strongly held opinions clash over [management] objectives, and when one party is perceived to assert its interests at the expense of another” (p. 100). Although some level of conflict is likely inevitable and perhaps even constructive toward achieving sustainability (Ominayak & Thomas, 2009; Young et al., 2010), conflicts among users and between users and managers can be an indicator of institutional failure and can evolve into a pathology that threatens the sustainability of the resources and the communities that rely on them (Bennett et al., 2001; Ostrom, 1990). For example, conflicts can erode trust among resource users and managers, and can undermine the collective action and political will necessary to solve complex problems (Jentoft & Chuenpagdee, 2009; Tolbert & Hall, 2009). Conflicts can also put additional stress on resources by causing people to circumvent sanctioned modes of resource use (e.g., poaching; Loring & Gerlach,

¹University of Alaska Fairbanks, USA

²University of Saskatchewan, Saskatoon, Canada

Corresponding Author:

Philip A. Loring, University of Saskatchewan School of Environment and Sustainability, 117 Science Place, Saskatoon, Saskatchewan, Canada S7N 5C2.

Email: Phil.loring@usask.ca



Table 1. Typologies of Fisheries Conflict.

Type I	Type II	Type III	Type IV	Type V
Who controls the fishery	How the fishery is controlled	Relations among users and user groups	Relations among fishers and other users of the environment	Relationship between fishers and non-fishery issues
What is the property rights regime? Who has power? How is power distributed?	What management technologies and frameworks are used?	Are there ethnic conflicts? Conflicts among different groups (small scale and industrial?)	Are there conflicts with other ecosystem services (e.g., tourism)?	Conflicts over issues such as climate change, economic change, politics.

Source. Adapted from Bennett et al. (2001).

2010; Muth & Bowe, 1998; Sutinen, Rieser, & Gauvin, 1990). Furthermore, disputes over resources can contribute to broader social, political, or ethnic tensions and possibly worsen regional instability and violence (Parenti, 2011).

Conversely, effective conflict management has been shown to improve the sustainability of resource management practices and regimes, and strengthen outcomes such as conservation and food security (Pomeroy et al., 2007; Sayre, 2006; Treves, Wallace, Naughton-Treves, & Morales, 2006). Accordingly, much work has been done to advance our understanding of the origin and nature of natural resource conflicts, some with the specific goal of developing strategies for their effective management (Bennett et al., 2001; Charles, 1992; Davies, Bryce, & Redpath, 2013), and some with the more general goal of developing theories about the human and political ecology of culture and culture contact (Agrawal, 2005; Barth, 1956; Bateson, 1935; Spicer, 1971).

In this article, we build on both of these lines of work, focusing on long-standing conflicts over Alaska salmon fisheries, fisheries that have seen dramatic sociocultural and institutional changes over the last few decades, including transition to limited access regimes and noteworthy growth in non-commercial fishing sectors. We show that while conflicts may begin as simple disputes over contested resources, they can come to function as emergent phenomena—exhibiting properties and processes that do not necessarily trace directly to the actions and intentions of the individuals or groups involved. Specifically, we discuss aspects such as dehumanization and the role of social imaginaries, and how these contribute to “schismogenesis”—a process by which opposing positions become more polarized over time (Bateson, 1935). We discuss how schismogenesis in this case may arise from local people needing to assert otherwise unprotected human rights in a political venue, and conclude with a discussion of what this perspective brings to the goal of effectively managing conflict in fisheries and other domains.

Background

Outside observers often misinterpret the causes of conflicts over natural resources and conflate them with straightforward economic disagreements or failings of human nature

(Adams, Brockington, Dyson, & Vira, 2003; Dickman, 2010; Jentoft, McCay, & Wilson, 1998). To some outside observers, conflicts can appear to be little more than polemic bickering (Sheridan, 2007), wherein interest groups overstate problems and otherwise act disingenuously to bolster their own standing while portraying their opponents as irrational and/or disingenuous (Hilborn, 2007; Howard & Widdowson, 1997). However, essentializing the motivations of people caught up in such conflicts ignores the fact that conflicts are often rooted in such complex issues as cultural identity, power relationships, legacies of mistrust, and differing attitudes and values regarding how resources should be stewarded and developed (Agrawal, 2005; Satterfield, 2007; Sayre, 2006; Sheridan, 2001). If a socially just form of sustainability is a goal, then conflicts over resources need to be interrogated and understood at these fundamental levels. As Ostrom (1990) argues, conflicts are to be expected as waypoints along the road as societies design and refine institutions to sustainably govern resources.

Research on natural resource conflict has been done in a multitude of settings, most notably ranching (Sayre, 2006; Sheridan, 2001), predator control (Nie, 2003), forestry (Satterfield, 2007), and fisheries (Acheson, 1997; Charles, 1992; Pomeroy et al., 2007). Focusing on fisheries, Bennett and colleagues (2001) identify five discrete categories of conflict that can occur (see Table 1; see also Charles, 1992), categories that are arguably extendable to other natural resource systems. As McClanahan, Allison, and Cinner (2013) describe them,

There are no quantitative data available on the frequency of each type, but all are common and may be ubiquitous in small-scale fisheries in developing countries . . . Struggles for resource control and for the mechanisms of control . . . are found in the everyday acts of resistance by many fisherfolk to central state-imposed management of resources . . . Intra-sectorial conflicts are also very frequent—fisheries are diverse industries and conflicts between different user-groups are inevitable. (p. 5)

In addition to this typology, Redpath and colleagues (2013) suggest six common features of conflicts that can create barriers to their effective management or resolution. These are as follows:

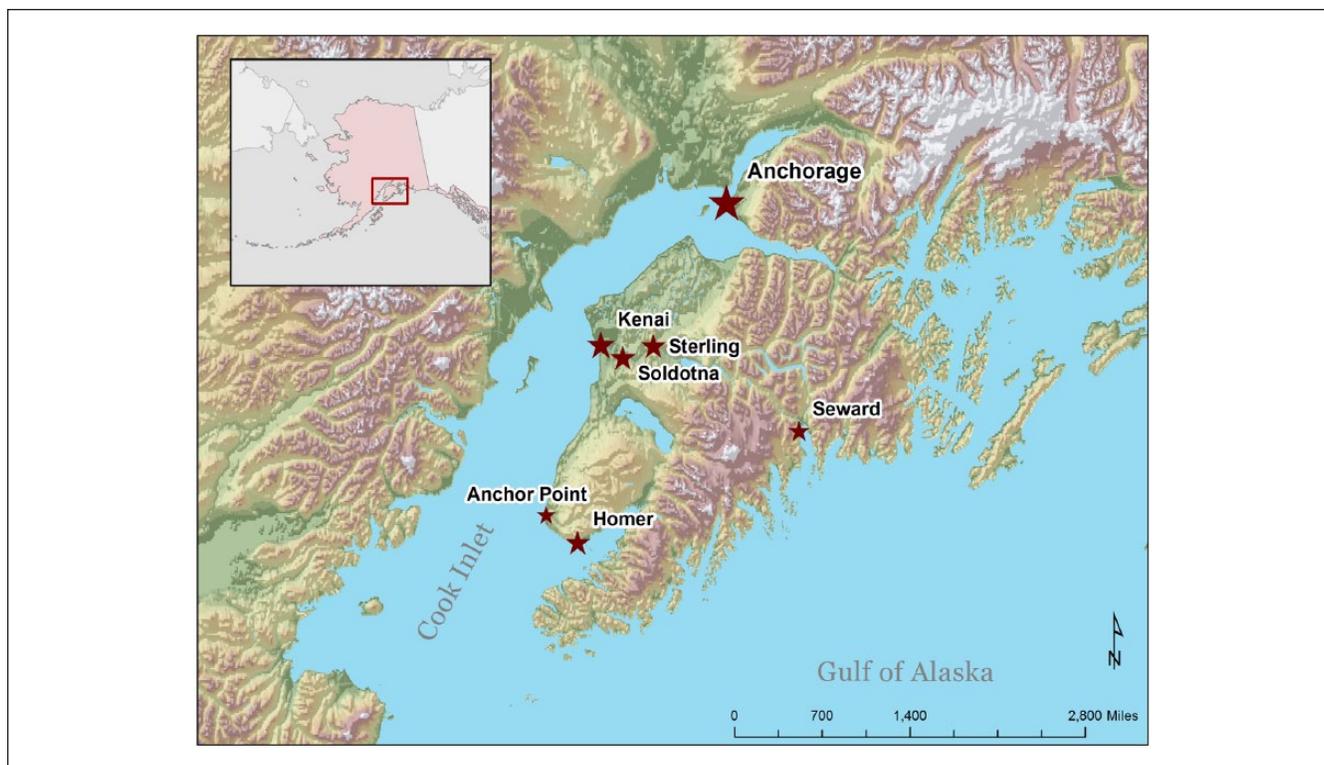


Figure 1. Map of Cook Inlet, the Kenai Peninsula, and major communities in the region.

1. unwillingness of parties to engage, whether because of distrust, differing values, or other reasons;
2. striving for unrealistic goals, such as win–win scenarios that do not reflect ecological limits, or unjust win-lose scenarios;
3. scale asymmetries between management goals and values, and user goals and values, for example, global priorities for predator conservation versus local concerns over predator–livestock or predator–game interactions;
4. financial incentives or disincentives that lock people into conflicting positions;
5. representations of conflict in the media; and
6. dissatisfaction with legislation, such as thinking that is too strict or too lax, leading to perceptions of unfairness or disenfranchisement among groups.

Less has been done to characterize how conflicts change and evolve over time. It is generally understood that conflicts can increase or become exacerbated if not managed to the satisfaction of all involved (Acheson, 1997; Bennett et al., 2001), and Bennett and colleagues (2001) observe that “conflict is not a linear, step-wise process but often a circular one” (p. 374), wherein management issues can lead to conflicts which, in turn, can create other management issues. Fisheries in particular are notorious for having long-standing conflicts (Khan & Neis, 2010; Pomeroy et al., 2007), in part perhaps because fishing cultures tend to be highly

multigenerational and tradition oriented (Acheson, 1981; Miller & Van Maanen, 1979), and because the psychology of conflict in general can have a strong intergenerational signal (Haslam, 2006). Following on these observations, one goal of this article is to shed additional light on these temporal aspects of conflict in the context of our case study.

Study Area

Cook Inlet is a stretch of ocean that reaches 180 miles along the west coast of the Kenai Peninsula, from the Gulf of Alaska to Anchorage, Alaska’s largest city (see Figure 1). The associated watershed covers approximately 100,000 square kilometers of Southcentral Alaska, with major rivers including the Knik, Susitna, Kasilof, and the Kenai. The watershed, and most notably the Kenai River, is home to all five species of Pacific salmon (*Oncorhynchus* spp.), and is also home to over 400,000 Alaskans—over half of Alaska’s total population. The majority of these people live on the mainland, in the city of Anchorage and the surrounding area. About 55,000 of these live on the Kenai Peninsula, which is home to the active fishing ports of Homer, Kenai, and Seward, communities that regularly rank among the top fishing ports in the United States in terms of volume of seafood landed (National Marine Fisheries Service [NMFS], 2010).

In this study, we focus on the salmon fisheries of the Upper Cook Inlet and Kenai and Kasilof Rivers. These fisheries include commercial, sport, and personal use fisheries



Figure 2. Salmon fisheries of the Upper Cook Inlet and Kenai Peninsula: (a) commercial drift fishing, (b) commercial set-net fishing, (c) sport-angling, and (d) personal use dip-netting.

(see Figure 2), which are described in more detail below. Subsistence fisheries, which are common throughout Alaska, are not present here, save the so-called “educational” fisheries that are protected for cultural pedagogical purposes. Many Alaska Natives do participate in the personal use fishery, however (Harrison, 2013).

Commercial fishing. Commercial fishing is the largest of the fishing sectors in the region. Commercial salmon fishing in the Upper Cook Inlet involves two fisheries, both of which are managed as limited entry, which means that fishermen must own one of a limited number of permits to fish. These fisheries primarily target sockeye (*O. nerka*) salmon, but the permits allow for all five species of salmon to be taken. The larger of the two is the drift fishery: a mobile fishery in which crews and vessels fish large reaches of the Inlet using gillnets that they deploy and allow them to drift in the water while catching fish (see Figure 2a). Approximately 450 drift permits are fished, roughly a third of which are fished as a second permit on the same boat. The second commercial fishery

is the set-net fishery (see Figure 2b), a more “stationary” fishery in which roughly 100 permit holders fish leased sites along the coastline of the Inlet using nets that are set to fixed anchors. Set-netters operate on both sides of the inlet, though those who fish on the east side, to the north and south of the mouth of the river, are the group most engaged in local conflicts. There also exists a small group of commercial fishermen who fish with seine nets at the southern mouth of Cook Inlet, though this group is not engaged in this regional conflict.

Together, the drift and set-net fleets catch the lion’s share of harvested salmon returning to the Kenai River. In 2012, the fleet caught approximately 4 million fish, valued at about US\$34.2 million. The bulk of this fish is sold by fishermen to processing plants, both locally and internationally owned, which are located along both the Kenai and nearby Kasilof Rivers. Participation in these commercial fisheries is not limited to Alaska residents, though the majority of participants in the drift and set-net fleets are from Alaska (Commercial Fisheries Entry Commission [CFEC], 2010). In addition,

about one third of the drift fleets are Russian Americans who live in smaller, predominately Russian villages on the Kenai Peninsula.

Sport fishing. On the Kenai River, sport fishing, or sport-angling, is a very popular activity for out-of-state visitors and locals alike (see Figure 2c). Sport-anglers are generally understood as people who fish for the experience of fishing rather than for the procurement of food, though most sport fisheries in the Kenai River do allow the fisher to keep their catch and many Alaskans rely on sport-caught fish to fill their freezers (Loring, Gerlach, & Harrison, 2013). Anglers target sockeye and kings, though the latter are the trophy fish and priority for most anglers, especially tourists. Many anglers come from out-of-state, or at least from communities outside of the Kenai Peninsula.

Sport fishing guides are also included in this group, because they are a ubiquitous and important presence in the sport fishery and the region, and guided tour operations, lodges, gear shops, custom fish processing, and the sale of value-added fish products are all important, related local industries found in Kenai Peninsula communities. In 2008, the last year for which there are data, there were 435 guides on the Kenai River alone, three fourths of whom were Alaska residents (Knapp, 2012).

Personal use fishing. Personal use fishing, also frequently referred to as the “dip-net fishery” (see Figure 2d), targets sockeye salmon, and occurs generally at the mouth of the Kenai and Kasilof rivers, either from shore or by a small watercraft floating along the first six river miles. Only Alaska residents can participate in these fisheries, and those who do generally do so to fill their freezers and share their catch within their social networks (local family, friends, etc.; Harrison, 2013). The majority of participants in this dip-net fishery are from Anchorage and the surrounding area, though some do come from all around the state (Harrison, 2013).

Catch limits are based on the size of the household of an individual participating in the fishery—the head of a household may catch up to 25 fish, and each additional household member may catch 10 fish. The Alaska Department of Fish and Game (ADF&G) also allows for a proxy permit that enables Alaska residents over the age of 65 to have someone fish in their stead, but any fish caught must be given back to the permit holder.

Personal use fishing on the Kenai River in particular has grown in popularity over the last decade; according to the ADF&G website, the numbers of harvested fish have steadily risen, growing from approximately 100,000 salmon in 1996 to over 500,000 in both 2011 and 2012 (ADF&G, 2013). This notable growth has raised concerns among some in other sectors as to whether dip-netting is a sustainable component in the suite of local fisheries, both in terms of the number of fish caught and the stress being put on local beaches and local government, which must clean up the impressive mess that these people leave behind each year.

Fisheries Governance and Management in Alaska

Salmon fisheries in Alaska have had a tumultuous history since the colonization of the state by Euroamerican and Russian settlers. In the first half of the 20th century, commercial salmon fisheries were a dominant economic force in the region, but lax regulations and the widespread use of highly efficient fish traps brought many runs close to collapse by mid-century. With statehood, Alaska took control over fisheries management, but salmon runs continued to have problems into the early 1970s, prompting the state to convert salmon fisheries to a permit-based, limited entry system. In concert with new hatcheries and favorable turns in natural environmental cycles, these changes are widely understood as bringing Alaska salmon runs back from the brink (Alaska Department of Fish and Game [ADF&G], 2009).

Alaska’s present institutions for fisheries governance and management involve multiple state- and federal-level agencies and policies, and are organized primarily in a top-down, “command and control” fashion, though some venues for public testimonies and proposals do exist (Loring et al., 2014). The system has two tiers: one that addresses decisions understood to be political in nature, such as allocation of catches, and a second that addresses decisions thought to be solely scientific in nature, such as identification of sustainable yield and escapement targets (ADF&G, 2009). The former is the role of the Alaska Board of Fisheries (BoF), a committee of political appointees established for the purposes of the “conservation and development of the fisheries resources of the state” (Alaska Statute 16.05.221). The BoF is tasked primarily with making allocative decisions for fisheries, that is, decisions regarding which groups have access and priority. The BoF establishes the management plan for fisheries, and has the authority to set quotas or bag limits, establish open and closed seasons, demarcate allowed fishing areas, and specify allowable methods and equipment for fishing.

Conversely, ADF&G is tasked with the scientific aspects of fisheries management and with managing fish and game populations in a way that supports the Alaska economy and the well-being of Alaskans. ADF&G draws its mandate from the Alaska constitution (discussed below) and other state statutes, which collectively require that fisheries be managed with the sustained use principle and with a philosophy of enhancement—meaning that with fisheries, ADF&G must “do all things necessary to ensure perpetual and increasing production and use of the food resources of state waters and continental shelf areas” (Alaska Statute 16.05.092). ADF&G frequently makes science-based recommendations to the BoF regarding changes to the management plan, though these recommendations are non-binding and the BoF can ultimately choose any source of information to justify its actions, scientific or otherwise.

The Alaska State Constitution, ratified in 1956 and enacted through statehood in 1959, was written with a goal

of curtailing unsustainable harvests of the state's natural resources. In addition to other mandates, Alaska's constitution requires that resources be managed to "the maximum use consistent with public interest" (§1), "for the maximum benefit of its people" (§2), and that "all replenishable [*sic*] resources" will be managed on "the sustained yield principle, subject to preferences among beneficial uses" (§4). The constitution thus guarantees that Alaskans have certain rights to access Alaska's natural resources (McBeath, 2011); however, it is left to the BoF to interpret what is meant by "maximum benefit" and "sustained yield." The former, for example, is generally evaluated in simple economic terms (i.e., the economic development of the resource), and the latter is generally implemented with the concept of maximum sustainable yield (MSY).

In addition to the Alaska constitution, the U.S. Magnuson-Stevens Fishery Conservation and Management Act (MSA) applies to Alaska's commercial salmon fisheries. The law was enacted in 1976 and has been amended several times since (U.S. Congress Public Law 94-265). The MSA establishes a number of "national standards" that must be met for any fishery under its jurisdiction. Most notable is Standard 1, which requires the prevention of overfishing while achieving, "on a continuing basis, the optimum yield from each fishery for the United States fishing industry" (16 USC § 1851). In general, the state constitution and the MSA are complementary in terms of policy goals, and as with the constitution, the MSA's language leaves much room for interpretation.

The life cycle of salmon also plays an important role in how these fisheries are managed, and in the conflicts that emerge among groups. Salmon are anadromous, which means they spend the first part of their life in freshwater streams and lakes and then migrate out to sea, where, depending on species, they mature for anywhere from 1 to 5 years before returning to freshwater to spawn and die. Fishing for salmon happens during this last stage of their life, when salmon return, en masse, to their natal waters. Salmon fisheries are serial in nature, meaning that commercial drift fishers necessarily get first chance at the fish because they operate in the open waters of the Inlet. Set-net fishers get the second chance, followed by dip-net fishers and, finally, in-river anglers. BoF and ADF&G must craft and implement a management plan that not only ensures that the desired number of fish "escape" capture and reach the spawning grounds, but they also need to ensure that each successive user group along the way has adequate opportunity to harvest the resource.

The Kenai "salmon wars." It is intuitive that the serial nature of these fisheries would contribute to the conflict among the various groups, and indeed, many of the fishers we worked with report that they have been fighting over salmon for as long as they can remember. There have been disputes both within and across fishing sectors, but the most notorious and

long-standing of the conflicts are between commercial and sport users.

As noted above, commercial fishers primarily target sockeye, and sport-anglers primarily target king salmon, though commercial fishers are allowed to take all five species, and anglers increasingly target coho and sockeye as well. As such, these groups are in both direct and indirect competition for fish. The latter is especially true for the set-net fishery and sport-anglers; set-netting catches a higher proportion of kings to sockeye than does the drift fleet, in part because kings are more easily ensnared in set-nets, and also (it is thought) because king salmon swim closer to shore and spend more time along the coast before returning to spawn.¹ As we discuss below, sport-anglers generally hold that set-netters catch *too many* kings, and in so doing limit sport fishing opportunities; conversely, the members of the east-side set-net contingent generally maintain that the sport-anglers and guides want to shut them down, and worry that they have the power to do so because of an unfair amount of influence with the BoF (Harrison, 2013).

Arguments on either side of the conflict among commercial and sport fishing are often made in economic terms; that is, sport-angling advocates claim that their sector contributes an order of magnitude more economic value to local communities than do commercial fisheries (Kenai River Sportfishing Association [KRSA], 2008), and vice versa. However, independent analysis of these claims has shown that comparable and high quality data on the direct and indirect economic contributions of both sectors are limited (Knapp, 2012). What is clear is that *both* sectors provide important contributions to the region, economic and otherwise (Knapp, 2012).

In the past few years, the antagonism among sport fishing and east-side set-netters has been amplified by the fact that king returns have been inexplicably lower than expected. This led ADF&G in 2012 to close both commercial set-net and sport fisheries in response, and additional, albeit shorter closures were also enacted for the commercial set-net fisheries in 2013. The reaction from both groups was largely negative, and included acts of protest, appeals to ADF&G and the BoF, accusations of spying, and even legal action. Currently, sport fishing advocates are pursuing legal and political venues for banning set-net fisheries in the region outright (Caldwell, 2014), and some set-netters are now responding with pleas that assert that their very way of life is at risk (Hermansen, 2014). As we describe below, these contours are indicative of the "larger than life" nature that the conflict in the Upper Cook Inlet has achieved over time.

Shared values. The level of passion that local people exhibit over these conflicts underscores the importance of fishing and fishing culture to the people, households, and communities of the Kenai Peninsula. As such, it is important to emphasize here that, despite the seemingly intractable nature of these conflicts, our previous research indicates that people

on all sides share in a set of core values (Loring et al., 2014): They place great value on fishing as an activity that brings their families together, they appreciate the importance of salmon fisheries to their communities and culture, and all groups share in a desire to take whatever steps necessary to protect Cook Inlet salmon runs. Thus, the devil, as they say, is in the details of how different groups see best to protect and implement these values.

Methods

In 2011 and 2012, the authors engaged in ethnographic research with people from multiple fishing sectors in the region, including sport-anglers, sport-charter operators, commercial fishers, and personal use fishers. We used a mix of common ethnographic techniques (Clifford, 1983; Weiss, 1994), including direct observation, participant observation, semi-structured interviews, and informal interactions with fishers at diverse venues, including street rallies, coffee shops, fish processing facilities, and bars. Our research takes a phenomenological approach (Creswell & Maietta, 2002), meaning that the goal is not to produce a set of findings that are generalizable to the community at large but to learn about the essence of a particular local phenomenon—the salmon wars—by seeing them through the eyes of multiple participants. This is different from a grounded theory approach, which focuses on disembodied “texts” rather than individual experiences (Clifford, 1983), though we do use textual methods to guide our analysis (see below). Each individual’s perceptions are considered equally important and valid for exploring theories that address phenomenological questions about the salmon wars in particular and that are informative to conflicts over natural resources in general (Evans-Pritchard, 1940). As such, where we use quasi-quantitative language in our discussion (i.e., noting the number of interviewees that expressed similar ideas or using words such as “majority”), these should be understood as narrative devices and not as data by which meaning should be weighed.

For the informal interviews, we recruited using a combination of happenstance encounters and purposive snowball sampling, the latter beginning with leaders of local fishermen’s associations. We began these interviews by sharing our background and goals as researchers, and then proceeded with a conversation organized around a set of pre-established talking points, which included life history (i.e., how they started fishing), the biggest issues facing the fishery, conflict, and the future of the fishery. In many cases, these interviews involved not just the skippers or business owners but also involved crew and spouses, who are regularly active participants in these family-run businesses. In total, we interviewed 13 drift fishers, 10 set-net fishers, and 10 sport-charter operators; the goal of recruitment was not to achieve a “representative” number of participants, but to add depth and diversity as possible to our understanding of local conflicts through individuals’ experiences across sectors. Discretion with respect to recruitment and interpretation is largely a learned,

experiential skill of the ethnographer (Clifford, 1983; Creswell & Maietta, 2002); that being said, Creswell and Maietta (2002) do suggest 10 interviewees as a benchmark for qualitative phenomenological research.

Interviews with personal use dip-netters required a modified recruitment process because this group is much larger and more diffuse (over 30,000 individuals from communities across Alaska held dip-net permits in 2012). The only practical way to identify interviewees was to approach them while they were fishing on the beaches at the mouth of the river. We selected candidates to approach on a happenstance encounter basis, with the only discriminating priority being that we targeted fishers who were taking breaks or cleaning fish so that we would not disrupt ongoing fishing activities. Seventy-two individuals were interviewed from this group using the same talking points as above, but with conversations lasting between 10 and 20 min.

Field notes were taken daily and interviews were transcribed with the aid of recordings (except those with dip-netters). As this project involved two ethnographers contributing equal effort, nightly debriefs were held to compare, contrast, and learn from our individual impressions and interpretations (Heider, 1988). After the fishing season, interviews and field notes were transcribed and coded with Atlas.ti, version 6.2, for the purposes of aiding our synthesis. Eleven deductive codes were applied (first author) based on the five categories of conflict and the six barriers to conflict resolution discussed above. Inductive coding (second author) was used to identify emergent issues.

We did not approach this work with a theoretical framework selected a priori, though the two typologies of conflict noted above were identified during the course of this research as having analytical utility. However, our previous findings point toward the relevance of cybernetics and in particular the concept of schismogenesis for understanding the nature of conflict escalation among groups (Loring et al., 2014). As noted above, schismogenesis is a process that was described first by Bateson (1935) as a pathology of culture contact that is analogous to arms races, wherein people escalate in their responses, in part because they are responding to the rivalry itself (or how they imagine it; see also Spicer, 1971). It occurs as a result of one or multiple positive feedback loops, where “uncompromising display of commitment . . . and the extreme speech and other acts generated by this competition, provide [all] parties, mutually, with the necessary pretexts for their [next actions]” (Brox 2000, p. 398). A question we had going into the present analysis was whether our previous intuition regarding the relevance of schismogenesis in this case would be supported by our ethnographic work, and if so, if the present research could shed light on the processes by which schismogenesis occurs.

Results and Discussion

One area of interest in our analysis related to the fit of Bennett and colleague’s (2001) typology of conflict. People

related concerns regarding all five types of conflict, though not all five were necessarily noted by people from all sectors. By and large, people discussed conflicts among and between sport and commercial fisheries, but personal use fisheries factored into people's perceptions of local conflict, as well.

Type I conflict, that is, conflicts over who is in control of resources, was raised by both commercial fishers and sport-anglers; eight commercial fishers expressed similar displeasure with the structure of the BoF, arguing that the current selection of BoF appointees favors sport fishing interests. "It's all a buddy thing, getting on the Board of Fish," explained one commercial fisherman; another used stronger language, describing BoF as a "corrupt" group that practices "ballot box biology." He continued,

It is pretty politicky [*sic*]. It just doesn't seem like it should be. It seems like . . . somebody should be like, "Okay, here's the user groups, and let's be fair. Everybody wants a whack at 'em. Let's keep the politics out of it and just come up with a sensible system for managing it." But it just doesn't seem like it's that way.

Similarly, three sport-angling guides shared displeasure with the role played by ADF&G; they questioned its intentions, insinuated unfair allegiance to the commercial fishing sector, and argued that ADF&G takes too many liberties when interpreting the BoF management plan. Said one sport fisherman,

Fish and Game are supposed to be at the top, the professionals. Okay? The Board of Fish members usually trust Fish and Game and their recommendations. To go against the recommendations the Dept. of Fish and Game make, you have to have some pretty good evidence and scientific information to go against what Fish and Game says. Now, what makes it all kind of crazy is Fish and Game isn't always truthful and they skew the numbers sometimes to sway decisions by the Board of Fish members.

Type II conflict—conflict over the methods of management—were also mentioned by both sport-anglers and commercial fishers. In some cases, these mentions focused on perceptions that BoF was unwilling to include local knowledge in management. "We spend all this time out on the Inlet," described one drift fisher, "but they tell us that we don't know what we're talking about when we say that their [fish] counts are wrong." Similarly, a set-netter explained, "We testify [at BoF meetings], we plead with [ADF&G], we offer to pay for a study of how kings swim in the Inlet, but they don't listen. They do what they want." A sport-angler also explained, "I've been fishing this river for decades, and I see the decline in the age and size of king salmon, see that they are changing how they swim in the river. [ADF&G] however says the science doesn't agree."

The majority of commercial fishers interviewed also raised questions about whether ADF&G and/or the BoF were abiding by the laws set out in the MSA, specifically regarding appropriate use of the maximum sustained yield concept.

Conversely, six sport guides raised skepticism about the scientific basis for ADF&G's management actions. Specifically in question is the scientific validity of the notion that "over-escapement" is possible. For example, one angler described the concept as "ridiculous," and claimed that "over-escapement of rivers happens frequently in Alaska and none of those runs have collapsed."

Type III conflict—conflict among users—was the most common type of conflict encountered in our interviews, mentioned in some form by a total of 59 respondents. Concerns that commercial fishers were "catching their fish" were raised by 13 personal use fishers. Likewise, three commercial fishers commented on the recent growth of the personal use fishery and how it is not scrutinized by managers to the same extent as the commercial fleets. Competition for salmon is the common theme to all noted disputes among commercial and sport fishers, as well.

However, depending on the interpretation of the categories provided by Bennett and colleagues, it is unclear whether these conflicts are best described as conflict *within* a fishery (Type III), or as conflict among fishers and users of other ecosystem services (Type IV). An example is how set-net fishers catch king salmon, which is not the primary species they target, and which can be at odds with the goals of sport-anglers who do target king salmon and which contributes to basic conservation concerns as well. As one sport-angling guide explained, "We make better use of Chinook [king salmon]. They are better for tourism and more valuable for the community when set-netters don't catch them."

Type V conflicts were also raised by interviewees from all of the groups interviewed, all centering on different visions for the economic future of the region. Some commercial fishers, for example, argue that sport-anglers do not recognize or value the contributions made by commercial fishing to the Kenai Peninsula culture and economy. "We live here, we spend our money here, we build our boats here, and we send our kids to school and college here," explained one commercial fisherman. Likewise, many sport-anglers assert that their fishery can provide more to the economic future of their communities, arguing that sport fishing and related industries are capable of deriving more economic value from king salmon than would be lost by eliminating the set-net fishery from the Upper Cook Inlet altogether. "We'd be better off without them!" exclaimed one sport fisher.

Many personal use fishers also raised a different Type V concern, questioning whether commercial fishing should continue to be a part of their local communities and economies. The argument was that by marketing their salmon out of state, commercial fishers are undermining local food security and community sustainability. One commercial fisherman also acknowledged this issue, saying, "I know we'd have better standing here if more of our catch stayed in Alaska."

Thus, while the typology of conflict suggested by Bennett et al. (2001) is useful for describing many of the various disputes reported to us by fishers in the Upper Cook Inlet, we

nevertheless find that it is difficult to apply here for analytic purposes. There are, for example, ambiguities about how to interpret the difference between Types III and IV conflicts in scenarios of mixed stock fisheries or upstream/downstream trade-offs. More generally, we are concerned that the typology may be too reductionist; collectively, the people whom we interviewed report all five types of conflict in different ways that were not so clearly delineated. This suggests to us that these conflicts are not discrete or isolated, but closely related and perhaps even indistinguishable from one another from the perspectives of local fishers. As such, our interpretation is that these are not different types or instances of conflict, per se, but manifestations of a larger systemic conflict that can take on multiple forms over time.

Conflict, Social Imaginaries, and Schismogenesis

We argue that a more accurate way to describe the salmon wars in the Kenai Peninsula is, in the language of cybernetics, as an emergent phenomenon. Emergent phenomena are outcomes of a system that have their own properties and processes that cannot be directly or mechanistically related to specific actions and interactions within a system. In the Upper Cook Inlet, people are not responding (only) to the behaviors or actions of individuals, but to their own social imaginary of the conflict, with its various symbolic meanings, political interpretations, caricaturized antagonists, and historical legacies of slight and perceived injury.

Systems theory posits that complex emergent phenomena are the result of more simple patterns or behaviors that interact synergistically. One such pattern we encountered involves the role of social imaginaries, a concept that describes how people come to understand the world and issues around them through a socially constructed frame of reference that may or may not accurately represent the true nature of the issues being faced or the values and intentions of others (McLaughlin, 2011; Stephenson, 2011). One way that we experienced social imaginaries in this study was in the form of the dehumanization of others. Dehumanization describes when any group or individual denies or refuses to recognize in others the rights, traits, and qualities of being human (Haslam, 2006). In its most extreme form, dehumanization involves when people are treated as non- or sub-human, but dehumanization also includes when the values, needs, and rights of individuals are delegitimized and when people's individual natures and qualities are ignored, caricaturized, or generalized about (Bar-Tal, 1990; Stephenson, 2011). Although stereotypes and caricatures of fishers are not uncommon in fishing communities and can even play into a sense of identity and culture (Miller & Van Maanen, 1979), the concern here is when they are used to “exclude specific populations from enjoying a full share of their human rights” (Stephenson, 2011, pp. 1-2). The United Nations' Universal Declaration on Human Rights provides important guidance, establishing as it does such diverse rights as the right to food,

the right to livelihood security, and to cultural self-determination (United Nations, 1948).

A common form of dehumanization that we encountered was widespread generalization of the other and their views by interviewees through use of third person pronouns, that is, “they” and “them.” A sport-angler complained, “There’s just no talking to, no getting through to them.” Likewise, a dip-netter protested, “They don’t care about the fish, only profits.” “The last thing you want is your daughter dating one of them,” is yet another example, in this case spoken by both a commercial fisherman and a sport-charter operator. Explained one sport guide,

I know that these people are my neighbors, I mean, I see some of them in the grocery store, and I don’t mean to generalize about them so much, but, it’s hard not to, it’s just out there, bigger than us, so just you feel like you have to fight back or get rolled over.

A second example of social imaginaries relates to the residency of commercial fishermen. We have encountered a widespread belief among sport-anglers and dip-netters that the majority of commercial fishermen are not Alaska residents. We heard estimates ranging from “most” to “more than half” of the commercial fleets being from outside of the state. In fact, the majority of participants in Cook Inlet drift and set-net fisheries are Alaska residents, accounting for 71% and 82% of permit holders, respectively, as of 2010 (CFEC, 2010). Nevertheless, we argue that this misconception contributes to dehumanization because state residency is not a prerequisite to the right to hold a commercial fishing permit in Alaska. As such people who make this critique seek to deny non-residents of these rights.

Similarly, some sport-charter operators used the phrase *bycatch* to describe the harvest of king salmon by east-side set-netters, and argue that their sector should have preferential access because they earn more money per pound with the fish through tourism. Although it was clear that most people who used the term did not intend it to be pejorative, we argue that its use as a discursive strategy is illustrative of how one side sees the king salmon issue in quite different terms than the other (sport fisheries as a matter of waste, set-netters as a matter of rights); also, we argue that the use of the *bycatch* language carries intonations of dehumanization as defined above, intentional or not, because the implication is that set-net fishermen should have less right to the fish than do sport users, and that economic valuation should be the basis of the distribution of those rights. Both implications are at odds with the doctrine on human rights established in the UN Declaration.

Managers and biologists are also regularly caught in the middle of fisheries conflicts (Acheson et al., 1985; Paredes, 1985), and that is the case in Cook Inlet, where they too are regularly subjected to dehumanizing acts (see Figure 3). Although not explicitly interviewed as a part of this research, these people are also members of the local community; those



Figure 3. Set-netters protesting a fishing closure in 2011.
Note. Dehumanization is not just at play among different groups of fishers, as managers face stereotypes and ill will from their neighbors in the public sphere as well. This image evokes both dehumanization and intergenerational issues.

with whom we interacted are all too aware that their actions have significant impacts on the livelihoods of their neighbors, and they lamented the vitriol with which many of their neighbors regarded their personal and professional competencies and ethics. Even some members of the BoF were observed during this research as treating area biologists with less than professional courtesy.

Finally, we also witnessed an evocative example of dehumanization while attending a local community parade in the region; marching in the parade were members of the local set-net association, who were handing candy to children in the crowds. One of the authors observed a child's mother knocking the candy from her child's hand. "Don't eat that candy!" she exclaimed, "We don't support commercial fishing." In so doing, the woman was implicitly denying the right of these local residents to participate as equals in the fellowship of a valued community tradition.

Conflict and Schismogenesis

This brings us to the concept of schismogenesis (see Figure 4) as an explanation for how the conflict has escalated over time. Unsatisfied with the venues for public input offered by the existing governance system, groups on all sides are increasing the stakes: resorting to protests, name-calling, and political and legal action. They dehumanize each other, by and large unintentionally we believe, by perpetuating inaccurate information and appealing to economic arguments that bolster their own standing while devaluing the regional economic and cultural contributions of their neighbors. An unfolding example is the proposed ballot initiative by sport fishing proponents to ban set-net fishing in the region outright. Many sport users we spoke with repeatedly expressed

that their intent is not to cause harm to commercial set-netters and their livelihoods. Yet, should such a ballot initiative be successful, an entire sector of fishing that has been active in the region for decades would be essentially eliminated, leaving hundreds of people without jobs. Based on our interactions with sport fishers in the region, we are skeptical that this initiative accurately reflects the values of most sport fishers on the matter.

Whether this initiative represents the collective will of sport fishers across the region or just the machinations of a few outspoken and politically powerful activists is unclear, but nevertheless it will likely be seen as another "us versus them" development by many set-netters. It was obvious to us that many set-netters felt persecuted and genuinely afraid for their futures. In addition, the loss of a commercial fishing sector for the region could also have negative long-term impacts on its economic resilience and even food security (Loring et al., 2013), given that diversity is widely considered to be an important component of regional resilience and sustainability. What's more, climate change is expected to create new challenges for Alaska's salmon runs, and dramatic warming has already been observed in the Cook Inlet watershed (Mauger, Davis, Davis, Ruffner, & Geist, 2011); these conflicts arguably severely diminish community resilience and ability to manage such challenges (Jentoft & Chuenpagdee, 2009; Jentoft et al., 1998)

Quite aptly, then, does Brox (2000) describe schismogenesis as a "disastrous logic" through which people do not always fully "envisage the aggregate implications of their [behavior]" (p. 390).

Intergenerational Aspects of Schismogenesis

One interesting and previously unexplored aspect of schismogenesis that we see in this case is the role of intergenerational transmission of conflict. As is common to small-scale fisheries, fishing in the Upper Cook Inlet is a family affair and it is not uncommon to find three generations working together on a boat or on the beach. "This is an Alaskan thing to do, a way of life," explained one dip-netter, "I want to be able to teach my kids that." As such, many interviewees addressed the intergenerational aspects of conflict, and an overriding concern raised by a majority of people we encountered on all sides of the issue was "the mess" that they believed is being handed down. A set-netter, when asked about the future in his business for his children and grandchildren, cried while trying to explain, "It's going to be hard for us. For my son . . . it's just really hard . . . when you've worked this hard . . . It's who we are."

As in the example from the parade related above, the younger generations are experiencing these fisheries, in many cases for the first time, through the lens of conflict. We observed countless children present, for example, at rallies by set-netters during fishing closures in 2011 (see again Figure 3). This is not a criticism, but simply an observation

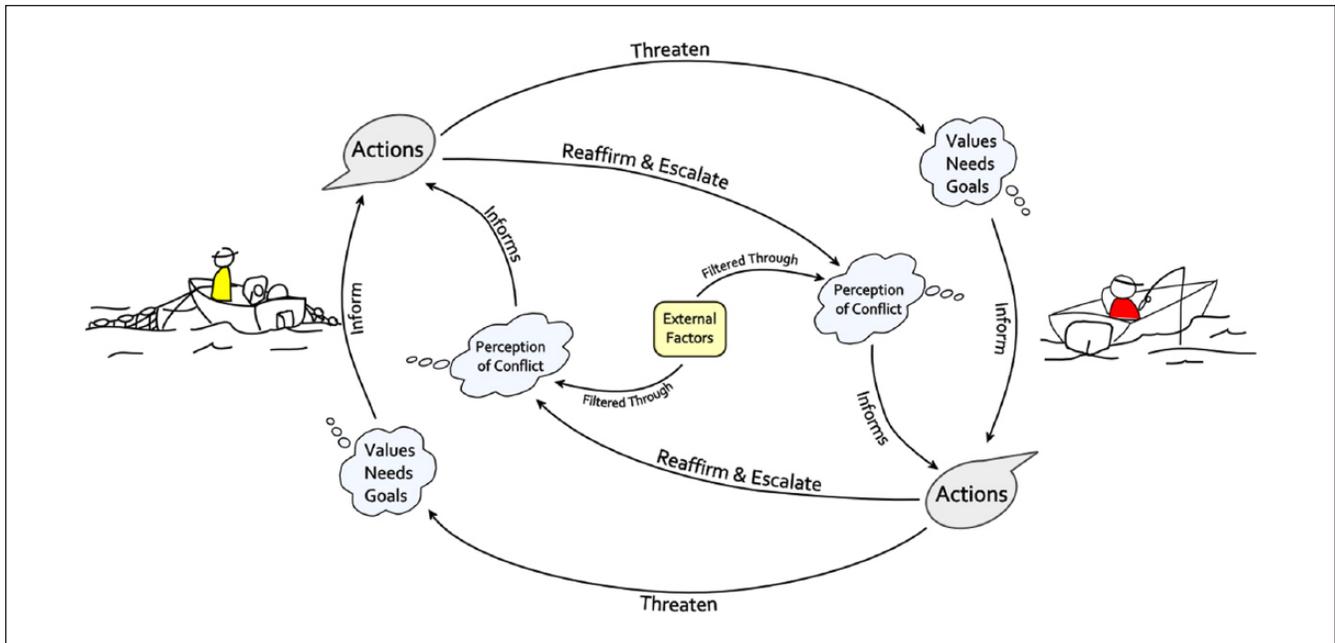


Figure 4. Conflict escalation (schismogenesis) in Cook Inlet salmon fisheries.

Note. When their values, needs, and goals are threatened, people respond. Each person develops a perception of the conflict that informs how he or she interprets the actions of others and also how that person thinks about external factors such as environmental change (see Loring, Harrison, & Gerlach, 2014).

that begs the question of how younger generations are constructing their own ideas of the conflict and of the character, and value the people in other sectors.

Moving Toward Conflict Management in the Upper Cook Inlet

Having potentially identified the explanatory process at play, we now turn to what this means for conflict management. Redpath and colleagues (2013) note that people's inability to acknowledge the rights, legitimacy, legality, and standing of other groups can result in an unwillingness to engage with the problem on all sides. In other words, people begin to exhibit a sense of futility or mistrust in the sanctioned venues for conflict management. It does not necessarily mean that people disengage entirely from the issue, but mistrust nevertheless constrains options for collective action. Such feelings were evident in our research; for example, a sport-angler complained, "There's just no talking to, no getting through to commercial fishermen or ADF&G." Likewise, a commercial fisherman, when referring to recent legal action taken by the United Cook Inlet Drift Association (UCIDA), a local trade organization, described the suit as "the only way to communicate with [the BoF]." Finally, many fishers, especially the oldest respondents, also regard these conflicts with a sense of futility and fatality. "I'm tired of fighting to fish," explained one drift captain, who was echoed by a sport-charter operator, who said,

This is going to go on until all the salmon are gone. It is going to take someone much younger than me to do anything about it, because I can't look at them. They're going to fish these salmon until there's nothing left.

Davies and colleagues (2013) suggest that facilitated and participatory approaches to conflict management can overcome seemingly intractable issues. Their approach shows promise, though they admit that "further research is required to develop . . . approaches for dealing with complex situations involving strong feedbacks and interactions" (Davies et al., 2013, p. 944). We argue that attention to schismogenesis, and specifically intergenerational issues, which are common to fisheries conflicts (Acheson, 1981; Miller & Van Maanen, 1979), would make their process more robust in this regard. For example, a focus on enabling participants to recognize shared values and to pursue them as partners rather than antagonists is essential; acts of goodwill from one side that are contradictory to the social imaginaries held by people on other sides may short-circuit the feedback loop shown in Figure 4, though such acts will likely also be perceived with skepticism. Drawing again from the literature on violent conflict (Barber, 2008), progress here might also require targeted engagement with the younger generations. Although they are no doubt learning to see these fisheries only through the lens of conflict as well, they may not be as fully entangled in the mistrust and unwillingness to engage that we have observed among their progenitors. As Stephenson (2011) concludes,

What is most pressing in addressing any abiding social conflict is the development of mechanisms that allow the parties both to grasp and respect the imaginaries of the other and to act on that knowledge in good faith. (p. 7)

Schismogenesis, the Commons, and Human Rights

Some have suggested that these sorts of conflicts are unavoidable, the products of human greed and shortsightedness, but this research contributes additional evidence that such explanations are overly simplistic and not borne out in empirical data regarding human behavior and motivations. Rather, conflicts are indicative of institutional failure, and as Ostrom (1990) suggests, conflicts are to be expected as societies develop and refine their institutions for governing the commons. Building on these two lines of thought, it stands to reason that these salmon wars are a strong indicator that fisheries governance in Alaska is still very much a work in progress. It has been several decades since commercial salmon fisheries in Alaska were converted to a limited access system. At best, this averted ecological collapse, but we question whether it merely replaced a human–environment conflict with a venue for human–human conflict. In other words, a tragedy of the commons may have been averted, but a different tragedy now plays out, manifest in social turmoil rather than ecological degradation.

Like the tragedy of the commons, schismogenesis is process of escalation via feedback loop. Brox (2000) suggests that it happens when people holding shared values, but seeking different goals, must confront each other politically. We propose a refinement of this premise: that conflict schismogenesis happens when people lack adequate institutional protections of their basic human rights, and must therefore negotiate them politically and within the discrete context of natural resource disputes. There is no evidence to our knowledge that shows definitively that these fishing sectors cannot coexist sustainably. Yet, the discourse has elevated to the point of suggesting the elimination of an entire way of life. We suggest that if local people on all sides were secure in knowing that regardless of any actions taken for conservation, their livelihood security was ensured, then an entirely different tone of collaboration would be present.

Conclusion

We have attempted here to highlight the systemic nature of conflict and explore what this means for conflict management as well as for the management of fisheries and other shared resources. It is too easy to misinterpret the politicized and seemingly exaggerated character of conflicts as indications that people do not have legitimate concerns, or to blame these conflicts on perceived failings of human nature. Our goal, thus, is that future solutions to conflict management do not proceed in an overly simplistic or mechanistic fashion,

treating the symptoms of conflicts rather than the cause. Instead, conflicts should be interrogated as opportunities to identify improvements to institutions for natural resource governance systems.

We also present this work as a contribution toward a comprehensive theory of natural resource conflict. In addition to cybernetics, cultural theory (Thompson, Ellis, & Wildavsky, 1990) is also likely useful for understanding conflicts such as this, as it attends to basic assumptions regarding human rights and human organization that underlie people's social and economic values and behavioral strategies. Future work that pairs ethnographic and cybernetic approaches could learn much about how people create social imaginaries of environmental conflicts, how these fit into broader socially constructed landscapes, and how they are transmitted across social networks and down to subsequent generations. Richard Dawkins' (1989) concept of the meme may be instructive here for understanding how social imaginaries persist and change over time.

Finally, we also hope that this work informs those working to manage these conflicts in Alaska and elsewhere. The salmon fisheries of the Upper Cook Inlet are of huge importance to the people, communities, economies, and cultures of the region, and it is encouraging that local people share so much passion over how these fisheries ought to be managed. A widely accepted tenet of sustainability science is that the more people rely on local resources, the more likely they are to fight to ensure that those resources are managed sustainably. However, what we find in Upper Cook Inlet is that conflict, escalated to a point of dysfunction, can turn the otherwise positive passion and engagement of local people into a disruptive force that reduces the resilience of local fisheries and fishing communities to change or surprise. Currently, these conflicts have not entirely undermined attempts to conserve and manage salmon resources in the region, but with climate change likely posing serious long-term challenges to salmon fisheries in Alaska and elsewhere, unless local people find a way to transcend these bitter debates now, a case could be made that the future of Kenai River salmon is tenuous at best.

Acknowledgments

The authors would like to thank Craig Gerlach, Quentin Fong, Alysa Loring, and the article editor and two anonymous reviewers for their contributions to this article. We would also like to thank the many fishers and other residents of the Kenai Peninsula who so graciously participated in this project.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research and/or authorship of this article: This research was

supported in part by a National Oceanic and Atmospheric Administration (NOAA) Regional Integrated Science and Assessments (RISA) cooperative agreement (Grant NA11OAR4310141), the Alaska Center for Climate Assessment and Policy (ACCAP).

Note

1. Only preliminary work has been done to evaluate the behavior of king salmon in the Inlet prior to spawning (see, for example, Welch, Porter, & Winchell, 2013).

References

- Acheson, J. M. (1981). Anthropology of fishing. *Annual Review of Anthropology*, *10*, 275-316.
- Acheson, J. M. (1997). The politics of managing the Maine Lobster industry: 1860 to the present. *Human Ecology*, *25*, 3-27.
- Acheson, J. M., Leary, T., McCay, B., Orbach, M., Peterson, S., & Spoehr, A. (1985). Comments on "any comments on the sociology section, Tony?" *Human Organization*, *44*, 182-186.
- Adams, W. M., Brockington, D., Dyson, J., & Vira, B. (2003). Managing tragedies: Understanding conflict over common pool resources. *Science*, *302*, 1915-1916. doi:10.1126/science.1087771
- Agrawal, A. (2005). Environmentality. *Current Anthropology*, *46*, 161-190.
- Alaska Department of Fish and Game. (2009). *Sustaining Alaska's fisheries: 50 years of statehood*. Juneau: Author.
- Alaska Department of Fish and Game. (2013). *Harvest info-Cook Inlet personal use salmon fishery*. Author. Retrieved from <http://www.adfg.alaska.gov/index.cfm?adfg=PersonalUsebyAreaSouthcentralKenaiSalmon.harvest>
- Barber, B. K. (2008). *Adolescents and war: How youth deal with political violence*. Oxford, UK: Oxford University Press.
- Bar-Tal, D. (1990). Causes and consequences of delegitimization: Models of conflict and ethnocentrism. *Journal of Social Issues*, *46*(1), 65-81. doi:10.1111/j.1540-4560.1990.tb00272.x
- Barth, F. (1956). Ecologic relationships of ethnic groups in Swat, North Pakistan. *American Anthropologist*, *58*, 1079-1089.
- Bateson, G. (1935). Culture contact and Schismogenesis. *Man*, *35*, 178-183.
- Bennett, E., Neiland, A., Anang, E., Bannerman, P., Atiq Rahman, A., Huq, S., . . . Clerveaux, W. (2001). Towards a better understanding of conflict management in tropical fisheries: Evidence from Ghana, Bangladesh and the Caribbean. *Marine Policy*, *25*, 365-376. doi:10.1016/S0308-597X(01)00022-7
- Brox, O. (2000). Schismogenesis in the wilderness: The reintroduction of predators in Norwegian forests. *Ethnos*, *65*, 387-404. doi:10.1080/00141840050198045
- Caldwell, S. (2014, July 23). Court finds urban setnet ban initiative can move forward. *Alaska Dispatch*. Retrieved from <http://www.adn.com/article/20140723/court-finds-urban-setnet-ban-initiative-can-move-forward>
- Charles, A. T. (1992). Fishery conflicts: A unified framework. *Marine Policy*, *16*, 379-393. doi:10.1016/0308-597X(92)90006-B
- Clifford, J. (1983). On ethnographic authority. *Representations*, *2*, 118-146. doi:10.2307/2928386
- Commercial Fisheries Entry Commission. (2010). *Permit statistics for Alaska's limited entry salmon fisheries: 2001-2010*. Juneau, AK: Author. Retrieved from http://www.cfec.state.ak.us/RESEARCH/salmon/salpmt01_10.pdf
- Creswell, J. W., & Maitetta, R. (2002). Qualitative research. In D. Miller & N. J. Salkind (Eds.), *Handbook of research design and social measurement* (pp. 143-183). Thousand Oaks, CA: SAGE.
- Davies, A. L., Bryce, R., & Redpath, S. M. (2013). Use of multicriteria decision analysis to address conservation conflicts. *Conservation Biology*, *27*, 936-944. doi:10.1111/cobi.12090
- Dawkins, R. (1989). *The selfish gene*. Oxford, UK: Oxford University Press.
- Dickman, A. J. (2010). Complexities of conflict: The importance of considering social factors for effectively resolving human-wildlife conflict. *Animal Conservation*, *13*, 458-466. doi:10.1111/j.1469-1795.2010.00368.x
- Evans-Pritchard, E. E. (1940). *The Nuer: A description of the modes of livelihood and political institutions of a Nilotic people*. Oxford, UK: Oxford University Press.
- Harrison, H. L. (2013). "This is who I am": *Perspectives on economics, policy, personal identity, and the culture of Cook Inlet and Kenai River salmon fisheries* (Master's thesis). University of Alaska Fairbanks.
- Haslam, N. (2006). Dehumanization: An integrative review. *Personality and Social Psychology Review*, *10*, 252-264. doi:10.1207/s15327957pspr1003_4
- Heider, K. G. (1988). The Rashomon effect: When ethnographers disagree. *American Anthropologist*, *90*, 73-81.
- Hermansen, M. (2014, August 13). East Side set-netter fears worst is yet to come. *The Redoubt Reporter (Homer, AK)*, p. 3.
- Hilborn, R. (2007). Defining success in fisheries and conflicts in objectives. *Marine Policy*, *31*, 153-158. doi:10.1016/j.marpol.2006.05.014
- Howard, A., & Widdowson, F. (1997). Traditional knowledge threatens environmental assessment. *Policy Options*, *17*(8), 34-36.
- Jentoft, S., & Chuenpagdee, R. (2009). Fisheries and coastal governance as a wicked problem. *Marine Policy*, *33*, 553-560. doi:10.1016/j.marpol.2008.12.002
- Jentoft, S., McCay, B. J., & Wilson, D. C. (1998). Social theory and fisheries co-management. *Marine Policy*, *22*, 423-436. doi:10.1016/S0308-597X(97)00040-7
- Kenai River Sportfishing Association. (2008). *Economic values of sport, personal use, and commercial salmon fishing in Upper Cook Inlet*. Kenai, AK: Author. Retrieved from <https://www.krsa.com/documents/KRSA%20Economic%20Values%20Report.pdf>
- Khan, A. S., & Neis, B. (2010). The rebuilding imperative in fisheries: Clumsy solutions for a wicked problem? *Progress in Oceanography*, *87*, 347-356. doi:10.1016/j.pocean.2010.09.012
- Knapp, G. (2012). *Economic impacts of Kenai Peninsula Borough Fish Industries*. Kenai Peninsula Borough Assembly. Retrieved from <http://www2.borough.kenai.ak.us/AssemblyClerk/assembly/Info/2012/102312/Economics%20of%20the%20Seafood%20Industry%20Presentation.pdf>
- Loring, P. A., & Gerlach, S. C. (2010). Food security and conservation of Yukon River salmon: Are we asking too much of the Yukon River? *Sustainability*, *2*, 2965-2987. doi:10.3390/su2092965
- Loring, P. A., Gerlach, S. C., & Harrison, H. L. (2012). *Food security on the Kenai Peninsula, Alaska: A report on local*

- seafood use, consumer preferences, and community needs (WERC-HD Occasional Report No. 01). Fairbanks, AK: Water and Environmental Research Center and the Center for Cross-Cultural Studies.
- Loring, P. A., Gerlach, S. C., & Harrison, H. L. (2013). Seafood as local food: Food security and locally caught seafood on Alaska's Kenai Peninsula. *Journal of Agriculture, Food Systems, and Community Development*, 3(3), 13-30. doi:10.5304/jafscd.2013.033.006
- Loring, P. A., Harrison, H. L., & Gerlach, S. C. (2014). Local perceptions of the sustainability of Alaska's highly contested Cook Inlet salmon fisheries. *Society & Natural Resources*, 27, 185-199. doi:10.1080/08941920.2013.819955
- Mauger, S., Davis, J., Davis, G., Ruffner, R., & Geist, M. (2011, July). *Stream temperature monitoring network for Cook Inlet salmon streams* (Alaska Clean Water Action Grant 11-01). Homer, AK: Cook Inletkeeper.
- McBeath, G. A. (2011). *The Alaska State Constitution*. Oxford, UK: Oxford University Press.
- McClanahan, T., Allison, E. H., & Cinner, J. E. (2013). Managing fisheries for human and food security. *Fish and Fisheries*. Advance online publication. doi:10.1111/faf.12045
- McLaughlin, P. (2011). Climate change, adaptation, and vulnerability reconceptualizing societal-environment interaction within a socially constructed adaptive landscape. *Organization & Environment*, 24, 269-291. doi:10.1177/1086026611419862
- Miller, M., & Van Maanen, J. (1979). "Boats don't fish, people do": Some ethnographic notes on the federal management of fisheries in Gloucester. *Human Organization*, 38, 377-385.
- Muth, R. M., & Bowe, J. F., Jr. (1998). Illegal harvest of renewable natural resources in North America: Toward a typology of the motivations for poaching. *Society & Natural Resources*, 11, 9-24.
- National Marine Fisheries Service. (2010). *Fisheries of the United States* (Current Fishery Statistics No. 2010). Silver Springs, MD: Office of Science and Technology, National Marine Fisheries Service.
- Nie, M. A. (2003). *Beyond wolves: Politics of wolf recovery and management*. Minneapolis: University of Minnesota press.
- Ominayak, B., & Thomas, K. (2009). These are lubicon lands: A first nation forced to step into the regulatory gap. In J. Agyeman, R. Haluza-DeLay, & P. O'Riley (Eds.), *Speaking for ourselves: Environmental justice in Canada* (pp. 111-122). Vancouver, Canada: University of British Columbia Press.
- Ostrom, E. (1990). *Governing the commons: The evolution of institutions for collective action*. New York, NY: Cambridge University Press.
- Paredes, J. (1985). "Any comments on the sociology section, Tony?": Committee work as applied anthropology in fishery management. *Human Organization*, 44, 177-182.
- Parenti, C. (2011). *Tropic of Chaos: Climate change and the new geography of violence*. New York, NY: Nation Books.
- Pomeroy, R., Parks, J., Pollnac, R., Campson, T., Genio, E., Marlessy, C., . . . Thu Hue, N. (2007). Fish wars: Conflict and collaboration in fisheries management in Southeast Asia. *Marine Policy*, 31, 645-656. doi:10.1016/j.marpol.2007.03.012
- Redpath, S. M., Young, J., Evely, A., Adams, W. A., Sutherland, W. J., Whitehouse, A., . . . Gutiérrez, R. J. (2013). Understanding and managing conservation conflicts. *Trends in Ecology & Evolution*, 28, 100-109. doi:10.1016/j.tree.2012.08.021
- Satterfield, T. (2007). *Anatomy of a conflict: Identity, knowledge, and emotion in old-growth forests*. Vancouver, BC: UBC Press.
- Sayre, N. (2006). *Working wilderness: The Malpai Borderlands group story and the future of the Western range*. Tucson, AZ: Rio Nuevo.
- Sheridan, T. E. (2001). Cows, condos, and the contested commons: The political ecology of ranching on the Arizona-Sonora Borderlands. *Human Organization*, 60, 141-152.
- Sheridan, T. E. (2007). Embattled ranchers, endangered species, and urban sprawl: The political ecology of the new American West. *Annual Review of Anthropology*, 36, 121-138. doi:10.1146/annurev.anthro.36.081406.094413
- Spicer, E. H. (1971). Persistent cultural systems. *Science*, 174, 795-800.
- Stephenson, M. O., Jr. (2011). Considering the relationships among social conflict, social imaginaries, resilience, and community-based organization leadership. *Ecology and Society*, 16(1). Retrieved from <http://www.ecologyandsociety.org/vol16/iss1/art34/>
- Sutinen, J. G., Rieser, A., & Gauvin, J. R. (1990). Measuring and explaining noncompliance in federally managed fisheries. *Ocean Development & International Law*, 21, 335-372. doi:10.1080/00908329009545942
- Thompson, M., Ellis, R., & Wildavsky, A. (1990). *Cultural theory*. Boulder, CO: Westview.
- Tolbert, P. S., & Hall, R. H. (2009). *Organizations: Structures, processes, and outcomes*. Upper Saddle River, NJ: Pearson.
- Treves, A., Wallace, R. B., Naughton-Treves, L., & Morales, A. (2006). Co-managing human-wildlife conflicts: A review. *Human Dimensions of Wildlife*, 11, 383-396. doi:10.1080/10871200600984265
- United Nations. (1948). *Universal declaration of human rights*. United Nations General Assembly. Retrieved from <http://www.un.org/en/documents/udhr/>
- Weiss, R. S. (1994). *Learning from strangers: The art and method of qualitative interview studies*. New York, NY: Free Press.
- Welch, D. W., Porter, A. D., & Winchell, P. (2013). *Chinook and sockeye salmon migration patterns in Cook Inlet, 2013*. Nanaimo, British Columbia, Canada: Kintama Research Services. Retrieved from <http://kintama.com/wp-content/uploads/2014/01/Cook-Inlet-2013-Kintama-Report.pdf>
- Young, J. C., Marzano, M., White, R. M., McCracken, D. I., Redpath, S. M., Cars, D. N., . . . Watt, A. D. (2010). The emergence of biodiversity conflicts from biodiversity impacts: Characteristics and management strategies. *Biodiversity and Conservation*, 19, 3973-3990. doi:10.1007/s10531-010-9941-7

Author Biographies

Hannah L. Harrison holds a master's degree in environmental ethnography and a bachelor's degree in natural resource management, both from the University of Alaska Fairbanks. She is currently serving in the US Peace Corps in Zambia, where she works on small-scale aquaculture projects as a means to improve livelihood and food security.

Philip A. Loring is an assistant professor at the School of Environment and Sustainability, University of Saskatchewan. An anthropologist by training, his research focuses on food security, fisheries, community sustainability, and climate change, primarily in northern North America.