

Syma A. Ebbin
Yale University, Dept. of Forestry and Environmental Studies
301 Prospect St. New Haven, CT 06511, USA
Fax: (860) 444-1142
E-mail: syma.ebbin@yale.edu

Stream: Theory

Developing a Problem Definition for Conservation of Pacific Salmon Under Cooperative Management Regimes in Puget Sound, Washington and the Kuskokwim River, Alaska

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INTRODUCTION:

Conservation has been put forth as the means to prevent or reverse what has been perceived as the “salmon problem,” a problem commonly framed in terms of declining salmon abundance. In the United States, conservation is one of the guiding principles of natural resource management, as well as fisheries management, enshrined in various legislative and bureaucratic mandates. However, the definition and elaboration of conservation inherently entails social choices which are based upon our understandings of the biology and ecology of salmon and the impacts of human actions on the production of salmon. Our definitions of conservation are also embedded in the values and the relative importance we attribute to the numerous and often conflicting human uses of salmon and the resources and habitat upon which they depend. Additionally, these values and understandings may change over time. Given the diverse understandings, interests and values that different individuals and groups hold of these things, consensus over the meaning and elaboration of conservation has not necessarily been forthcoming. This leads to additional concerns regarding how best to achieve conservation, and who should be empowered to make these decisions.

Co-management challenges the traditional ways in which the problem of fisheries management has been framed by increasing and diversifying the participation of various individuals and organizations in the management of natural resources. A new cadre of participants bring with them their own interests, unique perspectives, and understandings of the nature of the appropriate values and strategies to be pursued in fisheries management arenas. These multiple social realities often collide, leading to disagreements between participants as well as disagreements over the nature of disagreements (Dale 1989:62). This may expose the implicit frames, the bounded rationalities from which participants have defined the salmon problem.

This paper examines two case studies where, despite divergent legal rights, cooperative management regimes have emerged. The first focuses on the tribes of the Puget Sound region of Washington, and the second on the Native Alaskans in the Kuskokwim River drainage in Alaska. In Washington, as a result of extensive litigation, cooperative approaches to salmon management have been established between the tribes state management agencies. This contrasts with the situation on the Kuskokwim where aboriginal fishing rights were legally extinguished. Despite this, a cooperative

organization, the Kuskokwim River Salmon Management Working Group (KRSMWG), has operated on the river since 1988.

THEORETICAL FRAMEWORK:

Discourse refers to the process through which knowledge is generated through communication. Bound up in the discourse of management is a power struggle over knowledge and legitimacy. Discourses can be thought to compete in various social situations and individuals may attempt to change the boundaries of discourse, that is what is included or excluded, considered appropriate or legitimate (Milton 1996). Palsson (1991: 3) writes that,

“Discourses on fishing and fisheries embrace diverse kinds of phenomena- the words that people use in face-to-face interaction in the process of making a livelihood, the commonplace statements they exchange about their resources and their productive efforts, their ‘folk’ theories of nature and production, and the general paradigms within which they cast their theories about the workings of nature and human-environmental interactions.”

Individuals frame problems through an integration of what they perceive to be the relevant facts, values, theories and interests (Schon 1983, Dale 1989). In this respect, problems are constructed, not simply identified or discovered (Dery 1984). Some believe that issues become recognized as problems when people believe they can do something about them (Korsmo 1990:295). Along these lines, some have come to view problems as “opportunities for improvement,” declaring that in defining problems we “choose what goals or values to aim at, what values to sacrifice, what counts as a solution, and what kind of means to consider”(Dery 1984:116). However, as Korsmo (1990) argues, all participants in the policy process do not necessarily carry the same notions of the problem, the same values or goals, a fact clearly evidenced in arenas involving groups with culturally distinct worldviews, different languages and meaning systems.

The way in which we frame problems ultimately constrains the ways in which problems and, more importantly, their solutions are perceived.

“Problem definition creates language for talking about problems and non-problems that draws attention to some features of social life at the expense of others, locates responsibility for problems, putting some groups on the defensive and others on the offensive, widens and deepens public or elite interests in particular social phenomena, and mobilizes political participation around issues or symbols highlighted by the problem definition. (Weiss 1989: 259-260).

Problem definition then becomes an attempt to create and control shared meanings, an exercise in power, in which contenders struggle to impose their respective meanings upon others (Sederberg 1984:56). Within this struggle, people may become aware of their tacit frames and come to recognize the possibility of alternative ways of framing reality (Schon 1983:310).

Not only is knowledge power but the ability to define what is knowledge and what are salient cognitive tools is ultimately an even greater potential source of control. The ability to change the boundaries of discourse, to change the dominant problem definition involves the use of, what Galbraith (1986:214) has termed, conditioned power. This is power in which beliefs, “what seems natural,

proper, or right,” are changed so that instead of alternatives, people perceive but one appropriate route or option. This corresponds to those power processes “behind the social construction of meanings and patterns,” which set the stage and provide the rules of the game (Gaventa 1982:15).

METHODS:

This paper is based upon research that I have conducted as part of a larger study which focuses on the relationship between the Native peoples of Washington and Alaska and the Pacific Salmon, specifically in two areas where cooperative management institutions have emerged. Data collection proceeded through participant observation of co-management processes, a review of management documents, and interviews with 228 fishermen and co-managers in the two areas¹. Interviews included both closed and open-ended questions.

BACKGROUND:

The Salmon

This research focuses on the cooperative management of five species of Pacific salmon which are harvested in subsistence, ceremonial and commercial fisheries by the indigenous peoples of North America: sockeye (*Oncorhynchus nerka*), coho (*O. kisutch*), chinook (*O. tshawytscha*), chum (*O. keta*), and pink (*O. Gorbusha*). The species generally range north from California to the arctic reaches of Alaska and Canada, across the Pacific to Korea, Japan, and Russia, with some variations between species. All five species are found in varying abundances in Puget Sound, Washington and the Kuskokwim River, Alaska. They are linked by several common attributes in their life histories. They are all anadromous, born and reared in fresh water for a period of time varying from several months to years. They migrate to marine waters to take advantage of abundant feed, remaining for one to seven years and then return to spawn and die in fresh water.

Pacific salmon undertake extensive migrations within river systems and along the Pacific coast and in the Gulf of Alaska, and die after spawning once, except for steelhead which may spawn multiple times before dying. Salmon also possess a sophisticated homing sense which allows them to return to their natal stream to spawn. This has led to the evolution and subsequent classification of discrete populations or stocks of salmon within each species which have distinct genetic, morphological, geographical, and run-timing characteristics.

The worldwide salmon market grew dramatically after the 1850's due to innovations in the canning industry (Higgs 1982). The canning of salmon on the west coast first occurred in 1864 in a cannery on the Sacramento River in California (Sahrhage and Lundbeck 1992). By the 1890's, there were approximately 180 canneries on west coast from California to Alaska (McHugh 1984). There was a gradual shift of processing to the north and by 1896, thirty canneries in Alaska were producing 40% total output (Sahrhage and Lundbeck 1992). As the markets for salmon expanded, the number of salmon fishermen and the size of their harvests grew to meet this demand. Fishermen, particularly non-Native commercial and recreational fishermen, increasingly moved farther offshore to intercept mixed stocks of salmon in the ocean. Overharvesting of some salmon populations resulted. Additionally, commercial, residential and industrial development of

¹ In the analyses presented in this paper, fishermen represent those respondents who fished for salmon and were not directly involved in salmon management. Co-managers include both fishermen and non-fishermen who were directly involved in salmon management, either at present or in the past.

watersheds led to precipitous declines in the quality and quantity of habitat available to the salmon, consequently decreasing the abundance of various salmon populations.

The Cooperative Management Regimes

Indigenous peoples in Washington and Alaska have historically been at the "end of the line," allowed to harvest what little remained after the salmon migrated through numerous non-Native commercial and recreational fisheries. Native fisheries were often curtailed or closed by state managers due to concerns for the conservation of the run. These perceived inequities have been a source of conflict over the years. Many of these conflicts have been brought before the courts.

The Puget Sound tribes signed treaties in the 1850's with Territorial Governor Stevens which "reserved their right to fish in common with all citizens of the territory in their usual and accustomed fishing areas" (Treaty of Medicine Creek 1854). In 1974, Judge Boldt handed down his landmark decision in the US v. Washington case. This decision allowed tribes to harvest up to 50% of the harvestable salmon run and gave them the authority to manage their on and off-reservation fisheries. The decision also set up the framework for the formation of cooperative management between tribes and state management agencies. The decision was upheld in 1979 by the United States Supreme Court and since then a cooperative working relationship has been established and institutionalized between the tribes and state management agencies. There are 20 tribes in western Washington with adjudicated fishing rights. Each tribe has a fishery manager and some form of natural resource management staff.

The tribes in Alaska did not sign treaties with the U.S. government and they have no legal authority to manage fisheries similar to that which exists in Washington state. The Alaska Native Claims Settlement Act (ANCSA) of 1971 gave natives \$962.5 million, title to 44 million acres land (approximately 10% of Alaska), set up over 200 village corporations and 13 regional corporations, distributed shares to Natives² born before Dec. 18 1971, and extinguished all aboriginal land claims as well as aboriginal hunting and fishing rights. The Alaska National Interest Lands Conservation Act (ANILCA) was passed in 1980 in an attempt to rectify some of ANCSA's deficiencies. It established a subsistence priority for rural Alaskans "to protect Native cultural existence and non-Native social existence." Subsistence, however, continues to be a contentious issue, debated in the courts and legislature. Despite this, several cooperative management groups have emerged in Alaska, focused on a variety of fish and wildlife³. In the fall of 1987, the Kuskokwim River Salmon Management Working Group (KRSMWG) was formed. The group's members include local area commercial and subsistence users from the lower and upper river, sports fishermen, elders and processors. The KRSMWG meets frequently throughout the fishing season to make decisions regarding fishing openings and regulations.

Management Processes

Salmon are transboundary animals, harvested in fisheries throughout the entire length of the Pacific coast during their migrations. They pass through many political jurisdictions (international,

² Shares were distributed to Alaska Natives possessing at least one quarter "Native blood." Blood quantum is a quantitative index of ethnicity. It is widely used by the Bureau of Indian Affairs and by tribes themselves in setting limits on tribal benefits and enrollment.

³ These include the Alaska Eskimo Whaling Commission, the Eskimo Walrus Commission, the Alaska and Inuvialuit Beluga Whale Committee, the Yukon-Kuskokwim Delta Goose Management Plan, the Yukon River Drainage Fisheries Association, the management agreement for polar bears in the southern Beaufort Sea, the Quailgnut Caribou Herd Management Plan, and lower Yukon River moose (Huntington 1992; Schwarber 1994).

federal, state, tribal) and are regulated by a number of management agencies, often with conflicting or overlapping mandates. This has led to an annual management cycle that exists as a series of meetings hierarchically nested to grapple with management and allocation, from coastwide to increasingly local issues.

Fisheries management consists of the distribution of a resource between preservation and utilization -- first order allocations, and between various users and uses -- second order allocations (Calabresi and Bobbitt 1978). First order allocations are generally considered the province of the technical domain. Decisions are framed as technical problems in which the scientific knowledge of technical experts is legitimated and scientific discourse is privileged (Wooster 1988; Higgs 1986). Conservation is defined in practice through the process of first order decision making. Second order allocations, on the other hand, are the province of the policy domain. Decisions are framed as political problems in which a variety of social, economic and political considerations provide the basis for decisions by a group of policy makers. Second order allocations define equity in practice.

The "salmon problem" has been defined as the decline in numbers of salmon (NRC 1995). Traditionally, fisheries managers have focused on limiting fishing mortality in order to achieve conservation. From this perspective, conservation is viewed as a balance between fishery harvest and spawning escapement. Mathematical models of salmon production have been developed which portray production in terms of the relationship between spawners and recruits. From these relationships determinations of the maximum sustained yield (MSY) (including both maximum sustained escapement and harvest levels) have been developed.

FINDINGS:

Respondents were asked if salmon runs had ever been low. Seventy-five percent of respondents in Alaska and 97 percent in Washington answered affirmatively. Respondents were also asked what managers should be doing to increase the abundance of salmon. In Washington, habitat activities were identified most frequently. But what is most interesting, is that many of the responses offer dramatically conflicting approaches to increasing abundance. In the Kuskokwim, roughly equal numbers of respondents answered that abundance should be increased by restricting fishery harvests (22 %), or by liberalizing fishery harvests (17 %). In Puget Sound, roughly equal numbers felt that increased hatchery production should be used to increase abundance (12 %), or that hatchery production was the cause of resource declines and should therefore be limited (11 %). These responses appear to indicate that respondents have different problem definitions and thus different approaches to their solution. Additionally, the responses give a sense of the different discourses used to express these understandings.

In the Kuskokwim, fishermen and Native KRSMWG members tended to couch their understandings of salmon in terms of traditional knowledge and personal observations. While non-Native co-managers in Alaska and both Native and non-Native co-managers in Washington used a scientific discourse to describe the complexity of interrelationships between different factors, couching uncertainty in terms of marine survival rates and interspecies dynamics.

Finally, respondents were asked how co-managers had performed at conserving the salmon. This was rated very poorly by both fishermen and co-managers in Washington. The performance index averaged 3.04 and 2.92, respectively⁴, reflecting no significant differences. The differences between

⁴ The average scales were calculated using the response categories: 1=very good, 2=good, 3=fair, 4=poor. Thus, the higher the average index the more unfavorably it was considered.

Kuskokwim fishermen and co-managers were significantly different⁵, however, averaging 2.91 and 2.20, respectively. These differences appear to reflect the different meanings of conservation which are held by these groups.

Kuskokwim

From the Yup'ik perspective, proper care and continued use of animals is necessary to ensure the return of fish and animals in future years. Yup'ik traditionally viewed animals as infinitely renewable (Fienup-Riordan 1990), and the idea that wildlife can be scientifically managed as presumptuous and arrogant (Pete 1993), a view reflected in the comments of a Bethel subsistence user, "I stay away from politics. I feel that no man can or should control nature." The attempts of humans to control nature seem somewhat inconsequential in this Yup'ik scheme of things. I was told, "People around here believe in a higher power -- God. People do not control the fish. The higher power can always take away the fish. People have no control. If people don't respect what is being provided, the higher power could always take it away."

One alternate KRSMWG member offered his explanation for the decline of the chum salmon in 1993, "...there's a lot of speculation [about the cause]. I would prefer to stick with the traditional knowledge saying. When I translate, it was stated more than one time that God created food for us to utilize, to feed us and when we don't utilize what is available, they decline. Some elders say that because Fish and Game kept us from utilizing the resource, the fish, that is why they are declining. The elders always use examples, such as the muskrat. They were caught every spring and the furs put in bundles with about thirty in a bundle. People made money selling the fur. People stopped hunting them and they dwindled off. Now you see only a couple of them. I have heard that even this summer, 'Look at the muskrats, we stopped hunting them and now there are no more.' That could be a main reason why fish are decreasing the last couple of years. The same with reindeer, they stopped utilizing them and they stopped coming. The numbers of fish and game are always different, they always go in cycles, regardless, we should use them." Thus, some management actions (such as harvest restrictions) may be perceived by some Yup'ik as the cause of declines in the populations of fish and wildlife that they were implemented to reverse.

The testimony and reports given by fishermen, elders and KRSMWG members at KRSMWG meetings also reflect these traditional understandings, standing in stark contrast to the quantitative reports given by ADFG biologists which summarize test fisheries, sonar counts and the passage of salmon at weirs. At a June 27, 1994 KRSMWG meeting, the alternate downriver commercial fisherman member reported, "I spoke to an elder this morning, George Piluk from Napakiak. I asked him what he felt about the fish run this year. His first comment was that whatever the old folks said in the past about traditional wisdom and knowledge remains in effect today. He noted that this winter during a dark night, there was a bright light in the sky from the southeast to the northwest. When that happens fish and game will be abundant. An Eek elder concurred with that. On the coast there was lightening earlier this spring on the ocean. The lightening wakened up the fish. They will be abundant. Fish and game are few and sometimes abundant from year to year. We the people are not in control of the fish. Our creator is in control of this."

Thus in the Kuskokwim there is a sense that the pie is made by God and sliced by humans. Conservation is the product of respect, which is constituted by proper use. This includes killing

⁵ Differences were significant at the $p=0.05$ level.

something when it is available and not wasting something that has been killed. Harvesting salmon, under this belief system, appears to be essential to their conservation.

Puget Sound

In Puget Sound, on the other hand, there is a belief that the size of the pie can be changed, increased or decreased, directly or indirectly, as a result of human actions. Tribal and state co-managers and to some extent fishermen who were interviewed shared a similar scientific management paradigm. Although experiential knowledge was valued, for management purposes, this type of knowledge appeared to supplement scientific understandings of the salmon. Although the contestants, the state and tribal fisheries managers, are on the same playing field, there are differences in the way the salmon problem has been framed and concomitantly, differences in the various management approaches that are advocated.

Fisheries managers have traditionally operated within a bounded rationality in which management was focused on limiting fishery harvests in order to achieve conservation goals. As fisheries moved farther offshore, intercepting mixed stocks of salmon, terminal area fisheries were often closed by managers in order to meet escapement objectives. Indirect impacts to the resource, that is those which adversely affect the ability of the aquatic system to produce fish, were mitigated using a variety of techniques, including hatchery production and supplementation. Hatchery production was viewed as a virtual panacea.

“The comeback of coho stocks in the Columbia River is closely related to enormous plantings in the watershed during the past decade. Artificial production of fall chinook on an increasing scale has served to arrest somewhat the decline of this species, while the growing success in breeding steelhead has helped to sustain the steelhead runs, especially in streams outside the Columbia River drainage...Hatcheries are good, there is little doubt,’ says Dr. L.E. Perry. ” (Netboy 1974: 339-340).

Recently, the salmon problem has been defined by federal regulatory agencies and others as "the Four H's": harvest, habitat, hydropower and hatchery production. Further, the problem has been more finely focused on “wild” stocks of salmon. Hatchery production has been criticized for degrading the genetic integrity of these wild stocks. Critics point out that hatchery broodstocks have been developed from multiple lineages, supplemented with eggs from other geographic regions, potentially leading to the hybridization of stocks. Hatchery fish stray and may breed with wild fish thereby causing genetic changes. Indeed, Waples et al. (1990) believe that the very concept of a stock is less meaningful in the hatchery environment.

Hatcheries are now perceived by some to be part of the salmon problem, rather than its solution. This shift has been accompanied by changes in the discourse of management. The Washington Department of Fish and Wildlife (WDFW) now advocates “selective fisheries” and have, along with the Washington tribes, developed a “Wild Salmonid Policy” which seeks to conserve genetic diversity (WDFW and Treaty Tribes 1997) by changing the management direction of WDFW from “primarily regulating fisheries based on hatchery production to the detriment of wild salmonids...to preserving, protecting, and perpetuating wild salmonids in their ecosystems...”(Shanks 1997). The NRC (1995:273) concluded that “hatchery programs have been partly or entirely responsible for detrimental effects on some wild runs of salmon” and their use “has not favored conservation of biological diversity.”

However, there is by no means consensus on this redefinition of the salmon problem. Some tribal managers are contesting this redefinition and attempting assert their own which focuses on the nature of treaty rights and the right to maintain viable tribal fisheries despite declining runs of salmon. As one tribal co-manager explained, "Now hatcheries are a sin...We can't let them cut off our hatcheries because there'd be no fish to fish...And now we're forced into the wild versus hatchery debate and tribes are forced to be pro-hatchery when we didn't want them in the first place. They can cut off hatcheries when the habitat is rebuilt. Tribes have been put in an unfair position, having to reproduce what they disagreed with in the first place. Now it's a mode of avoiding extinction, maintaining fisheries and keeping economies. And the tribes are struggling to balance these things. That's unfair." A tribal enhancement biologist explained, "People are saying that this," he draws a box in the air with his hands, "is what a wild stock is and what it should be, as a bounded thing. Things can't be frozen in time. Both hatchery and wild fish stray. It used to be called hybrid vigor, now it's called outbreeding depression. It was based on crossing a horse with a donkey and getting a mule. But these aren't horses and donkeys, they are chinook salmon..."

The conflict has been posed as one between the preservation of wild stocks versus the preservation of fisheries, between salmon as "museum" specimens or as "meat." A tribal biologist commented, "A bastardized stock is better than a dead one. The state has no gumption to do anything about fish habitat. All the talk about wild fish means no fish - just museum fish. Production is being mixed up for political reasons." Thus, some perceive that the new conservation discourse encompasses an allocative intent. Another tribal biologist noted, "Now that the [Washington] Department of Fisheries is the Department of Fish, they've changed their outlook. The department has abandoned its commercial fishermen to preserve wild stocks that are intended to promote sport fisheries. Their intent is to exclude commercial fisheries for sport fisheries. Where the state or feds are environmentalist they want museum fish, and we want to kill them. They eliminate non-selective and preterminal fisheries and they would say they're just conserving fish...The state has focused on natural stocks because that's where the emotion is."

Problem Definition and Conservation Discourse

Groups may attempt to redefine problems to legitimate the resources they value or possess and to devalue and delegitimize the resources of those they oppose (Dietz et al. 1989). In this manner, groups seek to gain or retain authority and power. According to Shapiro (1993:6), "The general rule...is that the dominated try to politicize to delegitimize, whereas the dominators try to depoliticize to legitimize."

Co-management has brought a more diverse group of individuals into the management arena. On the Kuskokwim, these new participants have different cognitive realities, legitimate different types of knowledge, and express these understandings in different ways than do ADFG biologists. Many respondents expressed a sense that communication was not really occurring in the KRSMWG, noting that they did not feel that ADFG listened and understood the testimony of elders and fishermen at KRSMWG meetings. One non-Native observer of the process commented that the, "Information [exchange] is mostly one-way from Fish and Game to fishermen, not back from fishermen to Fish and Game. They [ADFG] try to get them to conserve the resource. They [ADFG] haven't learned from Native people. They [ADFG] can't be educated. Traditional Yup'ik knowledge isn't listened to. I don't think [the elder representative] gives traditional knowledge to get it off his chest, he says it so Fish and Game can see there are more ways to view the resource, to discuss his perspectives with others and feel like they managed the resource together. The system has taught [the elder representative] that he

should speak in English to have his words valued. People think that just having a translator is sufficient but its not...The state doesn't pay for cross-cultural training. It doesn't make it a requisite for state employees. Their job is numbers, not people, not communicating. It would be a real complement for [the elder representative] to speak in Yup'ik at meetings -- to say they listen and value him speaking Yup'ik as much as English. It's very normal to think your way is the best way but they should have an awareness that there are more ways to view the world...I thought the idea of the Working Group was to have people come with the idea that there was unmarked soil, that they could decide how to plant, but Fish and Game already comes with the garden all planned out and says to the fishermen 'Oh you can pull the weeds.' Its just token participation." A former KRSMWG member and Yup'ik elder explained his perceptions of the exchange of information at meetings, "...Now the Department has all the access in their hands. Traditional knowledge is just a decoration for the Department to have older folks talk. The Department never listens to them. If they don't want to open, they don't. The Department says no, even if older folks say there are fish in the river. This elder knowledge is just a decoration. It's not used. Its just so people can look and say, 'Look, they consider everything.' But they don't really. We try to give them the best of what we know, but they don't listen."

Multiple frames exist and although there is a recognition of alternative ways of framing the problems, scientific knowledge and discourse remain privileged. Thus, on the Kuskokwim, the salmon conservation problem has not been redefined to encompass the frames of many Native KRSMWG members and fishermen or to privilege their discourse. According to Morrow and Hensel (1992: 442), the effect of this may be that "winning on another's terms, the best that can be hoped for, ultimately resembles losing."

In Washington, tribal managers have adopted a scientific discourse. As one tribal fisherman and policy representative commented, "In fact they've [co-managers] taught me some of my concerns. I was in the harvest mode for years, I never thought about production, about the need to protect fish throughout its life cycle." Another tribal fisherman commented on the sophisticated understanding of management which has developed among members of his tribe's fish committee, "People have been doing this for twenty years. They're getting pretty good at fisheries management, as good as the state biologists. They know what you mean by outmigration, and smolt studies. They know what you're talking about. They know about CPUE, what it is and how it's calculated. They know about morts. They know the language, what you're speaking about. It rarely gets lost when the biologists are speaking."

At the same time, salmon co-management in Puget Sound has been redefined as a multi-authored and more explicitly political process. Tribal managers have exposed the allocative implications of conservation. There are now many answers to certain questions and many people qualified to answer them. First order allocations have come to be seen as encompassing a suite of competing social values and the goals and objectives of management have come to be seen as much as the outcomes of a policy process rather than as the original stimuli. Salmon co-management has become an iterative process in which the meaning and elaboration of conservation and exploitation are both subject to negotiation. Conservation is now a "burden" that is shared. The "museum" versus "meat" debate has highlighted the different values and interests of different stakeholders, transforming the image of the technical arena with the insertion of explicitly social considerations.

According to one Puget Sound tribal fisher and habitat representative, when combined the different values and understandings which co-managers bring to the table have the capacity to produce a more complete problem definition, "I didn't know the words like 'destruction of the riparian zone', 'scouring' or 'bank stabilization' but I knew what I saw...I didn't have the words. I haven't gone to

college. I don't have the technical knowledge. It is important to bridge both cultures. Tribal people still love the land. They feel close to the land, and not just for economic reasons, there are so many memories in the land, dealing with tribal culture... Tribal people are close to it but they also need knowledge. Understanding plus knowledge leads to wisdom. That's how I look at it. We need to get to that equation..."

This type of bi- or multi- directional exchange (as opposed to uni-directional) is critical to developing a common discourse, a common frame for managing salmon fisheries. Cooperative management might be one of the best institutional means for generating this kind of wisdom, providing a place where the diverse perspectives and understandings that different peoples, both Native and non-Native, can be recognized, refined and integrated into a more robust whole.

In the absence of a common discourse, it is essential to involve people who can understand and bridge the different world views, problem definitions and discourses of the various participants. This may represent the best chance for establishing a context of shared meaning. As one Yup'ik fisheries biologist on the Kuskokwim eloquently explained to me, "When Fish and Game points their sonar at the ground I have to say it's not right. They [ADFG] may not listen to Joe Blow down the river speaking Yup'ik but they'll listen to me with my test fish and data. I'm an advocate for the people. The trust is there. I'm working on test fisheries with Fish and Game and AVCP...There is no confrontation with Fish and Game. Fish and Game is a good group of people. There is no culture gap between me and people of the region, I can speak Yup'ik to them and they speak back. I get calls from all over the river from fishermen. Fish and Game listens differentially to me versus the fishermen. Fishermen tell the story of their fishing and catch. Fish and Game wants materials and methods, locations, numbers, estimates, consistency, and variables. That's the way they think, that's the way they were taught to think, that's their culture, their job. My job is to understand what the guy from Napaskiak is saying, to gather materials and methods for Fish and Game, to look at the fish racks and talk to people, to establish a method for the presence and absence of fish, to establish a method, because that's not communicated by fishermen. I find the methods for them."

Conservation can mean different things and have different implications for human actions to different stakeholders. The existence of cooperative management does not necessarily indicate shared management goals or visions of the future. Forging mutual understandings should be one of the preeminent aims of such regimes. This requires that meaning is shared, and this may be accomplished either through a common discourse or through interpreters who can speak the different "languages" of management.

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