The Skeena Watershed Partnership: Learning from Success and Failure in Salmon Management

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Abstract.—Watersheds in the Pacific Northwest have been the site of conflicts over access to salmon by commercial, aboriginal, and recreational groups, as well as conflicts among salmon users and other users over how to protect or restore salmon habitat, maintain a sustainable harvest rate, and define research priorities. Watershed and salmon users have sometimes chosen to form partnerships to solve common problems, making the conservation or sustainable management of salmon their central objective. Through examining a British Columbia example which illustrates principles of successful collaborative partnerships, as well as some failures to apply these principles, I consider what aspects of the Canadian experience might contain instructive precautionary lessons relevant to the Arctic-Yukon-Kuskokwim area. Five critical key conditions identified from this examination needed for successful partnerships include: (1) clarification of the role of government as a sponsor (funder) but not a convenor of the partnership, (2) a Memorandum of Understanding clearly spelling out the goals, the rights and duties devolved to partnership bodies, and government commitment not to violate them, (3) fishermen involvement in, and oversight of, all aspects of citizen science, including data collection, analysis of data, creation of fishing plans, monitoring and enforcement of adherence to the fishing plans, research, agenda setting, and (5) sufficient time for parties to develop trust in the process and other parties.

Introduction

Fisheries social scientists worldwide believe that there is much to learn from Alaska, because it offers clear-cut examples of rural fishing-dependent communities and because as a state, Alaska has broadly defined rural subsistence fishing rights and applied them to both aboriginal and non-aboriginal residents. Nonetheless, the British Columbia (BC) experience can offer some lessons of value to Alaskans about the watershed partnership aspects of fisheries management.

In the Arctic-Yukon-Kuskokwim (AYK) region in southwestern Alaska, the specific fishing sectors and parties are not exactly the same as those in British Columbia, where the divisions of commercial, sport, and aboriginal fisheries are mostly comprised of different individuals, each with different access rights to salmon. For example, in British Columbia, aboriginal communities have unique constitutionally-protected access rights to salmon for food, social, and ceremonial purposes, and over the last two decades have increasingly asserted their rights to sell river-caught salmon commercially and to co-manage salmon with senior governments. In British Columbia, little cross-over in participation

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exists between sport and commercial fishery categories. Some sport anglers primarily take salmon for subsistence purposes while enjoying no subsistence rights. While in the AYK region the same aboriginal individual may take salmon for commercial, subsistence, or even sport purposes at different times. In British Columbia, these three uses of salmon largely imply three different individuals. Furthermore, in the AYK region, the aboriginal population is clearly predominant and aboriginal/non-aboriginal identity is a complex and negotiated matter (Hensel 1996).

Despite these differences, many of the dynamics among commercial, sport, and subsistence uses in the two jurisdictions are strikingly similar, and take the form of upriver versus downriver conflicts. Likewise, many of the options for finding common ground and forming upriver/downriver partnerships, and interacting with senior governments are similar. Therefore a comparison with caveats is in order. Below, a noteworthy British Columbia effort is examined as a cautionary tale for the lessons it has to offer the AYK region regarding both which strategies/approaches have the best chances of success and which put partnerships at risk.

1The exception to this separation is aboriginal fishermen with individual commercial licenses. Canada currently faces the dilemma that aboriginal fishing rights are collective, while commercial licenses are individual. This implies that at some point individual fishing licenses will be converted to collective rights and counted as part of the calculus of treaty settlements. This is what eventually happened in Washington State where treaty tribes’ rights to 50% of the total allowable catch counted as tribal catch the number of salmon taken by tribal fishermen with state-allocated commercial licenses.

2Wolfe (2006) documents in Alaskan rivers an opposition which also occurs on the Skeena, although it does not figure prominently in this discussion: some aboriginal fishermen condemn catch-and-release sport fishing as immoral on the grounds that it shows disrespect towards the fish to obtain enjoyment from their suffering, while also threatening their willingness to return to the river (see Albertson 2009, this volume).

Problems in Fisheries Policy, Management, and Research in Alaska and BC

Alaska and BC salmon managers face similar generic dilemmas that could be said to reside in four general questions: (1) How can we get enough data/knowledge to hope to manage sustainably? (2) How can we know the data/knowledge we do get is valid and reliable? (3) How can we analyze and interpret the data accurately, taking enough factors into account? (4) How can we implement our analysis?

One reason that the study of co-management has gained more credibility among natural scientists in the last decade is that a growing recognition exists of the implementation feasibility problem. That is, even if managers could get all the data they need, and produce an analysis making a case for a particular regulatory action, would they be able to implement it? Implementation feasibility has several dimensions: (1) Is the data credible to fishermen? (2) Is the management policy or general goals made on the basis of the data credible? (3) Are the particular regulatory actions, fishing plans, and allocations based on the data credible? It has been widely documented in the social science literature that the level of compliance with regulations is affected significantly by the level of perceived accuracy of the data, as well as by the perceived legitimacy and practicality of regulations (Kearney 1983; Ostrom 1990; Pinkerton and Weinstein 1995; Jentoft 2000; Hatcher et al. 2000; Pinkerton and John 2008). Are they accurate, fair, and likely to achieve their stated goal? Data and regulations which do not meet this test are neither respected nor observed. Difficulties may occur at the level of monitoring, enforcement, or outright civil disobedience, as in the 2004 case when a public declaration was made that “Kuskokwim fishers, both commercial and subsistence,
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are very respectful of the law if they understand it and it makes sense to them.” (report on a 2004 meeting of the Kuskokwim River Management Group in discussing the civil disobedience of Yupik villagers in the lower Kuskokwim River after the Area M False Pass fishery tripled their time on the mixed stock fishery targeting sockeye salmon Oncorhynchus nerka which takes Kuskokwim chum salmon O. keta as bycatch, while the Kuskokwim River subsistence fisheries had been reduced in their fishing time on chum salmon 2001–2004).

The most straightforward way of getting around the implementation feasibility problem is for fishermen or fishermen’s organizations to play a role in data collection (as they do in the AYK region which relies heavily on reported catch in subsistence fisheries), in data analysis, such as in generating hypotheses about the cause of trends in abundance, and in harvest regulations based on the analysis. If fishermen play any role at all in creating the regulations or the harvest plan, then they have a role in creating legitimacy around the regulations, and around enforcement, reporting offenders.3

Peter Larkin (1988) reminded us years ago that they don’t actually manage fish, but rather people! The question examined here is: how can cooperation be mobilized among users and between users and government to address the problems noted above? The co-management literature suggests that the allocative, stock abundance, and compliance challenges can be addressed far better with strong partnerships among these parties. The more power-sharing among the parties, the stronger and more resilient will be the part-

nerships (Pinkerton 1991, 1992, 1994; Berkes et al. 1991; Leach and Pelkey 2001; Leach et al. 2002; Smith and Gilden 2002; Plummer 2006; Schumann 2007). Co-management is defined as the sharing of power in management decisions between a community or place-based organization and a government agency. In the Skeena River case discussed below, it involves three place-based organizations or sectors (commercial, sport, aboriginal) and two government agencies (one federal, one provincial). A second generation of co-management studies involves multiple parties or sectors which are able to cooperate with multiple government agencies in the management of fisheries in geographic units such as watersheds (Pinkerton and Weinstein 1995; Hanna 2009, this volume).

The Skeena Watershed Committee Story 1992–1997: A Cautionary Tale4

The BC experience 1992–1997 with the Skeena Watershed Committee illustrates both successes and instructive mistakes in an attempt to form partnerships among fishing sectors and between these sectors and senior governments. The Canadian federal Department of Fisheries and Oceans (DFO) considers this effort “a near miss” in that a lot of things were done right. Fisheries scientists can learn as much from what went wrong as from what went right about this story, and many things went right before some mistakes were made. This story is used to draw out general lessons and principles for how cooperation can be mobilized among users and between users and government to address problems. The story involves the kind of cooperative research which is of concern in the AYK region, but the conditions for this were imbedded in a much larger effort to do co-

3 A common pool resource such as fish requires managers to deal with the dilemmas of excluding some users and regulating others. It is extremely difficult to prevent non-licensed users from fishing, and it is extremely difficult to enforce fishing regulations unless there is significant cooperation from and participation among fishermen (Feeny et al. 1990).

4 Parts of this story have been previously published as Pinkerton and Weinstein 1995 and Pinkerton 1996.
management of data collection, data analysis, harvest design, habitat protection, enhancement, and joint enforcement.

To make the general comparison more meaningful to Alaskans, the Skeena watershed and its fishing sectors in northwest BC are briefly compared to its most similar AYK counterpart, the Kuskokwim River watershed. The Skeena River is smaller than the Kuskokwim River, comprising 32,000 square kilometers, and being the home to some 54,000 residents (12,000 of which are aboriginal) living in 15 communities. In contrast, the Kuskokwim River has fewer residents (11,000) and these are spread out into a larger number (37) of smaller communities. A review of the Kuskokwim River fisheries is provided by Linderman and Bergstrom (2009, this volume). But in both cases the fishing residents live mostly on the lower 320 kilometers of river. Important commercial, aboriginal (subsistence and commercial), and sport fisheries existed on the Skeena River in 1992 when the conflict among these three fishing sectors reached a crisis point that precipitated the formation of the Skeena Watershed Committee. A brief characterization of each sector is necessary to understand the crisis.

(1) The commercial sector was made up of some 400 gillnet limited entry permit-holders living in Prince Rupert, a city of 17,000 at the mouth of the Skeena River, and adjacent smaller communities participating in a $100 million 100-year old commercial fishery. All four major BC fish processors had plants in Prince Rupert, and they all had fish buying contracts with, or ownership of, gillnetters to fish the salmon runs of the Skeena and Nass watersheds. Almost half of the fishermen were aboriginal in origin, either resident in their traditional territory on the coast or upriver residents who fished the coast commercially. An additional 600 non-local gillnetters fished the mouth of the Skeena River in varying numbers when abundance levels were high. They targeted mostly sockeye salmon, (secondarily Chinook *O. tshawytscha* and coho *O. kisutch* salmon) but took steelhead *O. mykiss* as by-catch, which they were not allowed to sell commercially, and which was the preferred target of the sport fishery. They belonged chiefly to the United Fishermen and Allied Workers Union (UFAWU) and the Northern Gillnetters Association (NGA).

(2) The sport sector was made up mainly of residents of three communities up-river, whose most militant members were part of the Steelhead Society of BC, which considered itself a conservation organization concerned with the conservation of steelhead trout and also coho salmon stocks. Others belonged to the BC Wildlife Federation.

(3) The aboriginal sector was made up of members of three distinct groupings: the Tsimshian (residents in Prince Rupert at the mouth and several adjacent coastal communities), the Gitksan and Wet’suwet’en (residents of communities on the middle river), and the Nanoot’en (also called the Lake Babine Band, near the headwaters of the system). Both Tsimshian and Gitksan fishermen participated in the commercial gillnet fishery at the Skeena River mouth, but it had been the stated intention of the Gitksan since 1982 when they participated in the purchase of gillnet licenses from the fish processing company B.C. Packers, that these commercial licenses would be transferred upriver and used to target sockeye salmon in selective commercial fisheries. During the 1980s the Gitksan asserted their right to fish commercially upriver, a right disputed by DFO. Numerous net seizures and court charges were made, but no successful prosecutions of upriver commercial fishing. All aboriginal fishermen also engaged in food, social, and ceremonial fisheries using set gillnets, and were part of the aboriginal organization called the
Skeena Fisheries Commission (Gottesfeld et al. 2009, this volume).

All of these commercial, sport, and aboriginal fishing groups were resident on the Skeena River, and resemble the major sectors on the Kuskokwim River in the following ways: the subsistence and commercial in-river fishery on the Kuskokwim River is roughly equivalent to the aboriginal sector on the Skeena River which prosecutes both a commercial and a food fishery in-river (Linderman and Bergstrom 2009). The Kuskokwim River situation also contains a key dynamic which parallels the Skeena River in that commercial fisheries prosecuted downstream could severely curtail what was available upriver to sport fisheries. The upriver aboriginal commercial fishery on the Skeena River was unique in that the fishery targeted enhanced (stocked) Babine Lake sockeye salmon that were surplus to spawning escapement (called ESSR: escapement surplus to spawning requirements) and could not be taken in commercial fisheries at the mouth anyway. The commercial versus sport fishery on the Skeena River became the focus of the downriver versus upriver conflict as can be expected in such situations.

The senior governmental regulatory agencies on the Skeena River were also roughly similar to the Kuskokwim River situation. The federal DFO managed the five salmon species that were taken commercially, while the provincial Ministry of Environment managed the sixth species supported by the Skeena River, steelhead trout, which cannot be sold commercially, and was targeted by sport fishermen. The principal management agency for the Kuskokwim River is the Alaska Department of Fish and Game (Linderman and Bergstrom 2009).

The conservation and allocation dilemmas on the Skeena River in 1992 can be summarized as follows. (1) Poor data existed for 16 steelhead stocks, but there were signs of sharp decline in eight of the 16 stocks. This engendered militancy in the sport sector to protect the “last great steelhead trout run.” (2) A decline in coho escapements from 80,000 to 20,000 fish occurred over 20 years. (3) Poor data were available on migration timing, location, and abundance of many smaller stocks of all species. (4) A commercial bycatch of steelhead and other small stocks occurred in the mixed stock sockeye salmon-targeting fisheries at the river mouth. (5) A fear existed in the commercial sector that any steelhead they conserved by sacrificing sockeye salmon opportunity would simply be harvested in sport fisheries upriver, a fishery they felt was poorly monitored. These dilemmas reached a crisis point in 1992, forcing the three sectors and two governments to take action.


Alarmed by three successive years of decline in the monitored steelhead stocks, the Steelhead Society of BC launched an international campaign and brought intense pressure on DFO to reduce the harvest rate on steelhead (bycatch) in the commercial fishery tar-

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5 There were 839 commercial permits on the Kuskokwim, only 19 of which were on the middle or upper river: 694 in W-1, 90 in Kuskokwim Bay, as of 1999. The commercial/subsistence harvest ratio went from 40/60% before formation of KRSMG to 23/77% after this group formed (Ebbing 2002).

6 The Pinkut and Fulton sockeye salmon stocks had been significantly increased after DFO completed the artificial spawning channels on these tributaries to Babine Lake at the top of the Skeena River mainstem in 1971. These stocks could tolerate a harvest rate of 80%, but could not be taken in mixed stock fisheries at the Skeena mouth because other co-migrating stocks would have been overfished in the process. Throughout the 1980s, the Gitksan proposed a selective upriver fishery targeting the Excess Salmon to Spawning Requirements (ESSR), sockeye salmon which would otherwise be killed at the Babine fence so that they would not overpopulate the spawning areas.
geting sockeye salmon. This pressure drove the formation of the Skeena Watershed Committee in 1992 through its combination with another new policy of government, the Aboriginal Fisheries Strategy. This latter policy emerged from 1991 constitutional accords and involved a pilot sales program to move toward limited collective rights to a commercial in-river catch in the traditional territories of aboriginal groups. This new program enabled the Gitksan (one of the upriver aboriginal groups) to finally implement their ESSR fishery (see footnote 6), using selective gear: beach seines which enabled the release of all steelhead trout and coho salmon. The sport sector upriver had already implemented a catch-and-release fishery on steelhead trout and coho salmon. Finally DFO, using threats of total closures, attempted to push the commercial gillnet fishery at the river mouth into using selective gear such as weedlines (which lower gillnets several feet below the water’s surface) to avoid catching surface-swimming steelhead. (This also entailed sacrificing a portion of the sockeye salmon).

Most important of all, the Skeena Watershed Committee (SWC) was founded on a Memorandum of Understanding among all parties, signed in 1992, affirming that the parties would “strive to devise solutions to conservation problems which minimize any disruptions to longstanding fisheries,” and that “made-in-the-north” solutions would focus on local, specific, and flexible problem solving. The implied equality and good will among all parties through this agreement set the SWC on a strong course toward perceived legitimacy. Furthermore, DFO provided funding ($2 million a year to the SWC and $1 million a year to the aboriginal sector for four years from the federal Green Plan) to conduct research to get better data, analysis of stock abundance, and run timing.

This first stage of problem-solving made only minimal progress toward the goal set by DFO and agreed to by the SWC (reducing the harvest rate on steelhead trout by 50% in three years). The commercial experiments with selective strategies were too limited in scope, and commercial fishermen felt that they were being asked to make all the sacrifices but getting nothing from other parties in return. A breakthrough did not happen until 1994, when a new set of conditions was created.


Breakthroughs occurred in the 1994 SWC process when new conditions came into effect involving how decisions were made and the proper role of government. New conditions existed that made the SWC qualify as a multi-party co-management arrangement and as a result authentic power-sharing occurred for the first time.

A number of these conditions involved the creation of a principled decision-making process that was perceived as transparent and fair, and therefore legitimate. Several elements were involved in this new process: (1) Principled facilitation of meetings was conducted by a highly experienced professional mediator, who controlled the decision-making process according to the rules of dispute resolution which were agreed to by all parties, including the two governments. (2) The five parties (three fishing sectors, two senior governments) agreed to operate as five equal partners. (3) The five parties agreed to operate by consensus decision-making. (4) A MOU among the five partners spelled out how they would plan jointly, analyze data together, and spend enough time on education and data sharing to reach consensus. (5) The MOU delegated power to the SWC, promising that if the five partners agreed on a decision, the federal and provincial ministers would not overrule it. Of these five elements, the last was particularly key in assuring re-
spect for both senior governments and fishing sectors. The federal and provincial ministers did not give up any authority, yet the partners were all genuinely empowered.

Two additional conditions were key in that they involved a clearer definition of the role and power of government in the process: (6) the facilitator took over the convening and chairing role from DFO, which had previously both sponsored (paid for) and convened meetings. When DFO had served as chair during Stage 1, it had been clear that the SWC had only advisory power, and could be easily controlled by DFO. If participants perceive that they have no real power and believe that they are merely being used as tools to impose government’s agenda, they are unlikely to work very hard to contribute solutions. A process convened from outside of government is required for parties to work toward solutions with much conviction and energy.7 DFO still sponsored, and paid for, the operations of the SWC. Of course, DFO still exercised considerable power in that it had set the fundamental requirement in place that (7) a clear goal be achieved in a set time. Parties agreed to the goal and recommitted themselves to work to achieve this goal (50% reduction in steelhead trout harvest rate in three years) in the most practical and flexible way possible. DFO reserved the right to impose draconian closures if the goal was not reached.

Both the sixth and seventh conditions involved a clearer definition of government’s proper role in such multi-party co-management agreements, and the nature of the contract it was making with the fishing parties. Understanding in this area could have been made even clearer and the contract more explicit8 for it was in this area, specifically the proper role of government, that the understanding of the fishing sectors about the nature of the contract was chiefly violated later on. This violation was because the contract created de facto co-management rights in which the rules of the game were fundamentally changed. The SWC partners now had rights to jointly conduct (1) stock assessment, (2) production of a fishing plan, (3) monitoring of fishing (sport, commercial, aboriginal), (4) enforcement, (5) coordination of the fishing of different sectors, (6) stock enhancement, (7) habitat restoration, (8) research, and (9) problem definition and objective setting. This constituted a fairly “complete” form of co-management (Pinkerton 2003) in that it involved rights to participate meaningfully in decisions at the policy and planning as well as operational level.

One of the most important co-management rights was cooperative research: commercial, sport, or aboriginal fishermen could serve on a technical sub-committee which discussed research priorities, set research agendas, included local knowledge in research questions asked by 30 research projects, allocated research funds to different programs, received reports on research findings and generally played a highly valued policy role in setting the research agenda.

In Stage 1, minimal connection occurred between research and fishing sector participants in the SWC. The inclusion of fishermen in collecting and analyzing data/knowledge, as well as in designing fishing plans which implement the data, is the most direct way to overcome the implementation feasibility problem discussed earlier. Not surprisingly, when the SWC later failed, fishermen ex-

7In 1987 Labour Canada funded two of its former employees to set up an independent Public Policy Forum in Ottawa to bring government and the private sector together to identify and deal with contentious issues. Since then the Forum has assisted in setting up sectoral councils that take on issues in a more objective fashion than government or any sector can alone. Government usually contributes at least part of the funding to initiate the process, but the successful processes become mostly self-funding in a short time (Public Policy Forum 1993).

8I am indebted to Susan Herman for the insight that a more explicit contract could have helped
pressed some of the greatest regret about losing their role in the research process, a role which made them feel like real participants in management more than any other role. Although funding for research had been made available in Stage 1, fishermen had not felt at that point that they had any real role in the research because they were not authentic partners. But, like government partners in the SWC, they really wanted to understand as much as possible about the dynamics of salmon stock abundance, so they leapt eagerly into the research partner role in Stage 2. Likewise, they valued the honesty of the scientists’ acknowledgment of areas of uncertainty; they admired the competence of the scientists; and they were able to contribute their own ideas and hypotheses about what might be occurring and what kinds of research would best address what fishermen wanted to know and would contribute to effective regulation.

The 1994 Fishing Plan

The most immediate and publicly crucial role played by the SWC in the 1994 season under the new conditions was the creation of a fishing plan which would meet the objective of reducing the harvest rate on steelhead trout while causing the least disruption to existing fisheries. In this they achieved an impressive success, produced a fishing plan with more commercial opportunity than government’s default plan, while significantly reducing the steelhead harvest rate.

This success was achieved through the following activities. (1) The mediator caucused with each sector, producing a document identifying common ground among the parties. (2) The common ground document was ratified by the SWC and used as a framework for altering the default DFO time and area closures to protect steelhead and coho salmon. (3) Scientists in the two senior governments developed a stock, effort, and area computer model to generate options. (4) The commercial sector played with the model and proposed alternative options: commercial openings before and after the main steelhead and early coho salmon run had passed, which gave more fishing time, and a higher harvest rate on other species than DFO’s default plan. (5) All parties understand that further research would enable a more flexible and fine-tuned plan. In other words, the 1994 fishing plan was seen as a good demonstration of the kind of cooperative problem-solving that was possible under the new conditions. The sport sector decided that it was a good enough start and that further progress could be expected in subsequent years.9

The 1994 Monitoring and Enforcement Plan.

Almost as important and public as the fishing plan in 1994 was the plan for monitoring and enforcing it. Each fishing sector wanted to be assured that the other sectors were keeping their part of the bargain, which was larger than the fishing plan. There were at least three components of monitoring and enforcement.

One key component addressed the assurance desired by non-aboriginal fishermen that the new aboriginal pilot sales program was not going to involve illegal sales of food fish, and that the agreements between DFO and aboriginal groups involved a fixed amount of sockeye salmon that really were surplus to spawning escapement. The SWC was allowed to review the aboriginal harvest agreements with DFO, as well as the enforcement plans. A discussion occurred about sharing helicopter time between DFO and aboriginal groups to monitor all three fisheries, sport,

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9During 1994, the historical estimated average 36% harvest rate on steelhead was reduced to 21–22%. This was considered a tremendous achievement, even though 18% was the target.
commercial, and aboriginal. In addition, aboriginal groups were willing to coordinate their harvest, including their food fishery, with other fisheries so that a pulsed timing of fishing could be effective in getting stocks of concern to their spawning grounds. A discussion also occurred about a strategy for how enforcement of habitat protection can be coordinated watershed-wide.

The Joint Vision of Overlapping Interests.

What mattered most about the joint enforcement activities, as well as the joint fishing plan, was that the parties were implementing a joint vision of their mutual gains through the serving of overlapping interests in abundant stocks, healthy habitat, well-monitored fisheries, and effective enforcement. At this stage, the joint vision included discussion of an enhancement strategy to rehabilitate weak stocks. In the 1994 season, the commercial sector was willing to “give to get”: it could see the larger benefits forthcoming from cooperation, and saw that it also gained the power to influence management by cooperating in the process. Their willingness to cooperate illustrates a phenomenon that has become well understood in co-management. Even if the outcome is exactly the same (e.g., having harvest opportunities cut), an individual’s perception of the outcome is entirely different if he participates in, understands the rationale for, and agrees with the outcome (Jentoft 2005). Having power to make these decisions with full information matters, and contributes to an individual’s sense of self-efficacy, or ability to make a difference (Bandura 1982).

Another more positive outcome that emerged from aboriginal groups at different locations in the watershed was the benefits of inter-aboriginal cooperation. They were able to agree on an innovative form of risk sharing and benefit sharing. They agreed to discuss where in the watershed to best harvest each groups’ share for maximum opportunity or market value, and to contract with one another to balance market and conservation objectives. That is, sometimes groups fishing at the mouth would not have opportunity because of conservation concerns, but could share the surplus sockeye salmon if taken at the top of the system when conservation concerns were few. At other times, a selective fishery at the mouth might deliver a higher quality sockeye salmon which might be the only product acceptable to the market in that year. This discussion eventually evolved into a broader proposal in 1996 that the profits from the sockeye salmon surplus to spawning escapement taken at the entry to Babine Lake in the ESSR fishery would be divided among the Skeena Watershed Committee, the Babine Lake aboriginal groups, and the Skeena Fisheries Commission (the organization of aboriginal fishing groups on the Skeena River; Gottesfeld et al. 2009). Some of the funds would be spent on coho salmon “soft” enhancement (egg boxes in streams to increase egg to fry survival).


In the 1995 season a number of occurrences started to erode the effectiveness of the partnership. Some of them related to how government understood its role in the SWC, while others related to how the fishing sectors understood and responded to innovations in the fishing plan which did not work as much in their favor in the 1995 season as they had in 1994.

In 1994 the steelhead run had been stronger than usual and the sockeye salmon run had been unusually weak, creating the best conditions for an innovative fishing plan. DFO had begun using a harvest rate model
for calculating the Total Allowable Catch, instead of the traditional fixed escapement model. Traditionally, a weak sockeye salmon run would have meant a very small fishery, with most of the run dedicated to escapement. However, the new harvest rate model called for fishing a fixed percentage of the run, no matter how small or large it was. This meant that in 1994 the commercial fishery had more fishing opportunity on sockeye salmon, applying the new model, than it would have had under the old fixed escapement system of calculating the allowable catch (which allowed fishing to occur only after the escapement needs of a variety of stocks had been met). The commercial sector’s awareness of this undoubtedly was one element in its support of the 1994 fishing plan. The commercial sector had also preferred the harvest rate model because it permitted a more aggressive fishery on early stocks, as well as stability during uncertainty, and because at 42%, the harvest rate in the model was slightly higher than the average historical harvest rate of 40%.

In 1995, an unusually strong sockeye salmon run co-occurred with a weak steelhead run and yielded a nightmare scenario for conservation. The commercial sector was accustomed to paying off debts in the best year out of four or even out of ten. It was the “bonanza” run years which made their fishery possible. But the new harvest rate model only allowed them to fish a fixed percentage of the bonanza run, whether more salmon were needed for escapement or not. To make matters worse, in 1995 the harvest rate model underestimated the sockeye salmon run size, while the in-river test fishery historically had overestimated it. Naturally the commercial fishermen were inclined to believe a familiar method of measuring the run size. The new harvest rate model and the manner in which it estimated run size had not been explained sufficiently to the fleet by DFO, and it was in fact still being refined.

The members of the SWC who did understand the basics of the harvest rate model might have attempted to explain it to the fleet at large, had it not been for a second government action that went awry. Some of the Green Plan federal funding promised to the SWC was unilaterally reallocated to other purposes by senior DFO officials. Of course, this decision was not made by participants in the SWC, but the action was still perceived as a betrayal by DFO. Fishing sectors had seen the funding as providing one of the conditions under which they had agreed to participate. To make matters worse, the province did not deliver the funding it had promised for steelhead trout research.

In this situation of widespread confusion, distrust, and accusations of betrayal, nobody attempted to defend or explain the harvest rate model to the fleet at large. Accustomed to the fixed escapement model which let them fish more days if the sockeye salmon run size was large and fixed escapement goals were met, the commercial sector responded with outrage when the SWC fishing plan for the number of fishing days was not increased in the presence of a very large sockeye salmon run in 1995. Their protest was of course largely fuelled by the 600 non-local gillnetters who fished the Skeena River in large run years, which knew little of, and possibly cared little for, “made-in-the-north solutions.” One coastwide fishermen’s organization was inevitably drawn into a historic oppositional position, rather than one based on the new watershed-based model, whose support of, or possible rivalry with, their organization was not clear at this early developmental stage.

The sport sector responded with equal outrage at the commercial protest, especially since early steelhead and coho salmon abundance was quite low in 1995. Although the SWC fishing plan survived the protest, and was not varied, the sport sector had expected more progress, and decided in the next
year that it was time to increase protective measures. In 1996 a second and even greater bonanza sockeye salmon year caused the commercial sector to be even more unhappy with their fixed harvest rate fishing opportunity, especially in the context of a forecast overescapement of two million sockeye salmon which could cause disease and pre-spawning mortality leading to poor survival of the next generation. The Skeena Watershed Committee partnered with the Skeena Fisheries Commission and the Babine First Nations to conduct an upriver commercial fishery at the entry to Babine Lake. The commercial sector feared this development could presage a massive reallocation of fishing rights to upstream groups, and the largest processors claimed that sockeye salmon taken at this location would be of poor quality and unmarketable. Equally dissatisfying to the commercial sector was the failure of enhancement funding to materialize, what they believed to be poor catch reporting in the sport fishery, and research results which they believed showed steelhead and coho salmon to be less endangered than claimed. Their attempts to obtain more fishing opportunity and to change the original objective of 50% reduction in steelhead harvest rate were not successful. By October 1996 the commercial sector, which had been participating with less and less enthusiasm, had provisionally withdrawn from the SWC and by December outlined to DFO their requirements for rejoining. Obviously they still thought the process was valuable, but were bargaining for fairer treatment.

In early 1997 the sport fishery sector, especially through the provincial Ministry of Environment representative posted on the Skeena River, unilaterally pressured DFO to extend the SWC plan to the next watershed north (the Nass River), a separate fishing area that was managed chiefly as a seine (large vessel) rather than a gillnet (small vessel) fishery. The sport sector and DFO and provincial scientists who made this decision saw this as a way of reducing interception of steelhead by the seine fleet, and did not understand the political implications of this move. For example, the gillnet fleet which fished the mouth of the Skeena River had a large component of owner-operated vessels which could make independent decisions. In contrast, the seine fleet that fished the Nass was largely owned or controlled through indebtedness by major processors, and their decisions were dictated by the same. As soon as the major processors heard of the DFO plan to extend the SWC process to the Nass River, they took swift and effective action to stop it. In a matter of days, a meeting of the North Coast Advisory Board (representing all commercial fishing and fish processing interests in the north) was called, and a processor representative asked for and got the withdrawal of the commercial sector from the SWC. Commercial sector members of the SWC complied with mixed feeling, withdrawing from the SWC in early 1997, since they were already unhappy and distrustful of government unilateral actions, they perceived this latest action as yet another. Privately, several of them apologized to the DFO members of the SWC. After last minute attempts by DFO and the SWC to revise the new fishing plan to keep the commercial sector involved, the commercial sector announced that its withdrawal from the SWC in March 1997 effectively ended the SWC, according to the terms of the original 1992 MOU. In a March 1997 press release, a nonprocessor member of the commercial sector summarized the dominant feeling as “We were not at the table as a full partner” (Prince Rupert Daily News, March 17, 1997).

Although consideration of events after 1997 is beyond the scope of this paper, it is likely that the commercial sector is far worse off today because of their withdrawal from the SWC, and because they could be more powerful inside the committee than outside
it. They exemplify the tragedy of the expectation that older forms of power will continue unchanged after new conditions have been created by new rights (aboriginal), new conservation concerns (bycatch and weak stocks in mixed stock fisheries), and competing lobbies which become more organized and powerful (sport sector). Arguably, fisheries planning on the Skeena River is also less effective without the active cooperation and participation of the commercial sector.

The Key Aspects of Failure

With the benefit of hindsight, it is possible to distinguish key aspects of what went wrong. These consist partly in confusion over what role government was playing inside the process versus what role government could play outside the process without violating trust, i.e., which hat the government could wear appropriately at which times. A more explicit elaboration of the nature of the bargain, the contract, and the mutual obligations of the partners was needed to clarify what each considered essential to maintaining trust and honoring all aspects of the contract. This specification could have been done through a more detailed MOU spelling out expectations, which would have enabled the facilitator to cry foul if it were violated.

A second key aspect of failure was the weakness of “citizen science” (Westley 2002), i.e., a lack of understanding by government of the importance of explaining the new model to fishermen at large. The fishermen believed that as partners they had or could have a reasonable understanding of the management model. An investment in the removal of confusion about the science could have made a large difference.

A third aspect of failure was the lack of understanding of the fragility of the trust and communication, and the need for sufficient time to develop it more fully. Commercial fishermen stated that they gave up on the SWC when they got the impression that sport anglers really wanted to eliminate them entirely. There is a need to be keenly aware of the fact that institutional arrangements such as rules and committee structures merely enable the formation of co-management, but are not the essence of it. The essence lies rather in the human relationships and attitudes that are formed, namely the willingness to work together (see Brelsford 2009, this volume), the belief that together people can learn how to solve problems more effectively than they can apart, and that they each have a valuable contribution to make to the solution. Clearly trust is not built quickly in situations characterized in the past by extreme conflict. Both policy analysts (Leach and Pelkey 2001; Leach et al. 2002) and anthropologists (Smith and Gilden 2002) give “trust” a high priority in the list of conditions or assets required to make watershed partnerships work. (Other conditions identified are funding, education, leadership, clear problem definition, and vision, conditions consistent with the findings of this paper).

Theorists in organizational behavior and organizational learning (Argyris and Schon 1978; Gray 1991; Kofinas and Griggs 1996) identify additional conditions which facilitate the building of trust: (1) undertaking joint tasks such as information searches and assigning tasks to subgroups, (2) articulating the values that guide each party’s interest in the process, (3) inventoring all technical, financial, and human resources accessible to the collaborators (such that it is recognized all parties have something to offer toward solutions), (4) deciding how to implement and monitor the agreement, and (5) creating a local constituency to support implementation. The last four conditions serve to emphasize the fact that trust building takes considerable time.
Relevance to Problems Identified in the AYK Region

All three key aspects of failure discussed in the preceding section apply to the Kuskokwim River fisheries, or more broadly to the AYK region: the role of government, citizen science, and the slow building of trust. These issues are intertwined in a complex way on the Kuskokwim River because the watershed parties have identified interception and bycatch issues in the False Pass fishery as a concern, implying that they expect government to deal transparently with them about the data and analysis of a fishery outside of their watershed which they believe affects them. The Skeena River story suggests to managers of the Kuskokwim River that an investment by government in sharing and explaining what is known and not known about the impact of this fishery on AYK watersheds would pay off in increased respect for government, and in greater willingness to contribute to monitoring and enforcement in AYK watersheds. If clear data exists demonstrating a significant impact by interception fisheries, addressing this issue by involving the interceptors in some joint decision-making process could be beneficial. If a significant part of the stock abundance of the interceptors’ fishery depends on the effective management of watersheds, they have something to lose by not cooperating with those who protect habitat and conduct stock management. If they do not depend significantly on AYK stocks, government can still require them to participate in a joint process as a condition of continuing their fishery. Perhaps they can be offered something for their sacrifice in giving up fishing opportunity to reduce bycatch, such as increased opportunity in abundant years. As the Skeena River situation demonstrated, in an upriver versus downriver or interception versus terminal fishery, asymmetrical costs and benefits exist (Ebbin 2002). It is important to acknowledge that some parties are asked to give more than they get in the short term (as occurred for the commercial sector on the Skeena River), and to seek ways to balance the sacrifices of these parties so that they remain cooperative contributors and identify with the public good and long-term outcomes. Government can act as a leader to get sectors beyond the negotiation of individual interests to reflect broader interests in the health of stocks, ecosystems, and communities.

If such an effort were made, it would be important to spell out the expectations which make explicit the role of government through an MOU which delegates power and responsibilities to fishing sectors, and clarifies the consequences of not abiding by the MOU. If the MOU identifies consensus as the decision mechanism, it is important to be clear that lobbying of government by any one sector will be seen as a violation of the MOU.

Furthermore, sectors outside the watershed are unlikely to see cooperation with watershed partnerships as advantageous unless these partnerships have already worked out a high level of cooperation themselves in data sharing, data analysis, agreement of fishing regulations, monitoring of compliance with regulations, and enforcement of compliance. Key to this is that citizen science within the watershed be at a high level, as demonstrated by (1) a high level of trust in the data/knowledge, (2) fishermen involvement in collecting and analyzing data, (3) fishermen involvement in designing fishing plans based on this data, and (4) fishermen involvement in monitoring and enforcement of all uses. The SWC story shows us the need for social learning, the building of human relationships, and visionary leadership that focuses on the long term. That leadership may have to come from government.
Conclusions: What Have We Learned?

In the beginning of this discussion, four persistent problems in salmon management at the watershed level were considered: (1) How can we get enough data/knowledge? (2) How can we know the data we do get is valid and reliable? (3) How can we analyze and interpret the data accurately, taking enough factors into account? (4) How can we implement our analysis in an effective fishing plan and other planning for habitat, enforcement, and other functions?

In the SWC case study presented, I considered how these four problems can be addressed through partnerships among fishing sectors and between these sectors and senior levels of government. The SWC experience allowed us to identify the following conditions as facilitators of successful watershed partnerships.

The first four conditions involve the role of government and the first three are primary:

(1) Government can threaten to impose draconian regulations to achieve conservation goals if sectors cannot agree on more flexible regulations to achieve the desired goal. Many cooperative agreements have arisen in the shadow of the threat of less desirable and flexible regulations.

(2) Government can distinguish its role outside the process as a general policy maker (as in setting general conservation goals) from its role inside the process as a partner and stakeholder which does not make unilateral decisions. This role is clearly spelled out in an MOU.

(3) Government can share real power with fishing sectors when they can agree on a harvest plan, through an MOU spelling out the powers and responsibilities of each sector, and formal rules for making decisions and conducting themselves.

(4) Government can produce funding to allow research to fill key data gaps which will clarify differences of opinion among sectors in the longer term.

The next four conditions involve how an effective decision-making process is conceptualized and executed:

(5) The problem and a goal in addressing it are clearly defined.

(6) Common overlapping interests in the long-term productivity of the watershed can be incorporated into agreements among sectoral interests in such a way that their differing interests can be temporarily set aside.

(7) Asymmetrical costs and benefits are identified, and it is acknowledged that some parties are asked to give more than they get. Government seeks ways to balance the sacrifices of some parties so that they remain cooperative contributors and identify with the public good and long-term outcomes.

(8) The principles of facilitated negotiation are used, even if a facilitator or mediator of appropriate stature, experience, and style cannot be used.

The last four conditions concern the involvement of fishing sectors in the production and sharing of knowledge, and the way in which this motivates them to cooperate with one another and with government:

(9) Citizen science can be practiced: government considers that it is worth the effort to explain new models and levels of uncertainty to the fleet at large, not depending on committee members to carry this difficult burden.
(10) Citizen science can be practiced: government can allow fishing sectors to experiment with selective gear and strategies.

(11) Sufficient time is allowed for enough trust to build so that each sector genuinely accepts the others’ right to exist, and even believes that sector has a valuable contribution to make to knowledge about watershed health, and to actions promoting it.

(12) Self-efficacy, or the experience of being powerful enough to accomplish one’s goals, is an under-rated tool in fisheries management. When fishing sectors become real partners and trust the data because they participate fully, they feel enough power to become willing to sacrifice if it is part of a negotiated trade-off with conservation justifications.

These conditions are consistent with those identified in the co-management literature about place-based groups and communities, as well as the literature in political science on watershed partnerships. They add new dimensions to both these literatures in identifying the role of MOUs, the necessity for government not to be the convenor of watershed partnerships, and the key importance of fishermen involvement in research. The discussion also addresses the longstanding concern of fisheries managers about getting enough data that is reliable and valid, and thus sufficiently legitimate to allow implementation of fishing plans informed by it. This discussion has also shown that fishermen can be respectful of data limitations and consequent uncertainty, and that including them in a consideration of the state of scientific understanding can reduce the implementation feasibility problem.

A framework for the reconstitution of the Skeena Watershed Committee is now being gradually developed under new conditions including (1) legal action against DFO by an aboriginal group upriver demanding protection of weak sockeye salmon runs from mixed stock fishing by commercial fisheries at the river mouth;¹⁰ (2) renewed pressure from upriver sport organizations for conservation of steelhead trout and coho salmon and for implementation of the new Wild Salmon Policy and the new *Species at Risk Act*; (3) new funding from the Moore Foundation which is focused on the conservation of wild salmon of the Pacific Northwest; (4) the convergent interests of upriver aboriginal fishermen and upriver sport guides to have more fish available for use in-river; and (5) the convergent interests of upriver aboriginal and coastal processors, as well as coastal commercial fishermen, to obtain Marine Stewardship Council certification for all Skeena River caught salmon. These new conditions propel further consideration of the lessons from the past.

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¹⁰On July 26, 2007 the Gitanyow, claiming an infringement of their aboriginal rights to fish for food on the Kitwanga, launched a suit against DFO demanding that they protect a sockeye salmon run on the Kitwanga River (a tributary of the Skeena), which was alleged to have fallen to less than 10% of its historical abundance because of the mixed-stock commercial fishery at the mouth of the Skeena. At the same time, the upriver sport fishery launched a campaign about new steelhead abundance concerns based on management during the 2006 season when sockeye arrived a month late. Because of these concerns, an Independent Science Review Panel was commissioned to review Skeena Watershed management in light of the Wild Salmon Policy, and the interests of First Nations, commercial and sport fisheries (Walters et al. 2008). Although the Panel did not find evidence that commercial fisheries were overharvesting steelhead, it identified numerous other concerns and recommendations for improved management and policy.
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References


