CHAPTER 27
Dialogue following Solutions for Salmon Conservation

Linking theory with practice

Malcolm Windsor commented that US President Reagan was apparently interested in economics; what always fascinated him about economists was when they saw something in the real world and something working in practice, they were inclined to wonder whether it would work in theory. He noted that in a way we have had those two approaches with Steve Farber looking at the theoretical question of how to manage these activities and, from Arnie Narcisse, a totally different perspective and one without a single figure on the board. He posed the question: How are we going to reconcile these two?

User perception of a resource might influence the net value through the gross value figure

Jeff Hutchings commented on the points that Steve Farber made about politics and the importance of looking at impact and policy and that this should guide value. He described a situation where that might not necessarily work - where a fishery has declined to a great degree and there is pressure to close the fishery but, those involved in the fishery, would like to keep it going. From their perspective, if the net value is the gross minus the cost, in the short term the gross value might be quite high, whereas the longer-term gross value to them might be lower because of expenses they need to meet. For those users, if the costs are going to be the same and they perceive the gross value of that resource, of taking those fish out of the ocean, to be quite high in the short term but lower in the longer term, then, from a policy perspective, you would actually interpret the value in the short term of taking those fish to be quite high. He expressed concern about the degree to which the user perception of a resource might influence the net value through the gross value figure.

Steve Farber replied that this is a classic problem of short run *versus* the long run. He commented that for the kind of analysis he is suggesting, of looking at net value (which is really gross relative to cost), in this case, he does not think there is a conflict in interpretation. This is because there is, in the short run, an extreme inability of these people to adapt to the changes and to the changing circumstances. In the long run, they have more opportunities for movement to find other economic activities and other places to live and their costs are associated with this changing condition. The serious dilemma here is one of trying to assist those people in getting through this transitionary state, which is so costly to them, for whatever reason. This may be a large social decision to say that we are not going to save these fisheries and these people are going to be inconvenienced, or in China, for example, we are going to put a huge dam in and move 1.5 million people. There are huge transition costs and he believes that it is incumbent upon a society to ‘hold those people harmless’ - that is an ethical statement. Their problem is that they do not have access to the resources for the transition period, they do not have access in many of these

circumstances to capital, and they do not have the knowledge of what their opportunities are. In his opinion, one of the ethical responsibilities on the part of society is to facilitate their mobility through enhanced knowledge, access to capital and even subsidizations, if that is required. The point is to get people through the short run into the long run.

How can we incorporate non-measurable values into the decision-making process?
Jim Irvine enquired if either Steve Farber or Arnie Narcisse could comment on how we can do a better job of incorporating non-measurable values into the decision-making process. He noted that his concern with the traditional cost-benefit work is that you go through all of the analysis and incorporate all of the estimates of benefits and costs for all the measurable things and then you always end up with non-measurable things such as cultural values and ecological values. The question is whether it is even worth doing a cost/benefit analysis when you admit that those values may be miniscule compared to the non-measurable values. The question is: How can we logically or defensibly incorporate non-measurable benefits and costs into the decision-making process with something like wild salmon?

Arnie Narcisse replied that this was the quandary that they found themselves in during the 'allocation' debate of (May and Toy). They were asking that specific question; that is, How do we measure those non-measurable values that mean so much to us as First Nations' people? He commented that he frankly did not know how to do this. At the time those debates were going on, they had the commercial fishermen say that this fish is worth $10/$15/$20 while others would claim that the same fish was worth $100 to the recreational community. What he, himself, asked at the time was: What is the value of that salmon to First Nations? They do not want to play with these fish, and they do not wish to sell them - they simply want to eat these fish. How do you measure that value? How do you measure a value of something that has kept his people alive for thousands of years? It is impossible to do this. He stressed the importance of recognizing that there are other values that go beyond economics, such as ecological and cultural values. He also referred to the long slow process that is needed to recover those initial values that his people once had and stressed that if we want to get into evaluation then we also need to talk about the lost value that the First Nations people have witnessed since the inception of commercial fisheries.

Steve Farber replied that you cannot measure the immeasurable. What you can do is to begin to think about the whole variety of the natural system services and trace them all the way through the ecosystem. The bears are an example, and he noted that he had not seen anybody talk about those more indirect kinds of ecological values in the context of these issues - they may have referred to them ecologically but did not try to place any kind of monetary value on them. If we think more extensively about ecosystems and how they work and the whole array of services associated with these natural systems, then he believes that we can illustrate the importance of natural systems - that they are more than just commercial and recreational values. That would get us a long way toward actually preserving what people might traditionally think of as immeasurable values. How you deal with immeasurable values, the cultural values to First Nations of critical natural system services, is to not trivialize them by putting monetary values on them but instead by creating a forum in which people can express those values and begin to think a lot more carefully about how to preserve those values by doing things in different ways.

Wayne Jacob commented that what he has seen recently in planning processes, that are meant to drive some of the decision-makers, are 'Multi-attribute Trade-off Analyses'. To accommodate values that you cannot put a dollar value on, they have created artificial scales of 'better', 'the same' or 'worse'. You can attach a numerical value to that and compare that numerical value with another attribute that you may be able to determine a dollar value for. He noted that what he has difficulty with, in those kinds of situations, is that you may find yourself trading off potential multi-million dollars in one attribute *versus* a single digit change in an artificial scale. Taking the collective into account when there are multiple attributes and you are adding up the changes in each attribute, you may not see a relative scale in terms of the importance of that cultural attribute *versus* a much larger scale economic attribute. There are ways to

adjust each and you can create another artificial scale that simply takes into account that there is a change in economics (whether it is better to have all artificial scales and comparing a multitude of artificial scales) but you run into the dilemma where the culture ultimately gets valued somehow in the decision-making process and it is either a $1 value or an artificial value. He emphasized the difficulty associated with trying to capture the cultural significance in decision-making.

Irrigation practices and protection of fish habitat

Addressing Arnie Narcisse, *Wayne Harling* commented that he had been in the region where Arnie resides and noted that when he stood on the bridge of Westwall on the Salmon River in the middle of November and looked upstream and downstream, he saw that it was as dry as a bone. When he finally found water downstream, he saw a chinook salmon redd and a coho salmon redd, and in between the two there was an unscreened intake pipe for an irrigation pump ready to pump the fish onto the fields as instant fish fertilizer. He commented that he had also seen Louis Creek with more irrigation pump houses in the riparian zone than he has seen trees. He posed the question: How successful have you been in getting the ranchers and your neighbours to change their operations in order to protect the fish habitat?

Arnie Narcisse replied that he was the previous Program Manager for Nicola Watershed Stewardship Fisheries Authority and they were experiencing problems with the ranching community then in the Nicola Valley. They pointed out to the ranchers that the easy way to solve the problem was to spend $500, and utilize a simple technology, the Finnegan wheel, which is a small box 6' x 6' and has a big paddle in the middle. It effectively reduces the straying of fry and smolts into those intakes. There is a ranch cattle company on one of the Band lands where they had three intakes and indeed that problem was occurring there. He suggested to the Band that if they installed the screening devices on these intakes they would be providing leadership on the premise that if they did this, then the other ranchers would do it. They put these in and the other ranches did follow suit and so they were able to save the fish. What we need to do is to transpose that to all of the other watersheds that are impacting fisheries resources.

You take only what you need

Stanley Njootli commented that he sits on the Yukon Salmon Committee, which is enshrined in part of the Constitution of Canada as the umbrella final agreement for the Yukon Territory. He noted that with respect to values, it is not a question of measuring value, but looking at need. That is how they have been taught for thousands of years along the Porcupine River, for the use of natural resources. When they harvest waterfowl such as ducks and geese, their elders and parents have always told them that when the ducks start having their eggs and young ones, then their harvest is cut off. "What has been passed down to us is that you take only what you need. It is the same thing when harvesting caribou. If we take five caribou that is what we need for our family for the winter. The rest of the caribou are allowed to swim by and it does not mean that we should sell it, or commercialize it". He commented that they do the same thing with salmon. It is important to look at the question of what a human being needs to sustain himself and to live on this earth, based on need.

He gave the example of the Porcupine River, which has a branch that is one of the best spawning streams in North America for chum salmon - yet there are a lot of problems with that because a lot of these fish have been taken along the Yukon River system and in the Bristol Bay area on the Alaska side. They are looking at plans and in fact do have an interim agreement with the Americans - probably one of the few that the Americans would live up to in terms of having an agreement to sustain an international resource - to bring that level back up. There are not enough salmon coming up to spawn. There are 43 villages that live along the Yukon River system, on the Alaska side, that depend on that fishing system itself for the chum salmon, and chinook and coho salmon. He noted that when we are talking about the values of fish, we need to take into account the fact that we are in a cold climate and a lot of the values depend on sustaining one's life for the winter. The economy is not very good and there are many people who depend upon and use that salmon - that is the lifestyle in rural Alaska and the Yukon.

He also referred to earlier comments about digging a canal from the Columbia River over to Yakima. He pointed out that if you built your house twenty years ago it is not up to today's standard to keep warm in the climate in the North. Then we developed a house with the R2000 standards, and we can now have a warmer house. But you do not have a warmer house - you just build a bigger one and use the same amount of energy and possibly more because of affording to build a bigger one. It is the same thing with that River system. If you have a greater water flow in the Yakima River, then you will have more orchards and probably look at your financial return and determine what product you will grow in order to accomplish a higer yield. That is just human nature. In his opinion, the only changes that can take place are via legislation - changes can be made within the local system and within the Constitution of Canada.

Wayne Harling referred to the figures in Dr. Farber's presentation where worker's earnings were listed as $40 from the chinook *versus* $35 from another job, for a net value of $5. He wondered about the situation where if the alternatives from the earnings from the chinook job was going on 'the dole'? In that case, would the net value not be $40 plus whatever the person would get from Unemployment Insurance?

How do you get the message out to the public?

Karen Munro commented on the presentation earlier in the day about humans as predators and the rather sad story of the direction that society is taking. She noted that we all know this in our hearts. There is a lot of information that we have and, as scientists, we want to be objective and we do not always want to be stuck with making a prediction that may or may not come true. We are still left with the question of what we do with our life and how we live our life. The story of the salmon is closely entwined with that. She noted how much she appreciated the comment that Arnie Narcisse made about the need to build stewardship, as opposed to management, capacity. She commented on the dedication and concern of the participants in the workshop. She suggested that in addition to the initiatives that Bill Rees mentioned when asked about international efforts and legal efforts nationally, that we also think of how to take what we know, as was raised by John Fraser, out into the wider community. How do we keep communication clear? She suggested that this message should be one of the main recommendations from this workshop. She noted that how we value wild salmon is as much a question of how we value human life.

Predation

Robert Kreutziger raised the question of predation and asked: What is happening to those returning fish in terms of predation and what is the role of acoustics?

Malcolm Windsor replied that predation is a very important issue but, to their surprise, at NASCO they found that there was very little information about it. To date they have not done very much other than to set up a working group to accumulate all of the information and determine the effects of predators on salmon and who they are and what are they taking. The first step, like many other cases, is to get the information.

Randall Peterman noted that acoustics are being used as an attempt to reduce the effect of predation. He agreed with Malcolm Windsor and noted that it is very important that we know something about the predators' effects, in particular on juvenile salmon. We have learned from previous presentations about some examples of depensatory mortality – that is where a higher percentage of the salmon population is removed by predators as the abundance of the salmon diminishes. In the context of the precautionary approach, it would be reflected in assumptions about that process, and in stock assessment models. One of the assumptions, in stock assessment, should be that it occurs in a way that has a higher percent mortality at lower abundance– this has been observed in every other system where there is data on predation on natural populations, such as with insect, wildlife, bird, and, in a few cases, fish populations. In that way we would take that lack of information on specific systems about predation into account in the context of the precautionary approach.

Implementation error (Figure 23.2, Peterman, Chapter 23)
Bruce Ward addressed a question to Randall Peterman: With regard to the shape of the distribution of that implementation error I am curious to know if it tends to be skewed more positively or negatively in what you have looked at? Secondly, what actions, in general, tend to decrease a deviation around the mean?

Randall Peterman replied that if you convert the cumulative probability distribution into frequency distribution then it tends to be skewed to the right and there is a long tail out to the high values where you tend to get a few large escapements compared to the target. The factors that decrease the magnitude of the implementation error would be, depending on the species and the location, better pre-season forecasts – these certainly can help because the early fishing season plan is based on them, and it will be less likely to deviate from the necessary harvesting during the rest of the season if the forecasts are close to what the actual in-season abundance estimates are. Another point, which you would intuitively conclude, is that when there is a very large recruitment, there tends to be a much larger implementation error, which is a positive error over and above the escapement goal. When there is much lower than expected recruitment, the tendency is not to make up for that and there are fewer spawners reaching the spawning ground compared to the target.

The role of stewardship groups and public education
Paul Kariya commented that in the dialogue to date we have been hinting about some of the solutions that might involve stewardship and, what he would call, more "every day folk". When one considers the precautionary approach, it is interesting to think about where "every day folk" might fit in. We have a relatively unique social movement evolving in the communities of British Columbia consisting of coalitions of aboriginal people, fishing interests which are both commercial and recreational, and sometimes local government, and some of it is seeded by both senior. Some of this social movement has emerged from the good work of the Salmon Enhancement Program (SEP) and some has come out of the provincial ministries. These are coalitions of people who are out in the field doing mapping, information gathering, and working on small scale restoration projects. These people will ultimately influence decision makers who, in turn, will influence the companies that they work for to donate money and time. He believes that we have a unique solution in the making, in terms of both the precautionary approach, and real solutions to salmon and how they are valued and where they fit within the economy and the social fabric of British Columbia. He asked the presenters to comment on their experience on the role of stewardship and "every day folk", in the solutions that we seek.

Randall Peterman commented that generally, from what he hears indirectly about examples from other people, the stewardship that is engendered in people, such as streamkeepers groups, is a very positive move in the sense that they are going to be seeing what the risks are that are associated with various actions on a day to day basis. He believes that the link between them and whatever decision-makers are receiving in terms of feedback from the citizenry is important to develop more strongly. Perhaps what has not been done very well, is being able to communicate what the scientific uncertainties and risks are to a broader audience and to those people who do not have the background and expertise in those kinds of techniques. This is a real challenge. He referred to the orientation of the group that Greg Taylor described and noted that they probably do not have a similar concern about risks, but they do have economic and social risks to be concerned about. He noted that everyone has their own measures of risk that they are focusing on we would hope that, because they are all dependent upon long-term productive salmon stocks, that there would be some meshing of the actions required to minimize those risks, for all groups.

Malcolm Windsor commented that 'every day folk' do care about salmon and he stressed that these people are a tremendous asset and noted that he is not sure that they have tapped this resource adequately in Europe. They do need to get out more into schools and the public domain and talk about their work. People instinctively like this work and they like the salmon. However, in an organization such as NASCO

they simply do not have the resources to do that. In his opinion, our governments and particularly our NGOs can and are doing a lot. He noted that once you lose that critical level, which he has observed in Portugal and Spain where their salmon are critically depleted, you do not have fishermen or recreational fishermen depending on it, and it begins to disappear from the public domain and then there is no one to support it. It is very important to do something prior to reaching that critical state. If people do not depend on the salmon, or care for it then, then they will not help - work is needed, therefore, before reaching that point.

It is a question of priorities

Otto Langer expressed disagreement with Malcolm Windsor's remarks that governments simply do not have the money. He commented that we have just seen the NASCO countries spend approximately $150 billion waging a war in some distant land against a third world country and worried about mass destruction. He suggested that the environmental decay that we see all around us is a bigger concern in terms of mass destruction. In his opinion it is more an issue of government will - the money is there but it is not going to be spent on a lot of environmental issues, including salmon.

Malcolm Windsor agreed that it is a question of priorities and we do not seem to have the priorities that we once did. He reflected on why this is and commented that it seems that governments are reducing their research and development budgets. It might be that when stocks diminish there are a diminishing number of people who care about them. These governments have told him that they cannot provide any more.

Educating the senior managers

John Fraser commented that he is troubled, as Otto Langer is, with the comment that governments do not have any money to find out what is happening to the salmon once the smolts go into the ocean. He does not believe that Canada does not have the money to do it - in his opinion anybody who insists on that is just caving in to bean counters within the departmental structure - it has nothing to do with whether or not we can afford to have vessels and trained people trying to find and monitor this. He believes that we have the money and that, specifically, one of the problems in Canada, is that it is doubtful whether any deputy minister has ever sat down and spoken with anyone about the necessity to track where these salmon are going. He noted that there is no deputy minister present at this conference and commented that where we once had as good a public service as any country in the world, we now have managers making the decisions and the manager, who happens to be the Deputy Minister of Fisheries, might, by accident, know something about fish, but the probability is that he or she does not know anything about fish. They have been in other departments and have swirled up the managerial line. The difficulty with this is that the leadership that is expected in a great federal institution is not present at the upper echelons. He commented that it is likely the same in European countries. His specific concern is that, first of all, what NASCO and others are doing is enormously important. However, unless this organization determines what it would cost to do what needs to be done and, unless they can sit down with senior people, and not just deputy ministers, and advise them of what is needed, then it will not happen. He stressed that he would like to know what it would cost Canada to make an appropriate contribution to determine what is happening to these fish and who are the people to be talking to.

He then focused on issues related to Pacific salmon. He noted that we have had years of low ocean productivity and we have been asking questions such as, why we do not know where the fish are dying, how many are being taken by predators that have moved up into warmer waters, and who is tracking them? However, there is only silence to those questions. In his opinion this is because somebody, at the middle ranks, indicates that there is no money to follow through. He asserted that Canada does have the money and he believes that the federal government has to know about it. The difficulty is that the mid-rank representative of the department does not have the authority to do anything. Unless you meet with the top people and get those discussions out into the public, they do not see a need to be involved. He noted that we are experiencing budget cuts in British Columbia on the basis of decisions that were made

some years ago to set up certain programs, which were going to be sunseted. If they were important to be carried out, then why are they not important to continue being maintained. He noted that he is not talking about tens of millions of dollars and not hundreds of millions of dollars – rather they are modest sums. The specific thing that we need to know is who in the Canadian system is hearing this message and who in the Canadian system is telling you that we could not find the money to do it?

Malcolm Windsor replied that this analysis is absolutely correct.

The issue of accountability

Bruce Hill commented that it appears that one of the desirable outcomes of the precautionary approach is to generate conservative and prudent fisheries management decisions. He believes that most people can understand that - it is intuitive and is common sense, if not uncommon in practice.

We know that imprudent decisions and chains of decisions, especially in Canada, have led to the collapse of the richest fisheries in the history of the human race. In one of the previous presentations by Randall Peterman he suggested that we not use subsidies because they change the perception of risk and asked a rhetorical question, "How will fishermen react if they know they will be bailed out?" I think that is a very pertinent question, but isn't the lack of accountability, in regard to decision-makers, a form of subsidy? In other words, "How will decision-makers act and what is the history of how they have acted, if they know they will not be held accountable for their decisions?" In his opinion, this is the broken mechanism in the chain of decision-making in the precautionary approach that was presented and he cannot see how we can implement the precautionary approach consistently in the absence of that key issue of accountability.

Randall Peterman strongly agreed that we do not have enough impetus to evaluate the decision-making procedures, as opposed to the outcomes. He noted that often the media focuses on the outcomes and they might be disastrous because of poor environmental conditions, rather than poor decision-making. On the other hand, the outcomes may be fantastic, also because of good environmental conditions and not because of good decision-making. What we need to do is to focus more on how the decisions are made and that needs to be based on thorough documentation of the analyses and the trade-offs made by the decision-makers - and all of this needs to be transparent to those who are trying to hold the decision-makers accountable. In his opinion, we have a long way to go to make that happen. He agrees that we should be evaluating the decision-making procedures, and not just the outcomes.

The need for leadership, strong reporting structure, and accountability at the highest level

Malcolm Windsor commented that there is a structural problem in that top public people often do not spend very long in that particular position; for example, they may be dealing with fisheries negotiations within NASCO for two or three years and are then moved on to something else. This is quite common in civil services and it is a structural problem. How does one deal with that? What has been done is to create agreements with men in suits in hotels and what we need to know is what they have done to follow up with the agreements. We need a reporting structure, which requires that they come back the following year and report on their activities in front of all the other nations. That is the key - in other words, a strong reporting structure that exposes those who have done nothing.

John Fraser commented on the remarks by Bruce Hill with respect to accountability and decision-making and noted that there is a myth, in the Westminster Parliamentary system, that the only people that make any policy decisions are the ministers as a consequence of the deliberations of the Members of Parliament in the House of Commons. Sometimes they do but, far more likely, the real decisions are being made today, in our system, in the Privy Council Office and the Prime Minister's Office and most of those decisions are then put to the governing caucus to be rubber-stamped. In Canada, when we talk about fisheries, we have to talk about another thing which nobody wants to face up to and that is, "Where is the

leadership within the Department of Fisheries and Oceans itself?" There must be people in the Department of Fisheries and Oceans who know perfectly well that we should be tracking where these fish are going in the ocean. Nobody makes a decision to do something because they will be credited with higher marks in making sure that no money is spent.

His second point was with respect to money. Putting aside the Iraq war, he stressed that we should take a look at what it has cost our country to subsidize the people in Atlantic Canada because we did not spend enough money paying attention to what was happening to the cod stocks. The cost has been in the billions and is continuing. The Premier of Newfoundland is looking for money for the 800-900 cod fishers that are left with no employment, with the most recent moratorium. These are very large sums of money. He believes that the short answer to Bruce Hill is that the public service system, in our country, militates against decision-making and militates against responsibility. Many of the issues that circulate around drift off into committees and when something goes wrong nobody in the system is accountable. He noted that there has never been an inquiry into what happened with the Northern cod, and under whose watch it was that we allowed all the evidence, which was building from the mid-1980s onwards, that the cod stocks were in major trouble. What we knew was that the size of the cod was going down in every year's catch and nothing was done – not even an inquiry.

With respect to the Atlantic salmon, he noted that some years ago a decision was made to stop the commercial fishing. This decision was made by a Minister over enormous opposition. That was the only way to stop the demise of the Atlantic salmon in the Canadian Maritime Provinces. One has to say, "Where is the leadership we expect out of a large federal department and where is the public interaction and discussion on these matters?"

He noted the importance of World Summit on Salmon and commented that although we had a provincial minister present on the first day there was not one senior Department of Fisheries and Oceans representative present and no member of the governing party, as an elected Member of Parliament and moreover there was no message from the Department, at the upper echelons of the decision-making system. What should be uppermost in our minds then is that, if the decision-makers do not know what we are talking about, they are not going to do anything. To some degree, there are people within the departmental system who are so concerned about a negative personnel report, in raising issues, that they do not want to hear about it either. He cited an example of how difficult all of this can be. At the height of the Broughton Archipelago sea-lice controversy, when it was very much in the public domain, he contacted the then Deputy Minister of Fisheries and Oceans and advised him of the very great public anxiety over the issue. He was concerned that the department was saying absolutely nothing about the issue and that there was a need to know what action was being taken. He suggested that if the Minister did not have a complete answer, then he should come to the west coast and provide some answers as to what might be contemplated. The general feeling, by the affected and concerned public, was that the minister should have been dealing with this issue many months previously and should be taking some action. A week later, there was an ambiguous press release, which was the first public reaction and, following that, the sea-lice problem received more attention. He believes that we have an endemic problem, within the system itself, which makes what Malcolm Windsor is trying to do, doubly difficult. If we are talking to middle management people, who are sent to these meetings, and they report back to their superiors without it going anywhere, then we have to find a way to deal with this.

The most important right is the right to be responsible

Gerald Amos noted that he is a member of the Haisla First Nation from Kitimat and noted that he personally kills fish. His reason for making this opening statement is that we are all in this together and, in one way or another, we all kill fish. He believes that we have to put ourselves in that frame of mind if we are to do anything about what we have been discussing. He focused on the issue of accountability and noted that when he was first elected in Kitimat in the early 1980s, his grandmother would often call him

to tell her what he was doing when going to Vancouver, Victoria and Ottawa. He talked a lot about their aboriginal rights and title and described what was happening in this country on the issue. Her response, in her own language, was, "That is fine as long as you do not forget that our most important right is the right to be responsible." By extension, this means that in accepting that responsibility, it is also necessary to be accountable.

He reflected on once hearing a basketball coach talking about the game of basketball and how to teach the game. He said, "It is a simple game, it is the players that make it difficult." In his opinion, that is what we are dealing with. We have created so many graphs and charts that we are not hearing the messages, such as that coming from the Yukon First Nation representatives. "There are no fish returning for the elders to eat". This is a simple message but an important one. He wondered how many people present actually took the time to acknowledge this reality. Perhaps what we are doing here is attempting to swim up what he would call "the river of trust". Accountability is something that we all have a responsibility to ensure is instilled in the people who are leaders in this country and in our community. This is about people and how we relate to one another and how we carry out our responsibilities.

The importance of knowledge about the genetic structure of the species

Kjetil Hindar addressed his comments to Greg Taylor and also to those who do the forecasting of run sizes. He got the impression that knowledge about the genetic structure and the sub-divided nature of the species was seen as a threat to considerations based on the maximum sustainable yield of a large group of populations. In his opinion, this is not necessarily the case. Based on some recent studies on how we can conserve genetic variation, referring to the evolutionary potential of a species or of a group of populations, we know that when we think about the long-term genetic future we cannot be only interested in one single population. We have to be interested a large number of inter-connected populations; for instance, all of the sub-populations in the Skeena River system. If gene flow between these sub-populations is reasonably high, then it does not matter to the genetic variation in that system whether you harvest them in the sea indiscriminately or whether you harvest them on the spawning ground with perfect knowledge. If gene flow is very little, then it matters more to harvest them near the spawning ground or when you know which run they are fishing on. If there is one sub-population, which is much more productive than the others, such as Babine Lake, then you can, by harvesting more on the most productive population, keep the same yield and conserve more genetic variation than if you harvest all of the subpopulations at the same rate. It is not necessarily true that genetic knowledge is always to the negative for those harvesting salmon.

Greg Taylor that this is a very technical argument and beyond his capacity to address fully. He noted that his understanding is that gene flow is extremely limited between the 28 sockeye stocks on the Skeena, and he referred to the argument that Carl Walters raised, where most of us would think that all of those stocks have to be preserved but there are some who would argue that there should be a very limited stock out there. That then leads to the question as to whether we are going to lose the fishery over one stock. With respect to the other issues that were brought up concerning whether there is no gene flow and the preservation of these 28 stocks, the questions is at what level do we preserve them? There are several levels, such as their maximum productive capacity. Or is there some other level where they can exist, and what is acceptable to society?

Putting a value on the culture of the First Nations people and the salmon

Kjetil Hindar commented on putting an impossible value on the culture of the First Nations' people in their salmon fishery. He believes that this should be viewed just as we put a threshold on the number of salmon we need to keep in a stream in order for this population to avoid extinction. On top of that threshold, which has no economic value except the perpetuation of the species in the system, he would put another threshold on some number of salmon needed to avoid the extinction of the First Nations' culture. That number could be what Stanley Njootli, the representative from theYukon said; that is, that it

had to do with their need for salmon, which was salmon to sustain themselves and not salmon as a commercial commodity.

Would a certification system create the right incentives to create long-term productive salmon stocks?

Randall Peterman agreed with Jan Konigsberg's basic tenet on the certification of the Alaskan salmon fisheries and that the bar was so low that just about anybody could jump over it. He does not think that is a good model at all and what he would like to ask both Jan and Greg Taylor is whether a certification system, that has a sufficiently rigorous series of tests built into it, would help to create the right incentives on the part of the fishing industry, managers and others who use and abuse fish and fish habitat, to create long-term productive salmon stocks?

Jan Konigsberg replied that the basic assumption of the MSC is that somehow the market forces are going to actually improve fisheries management - at this point he sees little evidence that the profitability from eco-labeling is going to drive an entire industry, particularly one that has as its major source of competition, farmed salmon. He believes that there is a possibility that, regardless of how rigorous the standards are, this also increases costs to the industry to label and increases cost of production generally. He finds it difficult to believe that those costs are going to be met by substantial gains in profitability, simply because of the substitution influences in the market to other fish and food sources. At the root, he does not think the notion that this is going to drive improvement in fisheries management is tenable. He believes that if we are going to have standards, we ought to evaluate them in a public process through a public agency and either decide we are going to impose and enforce them as a matter of publicly owned resource or to tell people what the unsustainable fisheries are and let it go at that.

Greg Taylor replied that he is a little bit more optimistic but only when looking at it from a BC Pacific point of view. He believes that there is an opportunity as we develop a wild salmon policy that it could be linked with some MSC rules that everybody can buy into and can feel comfortable with. He believes that it creates a marketing opportunity for the commercial industry. He noted that they have to face the fact that there is going to be less fish available to the commercial fishery in the future and believes that there are niche markets that they can entertain with that kind of label. If it is done right and viewed as an opportunity, rather than a threat, then we should look very hard at using MSC and tying it in with where we are going with wild salmon.

Vicky Husband referred to the stance of the Sierra Club on the whole fishery. One of their real objectives is to keep people fishing although conservation comes first for them, and it is a very strong objective. She noted that her concerns with respect to the MSC are similar to those that Jan Konigsberg expressed. We are seeing in other parts of the world is no indication that it is actually a sustainable fishery that is being certified, nor that it improves management. She noted that they are watching this very carefully and are a part of the process in British Columbia, to ensure that it is something meaningful.

The value of hatcheries in Alaska

William Heard expressed his agreement with Jan Konigsberg's assertion that Alaska's strong declaration against farmed salmon, while stated in biological concerns, is in reality an economic one, and simply related to the concept of supply and demand. With more salmon in the world today Alaska is struggling to maintain a part of their former position. He also believes that the MSC declaration is politically driven and economic in trying to improve market positions.

He noted however that he takes strong exception to the claim made by Jan Konigsberg that the Alaska hatchery program is a threat to maintaining Alaska's strong biodiversity and abundant and healthy wild salmon stocks. The Alaska salmon hatchery program admittedly, not perfect, was formed under a different set of precepts than most other hatchery programs. Salmon management in Alaska by State Law

has, as its highest priority, to protect and maintain wild stocks. The management is structured on escapement base and not on fishery targets. Vigorous habitat protection is a priority and there are no dams on any salmon producing streams. Mixed stock fisheries whenever possible are avoided. Hatcheries supplement, but do not replace, wild stocks in the fisheries. The stakeholders in the hatchery program pay for the hatchery costs and the hatchery program is designed to minimize hatchery/wild stock interactions. Most hatcheries are located on non-anadromous streams and state-wide genetics policies are designed to protect and maintain wild stocks. There are strict fish health rules and statutes and careful siting of hatcheries with prescribed terminal harvest areas to allow a focused harvest on the more abundant hatchery stocks. Root stock diversities in the hatchery program are rigorous and there are no transfers between regions, and the aggressive marketing of all hatchery production allows targeted harvesting of hatchery fish. The question is: Is it sustainable? He believes that it is and the historical records suggest that it is. He does agree with Jan Konigsberg and others that there is concern about recent administrative changes that will focus on greater developmental use of Alaska's natural resources and reduce some of the habitat protection concerns.

Cutbacks on the Skeena harvest rates

Greg Taylor replied to Vicky Husband and Terry Glavin, that he appreciates their comments and understands that they are coming from a good place. However, he believes that they are missing a key point. For the commercial fishery in the Skeena River, the future is here today. They are faced with a 40% cutback in harvest rates, starting in this current season - under those cutbacks the consequences are that the fishermen are looking at a 50% reduction in their personal incomes. The consequences are being felt now - this is not about 'dire warnings', it is what people are dealing with right now.

Cutbacks on harvest for aboriginal fishers in the Yukon

Juanita Sydney commented as an aboriginal fisher they manage within their traditional territories for their harvest of salmon. She was not aware of the MSC designation that people are talking about. She noted that even though the Alaskan stocks are apparently healthy, in the headwaters of the Yukon River they are experiencing a reduction in numbers, resulting in a reduced level of harvest for aboriginal fishers; their subsistence harvest has been reduced to a level of 75% (this is a recommended reduction). She asked: If there is a sustainable fishery allowed, then why are we being asked to cut back on our fishery? They used to be able to harvest at least 2,000 pieces of fish, which is a small and insignificant amount but what is required to sustain their people. She noted that at one time there were more, but now they have less requirements because the people are going away from the land - yet the numbers are still reduced in their harvest. They are not able to catch what they need to survive and live on. She noted that they do not require the fish to sell or give away, but do need them to eat. This year because they are potentially looking at a much smaller run, the First Nation has taken some initiative and they have paid a citizen to go over to other rivers where there are healthier stocks and to bring fish in to their community because their elders need fish to survive. She emphasized also the importance of '*managing the salmon for the salmon'*. "They are animals and they have a greater right to be here than we do."

How do we harness incentives to effect change in fisheries such as groundfish?

Terry Glavin commented on the groundfish trawl that Ray Hilborn described and noted that, over the 12 month period that ended on April 3, 2003, there were 75 million pounds of fish that were harvested by 75 trawlers that came from managed species – that is species for which TACs applies – and, for most of these species, the fleet is actually well within its total allowable catch. However, over that same period, there were about 25 million pounds of fish that were caught that are not protected by any catch limits at all. There are as many rockfish species that are not protected by TACs as are protected by TACs. There are a series of structural problems within the trawl fishery mainly as a consequence of a lack of complete integration. He posed the question: In terms of incentives for fishermen, to the extent that the fear of Species At Risk Act (SARA) listings, the growing public anxiety over the fact that 30 million pounds of

fish were dumped over a twelve month period, and the fear of external forces threatening what is an otherwise economically viable fishery, how do we harness those incentives to effect change in fisheries such as groundfish?

Ray Hilborn replied that the solution is marine protected areas. There are actually something like 400 species caught in the BC trawl fishery and there is no way that we are going to be able to actively manage even a significant fraction of these. Under the Total Allowable Catch (TAC) right now are the economically most important species and we might imagine having the science to do two or three times that many. He believes that for these very complicated fisheries society will have to choose to be very risk-averse, (see Terry Glavin, Chapter 22) and say that we are not going to harvest anything unless we can prove, at some level, that it is sustainable. Alternatively we will have to determine how to develop a system of reserves where we are going to manage the economically important species under active management and we are going to cover the risks by protecting the rest in some pattern of protected areas.

Randall Peterman asked how we would deal with the situation that is more representative of the fisheries' world than Bristol Bay sockeye; namely, very complex systems and many different objectives going in different directions. He posed the question: Do you have any suggestions on how we might align the interests of all the different groups so that they are headed in the same direction?

Ray Hilborn replied that he believes that we should go to the places where there is some hope and work there.

Nobody is in charge

Wayne Harling commented that there may be fine managers and directors in the trawl fishery but, having worked with the DFO for 36 years and on trawling, he is doubtful. He noted that the senior manager of the DFO Pacific Region is now on a four month French course at the height of the fishing season and he has been replaced for one month by another person who, in turn, will be replaced by a third person for three months, by which time the season will be over and the original manager may return being fluent in French in a primarily English speaking area of Canada but out of touch. In his opinion, nobody is in charge.

Marine protected areas strategy

Otto Langer commented on Guido Rahr's presentation with respect to protected area strategies. He agreed that there is a need for them and expressed the concern in terms of British Columbia moving in the direction of a protected area strategy network. He noted that what came out of a land use planning process was that now that there are protected areas, we could get into resource extraction in the rest of the province. As usual, environmentalists cannot have everything and it could be an overall significant net loss.

Guido Rahr replied that giving areas a higher level of protection does not have to be triage. If that were the fear then we would have no national parks in any nation of the world. He believes that we have to communicate the message that it is important to have a very high level of protection in some places and continue to raise the bar across the landscape, or we are not going to succeed.

Watershed protection

Frank Heinzelmann referred to a slide presented by Guido Rahr with a watershed and a plan to protect some parts of the habitat. He is concerned that we should always see watersheds as a dynamic system where things change all the time. It may actually be better to focus on keeping the major watershed processes within what we would consider acceptable bounds rather than delineating particular areas that you want to protect at all times.

Guido Rahr replied that if you can get an entire watershed in some kind of protected status that is the best and, at least at the sub-basin level, that should be the goal. The point that Frank has raised is especially problematic when talking about the flood plain and drawing circles around specific places in the flood plain. It is true that the watersheds are dynamic and the key habitats do move across the landscape. At the same time, it is essential to hang on to the existing nodes of productivity or there are no anchors from which aquatic and riparian species can re-colonize the other parts of the watershed. The main point is to get as much as you can and especially make sure that the key headwater refugia are protected, which will have downstream benefits to the entire habitat below that.

Jack Stanford added that the flood plain reaches within whole river basins really do not move around very much and there are a lot of dynamics within those key and graded reaches. However, they stay entrenched in the landscape even though sediment plugs move through the system. The whole system is dynamic and, if you protect only certain parts of it, you may block part of that dynamic. On the other hand, as Guido Rahr noted, there are certain places within the landscape that are so vitally important that perhaps 80% of the biodiversity is in those few places and it is essential to use them as anchors.

Should we be protecting more than upland spawning habitats?

Craig Orr commented that what Guido Rahr was describing is really quite admirable; however, given the presentations from Carl Walters and others with respect to marine survival problems, he suggests this is only a part of the solution. For example, Norway has 21 national salmon fijords and 13 of those will be permanently free of fish farms. Therefore, while in British Columbia we seem to be in denial about the risk to juvenile salmon, Norway has actually established a clearly articulated policy that salmon farms will no longer represent a threat to wild salmon by the year 2005. With this issue in mind, the question arises: Should we be doing more instead of just protecting the upland spawning habitats?

Guido Rahr agreed and noted that he wanted to be clear that the strategy that he was describing reflects the freshwater and estuary part of the salmons' life history and that part of the conservation problem. That does not however address the marine areas. We have to think about how we are going to create protected areas in the marine environment to the extent that we can. It may even be temporal marine protected areas that correspond with the movements of fish - that is an area that needs to be elaborated. He noted that his reaction to Carl Walters' point was that, the very times that we need high production freshwater habitat is during times of low ocean survival so that a high number of smolts are necessarily heading out to the ocean to mitigate the effects of a fluctuating ocean. They found in Oregon and Washington during periods of bad ocean conditions, they could have lost significant genetic diversity because they did not have enough production in the freshwater habitat to carry those stocks through poor ocean conditions.

A thoughtful comment

Marion Sheldon, Teslin Tlingit Council, Teslin, YT, Canada

Marion Sheldon commented that she is a member of the Teslin Tlinget people of the Yukon, and referred to the comments made earlier by Juanita Sidney, from their community.

"Prior to my grandfather passing away, I had the privilege of spending the last four days with him and it is believed he was 112 years. He used to tell me about the gold rush when people traveled into our territory and the impacts that it had on our people. I see so many resources in this room and every time I come to a cross roads in my life, in being one of the stewards of our land, I wish I had this much knowledge and technical support to arrive at a common vision. I see a common link - somebody referred to it as a string of beads. It is about time that we, as a global people, look at ourselves in four directions and at what each nation has to offer because each nation of all colours, in this world, has something to offer. The oriental people bring us patience; the Caucasian people in this room are the people of movement and it is very obvious; the black people of our nation are the ones who fight for reason in the world, and we, as the aboriginal people of the world, come to you with vision. When Cook landed here,

the first person he met was an aboriginal of that land. When I go to Russia by boat, I hope that the first person I might meet will be an aboriginal of that land and I will know where I am going on their land and how I am going to sustain myself on their land. Until we circle our resources, we will never make it better for seven generations to come."

"I hear chaos in the media about commercial fishermen, net fishermen, and sports fishermen, but we only have one source of food that we are trying to protect and consume in order to sustain us. We have to circle our resources and acknowledge that every seven years, every species on this land goes through a change. It is not the animals on our land that need to be managed, it is the people who go to harvest, to study and to understand. If people trap on our land, they know which animals they will have success with and know what the market is; if people are going to fish, they know which creeks have the grayling, or the rainbow trout, or the whitefish, or the bull trout, or the salmon. I really believe in circling our resources to look at special management in protected areas."

"In the north, we are affected by global warming from the Arctic Ocean to the Pacific. Juanita Sydney, advised us about the 2,000 salmon needed to sustain our people - elders that have lived on this land who cannot consume the processed food without being physically contaminated themselves. Our people were nomadic and went to the streams to gather ducks in the summer and harvest the eggs of some of those birds. I question how we have been impacted through policies and regulations. We, as young people, have a responsibility to the older people in our nation. They have made us stewards of this land to become educated and to understand the discussions we have been having. I might not know all of your terminology but I do not need to be a scientist to sit here because the knowledge I have gained has come from the First Nations."

"To come out of the North and see one's special protected areas, which is where I go every summer, and what I am a part of, is especially rewarding. Mass production and mass development will affect everything if we are not cautious. All I can say to the knowledge holders here is "Do your best". When you go out into the world, I would ask that you do the best job you can, not for yourself, but for the generations of grandchildren you will have. I encourage you to circle your resources. When we talk about protected areas, remember the evolution of that land you want to protect and how it will change in the seven-year period. For the seven generations that you work, the cycle of life will lead you. The knowledge is there but you must involve the aboriginal people."

"Let's join our resources and let's have a common front when we go to the United Nations so that we don't have discrepancies that discourage our young people – give them clarity. Don't look for greed but rather a sharing of those resources. If it took one salmon to feed this room, I am sure nobody is going to say that they want the whole fish. If we only had ten fish to feed all of us, how do you think we would prepare that food and how would we sustain it so that tomorrow we would have ten more fish to eat? I would encourage everyone to take their neighbours by the hand, rather than continuing to argue over whose theory is the best, which is only wasting precious time. Look for the commonality in your theories and do your best."