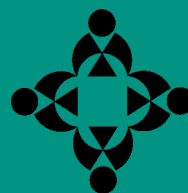


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Linking Indigenous Peoples' Knowledge and Western Science in Natural Resource Management

Conference Proceedings

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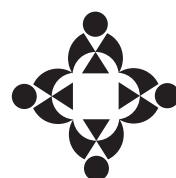


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Research Partnership

Linking Indigenous Peoples' Knowledge and Western Science in Natural Resource Management

Conference Proceedings

Henry Michel and Donald V. Gayton (editors)



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ABSTRACT

This two-day event, held in March 2001, brought together 110 people to talk about both the practical and theoretical aspects of linking Indigenous Peoples' Knowledge (IPK) and Western science in natural resource management. Participants were from both native and non-native communities, and represented Indigenous knowledge keepers, scientists, resource managers, elders, and academics. The conference consisted of observing cultural protocol, presentations from diverse perspectives, structured workshops, and informal discussions.

NOTE:

These proceedings contain Indigenous peoples' knowledge. In promoting implementation of this information, the user should recognize the equitable sharing of benefits derived from the management and use of this report (Article 8(j) of the United Nations Convention on the Conservation of Biological Diversity). Where possible, the reader should involve the keepers of this knowledge and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with the conservation and sustainable use requirements (Article 10(c)).

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INTRODUCTION

This ground-breaking working conference was held at beautiful Quaaout Lodge on the Little Shuswap Reserve, near Chase, British Columbia. From the outset, the organizers wanted to ensure that First Nations voices were heard strongly—and they were. Most of the 10 speakers and 100 conference participants were First Nations. Members of the Little Shuswap Reserve and Henry Michel jointly handled ceremonial aspects.

The conference was jointly sponsored by the Southern Interior Forest Extension and Research Partnership, with solid financial support from the Canadian Forest Service, Forest Renewal BC, the International Development Research Centre, Tolko Lumber, and Gorman Brothers Lumber. Without their generous support, this innovative project would not have happened.

The following articles are an abbreviated transcript of two days of very intense, thoughtful presentations and discussions. This is reflected in their conversational tone. The conference was not an academic or scientific event, but one that emphasized informal, personal contact. We hope you will benefit from reading this material as much as the participants did from hearing it.

Henry Michel and Don Gayton
Conference Co-ordinators



Don Gayton and Henry Michel

Conference welcome

HENRY MICHEL*



I feel that this conference, “Linking Indigenous Peoples’ Knowledge (IPK) and Western Science in Natural Resource Management,” is an important and timely one. A lot of people came to this conference searching for answers or for direction in starting their own IPK work. Other people came to gain some insight about their ongoing projects and to find if those projects fit into this new concept of incorporating IPK into natural resource management. Still others, such as policy makers and research co-ordinators, came because they knew IPK will play an important role in their work, and because they recognized that they need to build the informational foundation blocks for whatever the incorporation process will develop into.

Today there is great interest in the incorporation of IPK, but it is a very young process with many questions unanswered.

The En’owkin Centre and SIFERP (Southern Interior Forest Extension and Research Partnership, referred to as the Partnership) wanted to initiate this dialogue in British Columbia for a number of reasons. First of all, both our organizations are well situated to host such an event. The En’owkin Centre is an Indigenous educational institute that focuses on restoring Indigenous educational, community development, and decision-making knowledge systems. The Partnership is an extension and research organization dedicated to bringing together the best thinking and skills available for ecologically sustainable natural resource management. Both organizations are neutral in the sense that they are perceived to work between the many diverse agents within the natural resource management community. In addition, both organizations have a track record for initiating challenging new areas of community dialogue.

This conference took the better part of a year to organize. It wasn’t until a month prior to the event that we secured all the funding, although we had already decided that the conference would go ahead anyway, and we were prepared to take the financial risks involved in order to get this important dialogue off the ground.

We are fortunate that this dialogue is able to take place. If one were to examine the demographics of the Aboriginal community, it would be easy to assume that IPK is dying, and that there are no longer enough fluent speakers and knowledge keepers alive to protect and perpetuate what little is left of IPK. That, however, is far from the truth. In fact, there are now many practitioners of IPK systems. IPK systems were always in use and continue to be used in the present day. There are problems, but IPK is certainly growing. The perceived danger surrounding IPK is that the “Western world knows little about it.” This ignorance was intentional: until recently, the Western world has worked to eradicate IPK practices and has dismissed its importance by excluding IPK from mainstream institutions and structures.

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The conference attempted to systematically define some important questions such as: What is IPK? How do we recognize it as a knowledge system of equal importance to Western science? Are there enough successful field incorporation experiences that would allow us to start developing a set of principles for the integration of IPK with Western science? This short paper will summarize the messages I took away from the conference in relation to the incorporation of IPK in natural resource management.

I feel that the most important issue is the development of Indigenous peoples' ability to utilize their knowledge systems effectively. Culture loss, language loss, and loss of independence due to government assimilation policies brought IPK close to extinction. However, in the last 30 years, there has been a resurgence in IPK system applications throughout North America. Within most Indigenous nations, active IPK practitioners are now conducting spiritual and cultural ceremonies, working to develop language and cultural programming, and developing approaches to bring IPK to bear on current social, cultural, educational, and scientific issues. More and more, IPK is being incorporated into ecosystem-based natural resource management because IPK practitioners have shown their ability to work effectively within the Western scientific system, and their ability to build organizations recognized by Western world standards.

Like many practitioners in training, I came to this work in the Partnership because I combined academic education with training in the cultural/spiritual disciplines of my people. I suspect this same motive applies to many of the Indigenous people attending this conference. I hear myself saying that these disciplines involve life-long learning, and it is difficult to know what level you are at in your own training. So I tell people that I'm still an IPK "candy-striper." I'm very lucky to have the background that allows me to do this kind of work. I also have the fortune of having mentors, teachers and guides that have helped me to take these initial steps.

I realize that there are risks involved in linking IPK to Western science. For example, there has not been a lot of trust built between Indigenous people and the natural resources sector. Researchers, policy developers, and government and industry personnel have historically been lumped together as being opposed to or exploiting Indigenous people and threatening their traditional land use rights. Risks are particularly great for Indigenous organizations that have sought to participate in integration activities and have to justify their work to their suspicious Elders. The Nicola-Similkameen Innovative Forestry Society (NSIFS) representative, Verna Miller, showed an example of this in its project's data collection and storage in public information systems. Miller said, "Aboriginal people in the Nicola Valley are engaged in extensive Land Use and Occupancy Studies. The Elders were very concerned about giving away information, and NSIFS have had to work closely with their Elders to determine what information is to be shared and what is not. Elders also identified a need to redefine certain words such as 'management.'"

Indigenous participants pointed out another risk during the conference discussion table sessions: the scientific community's misunderstanding of how IPK fits in a Western scientific paradigm. People acknowledge the danger in seeing IPK as the same as Western science, and likewise, Western science is not IPK. This misunderstanding occurs when Indigenous intellectual property is treated as a commodity, another bit of knowledge that becomes part of a larger scientific database. Fred Fortier's presentation highlighted these risks. He explained how, as part of a United Nations work plan, international agreements are negotiated between UN Indigenous organizations and must be brought home and implemented nationally. Fortier declares that a main issue at this level is intellectual property rights. "Is our knowledge a commodity for sale?" Fortier asks. "This is a tough question for us as Indigenous people," he says. "Indigenous peoples' position at the world level is not about money."

I feel that intellectual property rights and the integrity of IPK systems are vital issues. The sensitivity required in the process of incorporating it in natural resource management will be a great challenge of the future. It was important for this conference to face that challenge in the most healthy way possible.

In my training, I have been told by my mentors that “people out there are just waiting for your vision, and that they will bring whatever skills needed to make it happen.” This conference has demonstrated that for me. I don’t know what other people see when they go to seek a vision, but in my vision quest, I saw file folders. Imagine that, seeing your file folders and your office environment when seeking a vision for your life’s work! Well, those file folders and office direct how I approach my life work. They tell me that I must dedicate my life work to bringing an understanding of those people who seek knowledge through cultural/spiritual disciplines to those people who work within the disciplines of Western world thinking (science, for example). My vision and what I attempt to represent in my work are the combining of healthy holistic approaches to community, economic, educational, and natural resource development that combines the whole person: mind (intellect), body, emotions, and spirit.

I believe the work of this conference is headed in the right direction. To go ahead with it, I sought the blessing of the Elders. The ceremonies and prayers we have had are an important element of the whole process. The sunrise ceremony, the prayer to open each day, and the prayers over our food are critical for maintaining a process of ceremony throughout the conference. The process of integrating IPK can start with something as simple and basic as incorporating the sunrise ceremonial fire and prayers for each day and each meal as part of any meeting or discussion. I think people understand now how those ceremonies contributed to this meeting. Offering your prayer by putting the tobacco on the fire and having the fire take the prayer into the environment may seem like a small act. But the intention behind that act is that you are seeking permission from the spirits of this land to make our work possible. We are essentially asking permission from the land to have this dialogue about incorporating IPK and Western science. Gaining the blessing of the Elders and the permission of the spirits of the land tells me that we are heading in the right direction. Imagine how this conference would have turned out if we did not follow these protocols. We would probably have made some horrendous mistakes.

The spirit of this gathering was healthy—people didn’t come here with negative intent. They came with a good heart and a willingness to explore this complex issue. The sunrise ceremony at the beginning of the conference told me that. I believe that if there had been negative intent and we were not ready to learn, the Elders would not have given their blessing and the sunrise ceremony would then not have happened.

I believe the conference itself offers a whole systems model for incorporating IPK and Western science paradigms in natural resource management issues. I am not certain how many of the Western scientists at the conference had previously experienced a “sunrise ceremony” or had had an Elder start each day and each meal with prayer. For Indigenous people, the purpose and responsibility of spiritual and ceremonial practice in public events are essential ingredients. Ceremony engages the whole community, that is all life forms from within the place where the community resides. Prayer and ceremony sensitize each participant to the responsibility we all carry for all other life forms in our decision-making. If community development and natural resource management models were able to engage the whole systems concept in a similar fashion, I believe that the perspective and approach of natural resource management would become healthier and more inclusive of the entire community’s needs. The concept that is now understood as non-timber forest products would gain a much higher profile at all levels of natural resource management. The end result will be far more sustainability than current management practices based on a holistic management system.

For me, understanding the conference as a model involves understanding the significance of whole systems thinking and the importance that ceremonial aspects of whole systems have in whole systems thinking. How did the sunrise ceremony and prayer to begin each meal and day change this conference from typical natural resource management conferences? My suggestion is that the dialogue changed. The logic of whole system models is that if you change the nature and the cadence of interaction of natural resource management practices, you will also change the outcomes as well. This involves a paradigm shift. Jeannette Armstrong's keynote address provided clear thinking about this paradigm shift. In her presentation, she indicates that there is a sense in Indigenous belief and philosophy that the natural world teaches you. She also suggests that we, as people, need to be reminded of what real management means: (that we) should be able to take care of ourselves without hurting all the other life forms. We are beginning to understand whole systems thinking that is multigenerational and connected over years. At the conference, the ceremony and prayers reminded us of the need to take direction from the natural world. For non-Indigenous people, I hope that the ceremonies may symbolize that shift in their thinking that must occur before the process of understanding IPK can begin.

This conference was also an attempt to take some of the mystery out of the potential for incorporating IPK systems in natural resource management. The ceremonies grounded the conference in Indigenous Peoples' Knowledge and practice. There are many misconceptions about IPK both in the general public and within the Aboriginal community itself. If non-Indigenous participants are exposed to IPK as a system based on real concepts and practices, they can begin dismantling popular Western stereotypes of IPK as some elusive philosophy or superstition. Indigenous knowledge systems operate from the perspective of natural life systems. The natural laws of life—land, water, wind, the four cardinal directions, plants, animals, and humans—are the essential elements of those laws. The interrelationships that exist between these life elements are the basis of the natural laws. Indigenous knowledge systems and governance structures are modelled from these natural law principles. Western society has been so displaced from these natural world systems in which IPK is based that its value system has also become removed from nature. The incorporation of IPK systems with Western science will mean Western society must re-establish linkages based on natural systems thinking. Jeannette Armstrong made reference to this linkage in her presentation. She suggested that people must shift the paradigm to value (nature) in a different way. She suggests that people must be shown different ways to create connection with the natural world. "How do you shift the paradigm to making better choices in terms of land use, knowing that we need to feed our families?" she asks.

Asking non-Indigenous people to observe and engage in ceremony and prayer symbolizes the process in the paradigm shift needed to enable the successful incorporation of their knowledge systems with Western science. Following this ceremonial protocol, the conference was able to provide a forum where the two different systems operated together on a single task—the conference process. It represented a challenge to both Indigenous and non-Indigenous people to set aside their differences for a short time to discuss principles of incorporation. And for the non-Indigenous participants, there were times when not knowing the process most likely caused discomfort, yet the process was gentle enough to allow their participation.

AUTHOR

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Indigenous Peoples' Knowledge and Western science: A personal view

DON GAYTON*



This conference is a celebration of diversity. As I look at the registration list, I see representation from First Nations groups from right across the province. I see representation from the forest industry, from both federal and provincial governments, from universities, from consulting, and from the non-profit sector. This kind of diversity is very healthy, and is a great asset to us as we wrestle with some very complex issues.

This conference is about defining the terms, concepts, philosophies, and world views of our respective knowledge systems. California Indian Elder Dennis Martinez came up with a nice phrase for what we were trying to do. He called it “intercultural verification of ecosystem states and processes.” In other words, we both might share a mutual interest in those ponderosa pines we can see out the windows of the conference room of Quaaout Lodge, but we see them in very different ways. But, because we are both so interested in those trees, we’re willing to hear what the other guy (or gal) has to say about it, from that different perspective. Shawn Morford, who sat on our conference planning committee, came up with another nice phrase for the work of this conference. She called it “bringing out the cultural assumptions behind our words.”

I said at the outset of this conference that if we didn’t mention even a single piece of Indigenous knowledge, or Western science, but if we did learn a few of each others’ definitions, and we acknowledged that there are several ways to look at a river or a ponderosa pine or a whitetail deer, then the conference would be a success. And it is.

Many First Nations people feel that the resolution of land claims, of treaty, of capacitation, and of intellectual property rights must come before any discussions on actual content. That is an honorable position, and I fully respect it. However, what we are attempting here is a very modest goal, but an important one, and it is this: when and if Indigenous knowledge keepers and Western scientists are ready to talk on equal terms about that ponderosa pine tree out there, then the work we do here will have removed some of the communication barriers that might otherwise prevent that important conversation from going forward.

There is a symbolic reason why I chose the ponderosa pine to illustrate these points. One of the key elements that separates Indigenous Peoples’ Knowledge (IPK) from Western science is the high cultural and ceremonial content of IPK, but even the most cynical and hardened white scientist can acknowledge the aesthetic beauty, the poetry, and the symbolism of a veteran ponderosa pine.

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There are many world views but for the purposes of this discussion, I'll name three: the scientific, the Indigenous, and the economic. The economic world view dominates the other two. Some of you may disagree with this statement but I believe that the current management of our forests and rivers and oceans is driven not by science, but by economics.

The point I want to make with this, and it may come as a surprise to some of you folks, is that many scientists and ecologists often feel just as excluded from the management of our natural resources as First Nations do.

You might envision natural resource management in British Columbia as this big castle, with high walls all around, and all the castle doors are locked. First Nations people are standing outside, banging on the door, trying to get in. But over on the other side of the castle wall are the scientists, and they're banging on another door. So you could imagine that instead of being at Quaaout Lodge, we're actually in a meadow outside the walls of the big castle of natural resources. Scientists and First Nations folks have decided to stop beating on the castle doors for two days, and sit down in the meadow outside the castle to have a talk. After the end of that talk, we're going to go back and beat on the castle doors some more, but this time we might beat on the same door, and we might do it together. Now the forest industry is inside the castle, but we think that the more progressive ones might see us as potential allies. We're hoping they'll whisper to us that the key to the castle door is actually hidden under the doormat.

I think I've pushed this castle analogy about as far as it will go, but I want to reiterate: this conference is not about IPK, or Western science. It's about how these two knowledge systems work, and how we communicate them to each other.

I love the land, and I love my family. I am a Western scientist, and I'm damn proud of that. But I do work in a particular branch of science called ecology, which sets me apart. As an ecologist, I'm trained to look at whole systems, and at the processes that allow ecosystems to be sustainable over the long term. So ecology seems to be an excellent point of intersection between IPK and Western science.

Sustainability is a word that suffers from multiple definitions, and here is an example. Lower Arrow Lake is a portion of the Columbia River near where I live. On the shore of that lake is a village site containing *kekuli* (pit house) dwellings and artifacts that date back 3,200 years. We know that the people who lived in these houses made use of the Columbia's fisheries resource, the same fishery resource that is in so much trouble right now because of hydroelectric dams, pollution, and overfishing. I wonder, are the current fisheries policies on the Columbia River sustainable? Are they designed to maintain the fishery for 3,200 years, 320 years, or even 32 years?

When native people harvested spawning salmon and sockeye on the Columbia River, they would traditionally wrap the bones of the fish they caught and carefully return them to the water, in order to maintain the salmon runs. Now to a Western scientist, this might seem like a superstitious custom, until one reflects on the fact that the custom worked, in some metaphorical way, for at least 32 centuries. In contrast, the wheels seem to be coming off our high-tech salmon management system after only a few decades.

I have recently had the opportunity to work in the exciting new field of fire ecology. The composite picture that is emerging, from studies all across the drier parts of western North America, reveals two very significant facts. First, that the grassland and dry forest ecosystems of the West historically experienced frequent, low-intensity fire. The second fact is that the historical fire regime was a combination of lightning-caused fires and fires set by First Nations people, in the deliberate and thoughtful management

of landscapes and natural resources. I think fire ecology is another excellent mutual point of entry for IPK and Western science.

There are some very solid philosophical reasons why our respective societies should work toward a greater awareness of each other's knowledge systems. For me though, the most compelling reason, is simple fascination. I have steeped myself in Western scientific knowledge about things like the ponderosa pine, the alligator lizard, and the kokanee salmon. I've studied these organisms, read all the literature, and talked to all the scientists, but I am still hungry for more knowledge. If I were offered the chance to become familiar with a whole separate universe of knowledge about these same organisms, would I accept? You bet I would. And conversely, would I be interested in sharing my understandings of these creatures with others? You bet I would.

It has been a pleasure to collaborate on this conference with my colleague, Henry Michel. In the slow process of learning to work with each other, we've had to probe each other's philosophies and core beliefs. I believe this same highly personal, one-on-one process that Henry and I go through is crucial to developing linkages between IPK and Western science. The political, social, and economic aspects of bringing IPK and Western science closer together are demanding, but we must never forget the importance of forging individual and small group bonds between these two cultures.

As Henry and I developed this conference, several people asked us what role the Southern Interior Forest Extension and Research Partnership plays in Indigenous Peoples' Knowledge. It's a valid question. We are an organization that has no political power. We're not involved in any official processes. We don't really have any money to speak of. What we do have are some very talented extension staff, people like Henry; Shawn Morford; Victor Cumming; Alan Wiensczyk; and our director, Chris Hollstedt. What the Partnership does have is a broad mandate to build working partnerships between sectors involved with natural resources. We bring to this work the passionate belief that knowledge—and I mean knowledge in the broadest, cross-cultural sense of the term—is essential to the management of our natural resources.

I'll close by repeating Dennis Martinez's phrase "intercultural verification of ecosystem states and processes." I'm impatient. I want to get together with you folks and get outside, into our magnificent forests and grasslands and waterways, and start doing some of that intercultural verification.

AUTHOR

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Natural ways of knowing: Positioning Indigenous Peoples' Knowledge in natural resource management

JEANETTE ARMSTRONG*

I want to thank the organizers of this conference, and I want to particularly thank Chief Felix Arnousse for reminding us of what our responsibility is and the responsibility that the leadership holds to our people and to the future generations. I acknowledge the people that are gathered here from areas of Western science, resource management, and Indigenous leadership, and our bands and communities across the province here. We have people from various areas of study and knowledge that are gathered here who use their knowledge in different ways, but what we all lack is information. We all lack good enough information that is necessary for 100 percent sustainability.

I want to begin by pointing to the differences in the use of language in terms of documenting thought and knowledge from an oral sense in those Indigenous communities that have been intact in an area for generations. *En'owkin* is one of those words that comes from that kind of system of knowledge. It is an Okanagan word which has to do with community process and knowledge, and the practice of sustainability. A sustainable community process is important for us to understand and engage, as it has a lot to do with diversity of thought and difference between peoples. The *En'owkin* process is one such process. Engaging it here may assist this gathering.

The *En'owkin* process gives you a really clear listening directive; it asks you to listen and to not try to put your position forward without having heard every side. Having heard everybody else's position informs your position, informs your knowledge, and informs the reasons why you might want to shift your position, because you might be the one that's at fault. You may be the one that's the problem.

What community means to us then is that diversity is necessary, especially in times of need and crisis. In times of need, diversity of thought, knowledge, and view are necessary for innovation, for new things to come about, for change to occur. We know there is a lot of work to be done if the sustainable survival of our people is going to be ensured seven generations from now. There's going to be a lot of work in which we will have to position ourselves in that context, and in which we must try to engage others to position themselves so that we can share information, our knowledge, our values, and our reasons for our values. So that we can at some point in the future be living together in a healthy way on this land.

I want to talk about Indigenous Peoples' Knowledge (IPK) and positioning it in terms of natural resource management. I put quotations around "natural resource management." It is clear to me that management has a very specific role, and a very different meaning and context of interaction with our relatives out there on the land in terms of our sustenance and our lives from a traditional Indigenous

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sense. It means a whole different regime of constructed management people who are put in place specifically to figure out how to manage and, within that construct, what is the ultimate goal of management. Management of resources for market economics is a very different positioning from our traditional Indigenous peoples' communities and their interaction within their land use and how resource use occurred in terms of long-term sustainability. So ultimately the topic has to come down to more than just management if we're going to look at these two systems and position them together.

It comes down to the issue of values—philosophical and social values—and an examination of constructed Western values. By constructed, I mean things that have been put in place that make us do things in certain way. Government, for example, is a constructed value system. All government is, is a set of rules that tells you how you are going to do certain things in certain ways. Canada is a constructed set of values that determines how resources are managed. It doesn't always come down to economics. To me this topic ultimately comes to value systems and an overall larger picture in terms of what society values, and the positioning of Indigenous peoples' values in terms of what is constructed around them by what Canada is, and what Canada's laws are.

For example, when we use words like “non-timber” values, then everything in that forest is classified as a non-timber value. What is that saying? It is saying that the only thing that is of value in the forest is the timber value, and the use for the lumber industry, and everything else is measured against that value. I'm not saying that that is how we look at the forest, but that it is an example of how natural resource management is positioned in this country. One of the reasons that it is positioned in this way in this country is that timber values are a source of various kinds of economic and societal values. Waged labour, for instance, is a constructed societal value. For many, it is a way of putting food on the table for their families because they have no other way to do that. So then it becomes a societal value, and it takes on an emotional value. The emotional positioning of values is, I think, in terms of the underlying questions that we have to answer, what we must look at in the next two days. It definitely is not just about market, it is not just about multinational corporations and profit, although that seems to be a major consideration. It is also about those people feeding their families, not different than Indigenous peoples feeding their families from those forests. And so I think that the values issue really needs to be grappled with, needs to be thought about in terms of looking at Indigenous Peoples' Knowledge and value systems.

I'm now going to try and provide some foundational information in the area of Indigenous knowledge systems, which might provide some food for thought and questions.

We in the Interior Plateau area, the Salishan peoples, in my opinion, practised land use patterns that were similar among all Salishan peoples. I want to talk about those land use patterns. Although many may think so, the fact is that we were not migratory—each band had a permanent village station to which our people returned in the winter months. In the spring, summer, and fall, we practised an informed pattern of harvesting and gathering. The word in English that I like to use is perma-culturing, care-taking the land like a garden over many years. Having an understanding in which you know your garden grows on its own without pesticides, without irrigation, without all kinds of things you can use to interfere with natural systems on your land. And you understand that fire, drought, heavy snowpack winters, heavy rains, and flooding all have a part in that to do different things.

When we talk about the way we think of our garden, we think about 25-year increments or a life cycle. We would say a life cycle of one person is from the time that person is a child until they bear children. That is one life cycle in our *Nsilxcen* system. So in four life cycles, in 100 years, that land should be

treated in certain ways by our people, so that it can reproduce and cleanse itself. So that there would continue to be berries and understory mammals and birds like pheasants that feed us. Because ultimately we are interested in feeding ourselves. We are interested in survival. So that knowledge was traditionally there. I know in my lifetime, and I'm 53 years old (two life cycles), I know of two times in my lifetime in which fires were set under the direction of my grandmother in her areas of harvest. I know of two times in my lifetime when my grandmother directed my father and uncles to go and do things in terms of the water systems, breaking beaver dams, and taking all the beaver out of some of the systems from a certain area. There are other things that are more short term in relation to the river systems—medicines and berries. For example, my aunt runs a root feast every year, so she is called the root boss in our territory. When she goes out into the field and says, "you dig one in every 10 of the camas," or "you dig one in every five of the bitterroot," that's what you do that year. The seasons and the cycles are different every year and the root boss has the knowledge to go out there and tell you. There is a conservation system in place because we want the roots to come back next year. All of our Elder ladies who practice the traditional harvesting tell us that.

Another example is that there are seven varieties of Saskatoon berry in the Okanagan that we have names for. Two of the varieties we do not ever pick. One is for the worms and one is for the birds. When we go out to pick Saskatoons of the other varieties that are left, there are only two that we pick in large quantities, because those two are prolific and keep well.

We know that other animals and birds eat those berries and we need their help. For example, the black bear came and talked to our people. What we mean by that is that many generations ago the animal showed us its knowledge and the important things we need to know. We mean we understood and communicated and listened to what that bear is saying to us every day out there, and what it's still saying to us every day out there. Bear said, "I'm your gardener for those berries you love. I go around and fertilize them, I plant them. The bear fixes it up with sweet chemicals that allow it to grow in ground which is very difficult to grow anything. Bear gave us a gift to help and sustain us because he also likes those berries. Our bear is never chased away in our communities and killed because they come to visit us in our homes.

In the same way, we think about beaver. When beaver does that work so that the moose can come to us, and all the other things that make up those wetlands, the beaver tells us, "I'm your relative, I'm not a stranger, I love you, and I'm going to help take care of you." It's the same way with those medicine food plants that came to our people and told us, "We feel sorry for you so we'll do that as long as you look after us. As long as you take care of the water that we need. When you stop taking care of us you're going to get sick, and hungry." That's our natural law. That's the way my grandmother talked to me: simple words, simple knowledge, simple understanding, and yet it is very complex.

The Interior Salishan peoples practised ceremonies every year to remember what was said to them, and to speak back to the land and to renew their commitments to the life forms individually as humans, because we are an essential part of this living life around us and we have to be reminded of that. We think we can go out there and manage everything. We think we can go out there and take this and that out so that we can put money in our pockets and food on the table. That's management. If we think about real management, we should manage to do those things without harming any species. If we had that kind of education and real science we could do that. And we *have* to do that. We have to begin to look at systems, at whole systems knowledge, and how it is interconnected and trans-generational over many, many years. We have to ask: What does it take over 100, or 50, or 25, or 5 years to keep that system healthy? What does it take over the next four cycles? That is knowledge, immense knowledge.

Western education systems have interfered with our Indigenous knowledge systems. The government through the education systems has said that they will replace Indigenous knowledge with another system, a “superior” system of knowledge. However, we are beginning to find out that we are all the same in the end when we get cancer. We are beginning to find out that we are all the same in the end when we become a labour and resource pool for some multinational company in Europe, Japan, or the United States.

When the lack of inclusiveness in terms of deciding how lands should be managed does not include IPK systems practising sustainability, then I think we are in a danger zone. So I think creating an alliance with Western science is extremely important in order that we can make better and more informed management choices in the future, together. Today, science and IPK systems are a lot like a priest’s language. Most of the people on the street don’t understand science buzzwords. In the same way, many Indigenous people are not schooled in traditional ecological knowledge practices.

The point that I’m coming to is that there is a lack of knowledge generally among all our peoples because knowledge has become managed in our education systems. Whether from an Indigenous system or from science, it has become compartmentalized and systemized, and I think there’s a real danger in that. I think of what happened to remove people from land-based value systems here, it has been maybe 150 years. In my mother’s times, our people practised complete community cohesiveness, with enormous knowledge about natural systems.

In our communities there was a necessity to co-operate with one another, to have equal access to everything, and to work together to work for the amount of surplus to carry you from winter to winter. Everyone understood that you didn’t need a 10-month surplus—you just needed to protect and take care of your land from year to year. You just needed access to the land.

Twenty years ago, I heard Russell Means say that when the people from Europe came over here they were liberated from the kinds of systems that did not recognize their human rights to interact in a natural way with the land or have access to everything available on the land. They were liberated into a land that could provide everything if we managed it properly, together. There still is an opportunity to do that here, and to look at values in terms of what they mean for the future and what they mean for all of us. Of course, I do not think you can just change values in a day. People are born into values and that is what permeates their actions and their thinking. That is what their beliefs are, their central philosophical beliefs, which is why I made the first point in terms of philosophical values and the positioning of Indigenous Peoples’ Knowledge.

I was invited to a conference by Fritjof Capra about eight years ago to speak about shifting the paradigm in terms of the future. Shifting the paradigm in relation to what must be done in Western thought, in Western philosophy, in Western science. To shift the paradigm so that the global biodiversity and the accumulative Indigenous Peoples’ Knowledge could be a participant in the future towards health for all of us in terms of cultural diversity and cultural knowledge. We instituted an idea that to shift the paradigm you can’t just talk about doing this today. You can’t just tell people to change their values. You have to find ways in which you can create connection to value the land and create an understanding to who that bear is, and what he’s saying to you; who that tree is and what it is saying to you; what the bear or the tree is saying they need from you; and what the relationship is that they want from you. What they require from you in terms of you changing your actions. So that you *are* their brother or sister. So the issue is how you shift the paradigm in terms of making better choices, in terms of land use, knowing that we have to feed our families. That we have to enjoy life, and that we have to have wealth to do that.

Knowing that and understanding that and finding ways to reinstall those values in all of us as humans, in every one of our children, so that they come from that value first. That value and an understanding and knowledge base first. So, we have to become more ecologically literate in that and then we can make ecologically literate forest management decisions. We can make ecologically literate aquatic management decisions. We can make species endangerment decisions. The word “management” then would have a different meaning, a different foundation, and a different process in terms of who is involved and engaged in that process.

You have a wonderful two days of talk in front of you and I hope that you have a whole diversity of views and knowledge and information and perspectives. Keep in mind that there are different languages and words and different ways of articulating. Always remember just because an Indigenous person might not say something in the way you are used to hearing it, or is not using the words that you are used to using, do not think that what they are saying does not have meaning. We also love our land, and we love our children, and we love our relatives on the land out there.

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Desman Peters, Sr.

Western science: Ways of seeing nature

DICK CANNINGS*



Scientists, like most people, see the world around them in at least two fundamentally different ways: analytical versus instinctive, specific versus holistic. As a naturalist, I perhaps lean toward the holistic more than some other scientists, but I also love the details. And all scientists use instinctive, holistic techniques at some time in their investigations, especially when formulating initial questions and devising analytical methods.

Science is based on observation. A scientist changes things, if possible one thing at a time, and observes the results. A naturalist is a scientist who lets nature make the changes, and then makes careful observations and speculates on cause and effect of the changes.

These observations are published, and must be reproducible to be believed. Scientists, technically, are not big on trust. Because of this, scientific knowledge must be public knowledge.

The scientific method works well on small details, the smaller the better, because you can control the changes more effectively. It shines in physics and chemistry, but becomes more difficult to use in ecology, where variables are many and difficult to control.

I'm going to talk about ecology today, since I think that's what this is all about. Ken will likely say more intelligent things about forest ecology later in the day.

Someone defined ecology as "the painful elaboration of the obvious," although other disciplines at the edge of science, such as psychology and economics, have also been defined thus. This gives ecology a kinship with more holistic and instinctive knowledge systems.

Most ecological studies involve small parts of the natural world. Some examples are, "What relationship is there between fairy slipper orchids and mycorrhizal fungi?" or "How does dwarf mistletoe affect lodgepole pine growth?" or "What kinds of woodpecker holes do saw-whet owls prefer to nest in?"

These small bits can be put together through ecological models to give ecologists a more thorough view of the world, in an attempt to answer bigger questions such as, "What factors affect the location of treeline?" or "What is the role of fire in interior forests and grasslands?"

A few ecological studies have tried to look at the big picture, but these are difficult because of cost, time, and space. I'd like to go through two examples to illustrate both the limitations and effectiveness of ecological studies at this scale.

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The Kluane project was a large collaborative investigation involving a dozen or more ecologists and many graduate students working over about 20 years. It was basic science that set out to find out why snowshoe hare populations cycled every 10 years. Ecologists involved in the Kluane project attempted to isolate relatively large areas of boreal forest in the southern Yukon and subject them to different treatments. Some sites were irrigated to simulate increased rainfall, others were fertilized to promote plant growth; in others, predators were excluded with high fences and overhead netting and wires, and in others extra food was put out for the hares. For each of these treatments, of course, there were “control” sites where nothing was done at all except monitor the populations of various animals. At the end of the project, and after many scientific papers, no crystal-clear answers emerged, although the original premise was generally supported: the hare population cycle was the result of high predation during the height of the cycle, which drove hare numbers down and kept them down until vegetation could recover enough to provide the impetus for a new surge in population.

A second example of a large ecological project is the Habitat Atlas for Species At Risk in the South Okanagan and Similkameen. This was an applied science project, undertaken to fill a perceived need—that being a lack of information about the distribution of wildlife species and their habitats. There was a general concern for the rare habitats and endangered species in the South Okanagan and Similkameen valleys. This area is often touted as one of the four most endangered ecosystems in Canada. Biologists on the project knew, somewhat instinctively perhaps but also on the basis of many published papers, that the dry grasslands were the key habitat in the area. They wanted, however, to come up with a scientific basis for specific areas of concern.

The first step in creating the atlas was to map the entire area into habitat polygons, using soil and vegetation characteristics. This information was converted into maps, then into a GIS database. This gave us a data set that helped us answer simple questions such as, “How much habitat is out there of each type?” Using old aerial photos, we were then able to estimate how much of each habitat had disappeared in the last 50 years. We then developed algorithms that linked habitat types to each species of concern, so that we could produce maps of habitat suitability and capability for each species. Using all species of concern, we could then produce a composite map that showed, as we suspected in the first place, that the dry grasslands and open ponderosa pine forests were indeed critical for the survival of most of the rare and endangered species in the area.

Large projects such as these two examples stretch the utility of science to its limits, since we “know” so little about many details. Much of the algorithm exercise in the habitat atlas, for instance, was done simply by asking “experts” to make their best guesses as to what the specific habitat needs of all the species were. In some cases, this information was accurate and based on valid observations. In others, the information was based on a long list of assumptions.

The habitat atlas example, I think, is the closer of the two examples to the IPK model in many ways, where we base actions on the recommendations of people recognized as having knowledge, rather than only trusting what we find out for ourselves through observation and testing. There are different ways of looking at nature, even within the discipline of Western science.

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Linking Indigenous Peoples' Knowledge and Western science: An international perspective

FRED FORTIER*



Is our knowledge a commodity for sale? This is a tough question for us as Indigenous people. And what is the price that people will pay for it? Everybody now is trying to deal with the complex issue of Indigenous Peoples' Knowledge (IPK). You'll see as you look at various home pages and e-mails that there are many conferences across the world grappling with the question of how to deal with traditional ecological knowledge issues. What is driving this interest in IPK? What's Canada committed to implementing these UN Conventions that they are signatories to?

In 1988, a bunch of technical experts and lawyers established an ad hoc group to come together to provide an instrument for Indigenous people across the world to sign a deal about biological diversity. This team developed text that became the UN Convention on Biological Diversity. This text was open for signature at the Rio de Janeiro summit of 1992. There were other conventions: Climate Change, Ramsar (wetlands). Once these UN Conventions are signed by 30 member countries, they become operational, a UN function. How they operate these conventions is they call it a Conference of Parties: 1, 2, 3, and so on. They are now in their sixth session developing work plans in these international agreements. As part of these global work plans, they negotiate the text at a world-wide level. These international agreements then must come home and be implemented nationally.

The international agreements include taxonomy initiatives, or databases. How does IPK work in relating to taxonomy initiatives going to assist the world in carrying out these international agreements? Our knowledge bears on this issue. For example, alien species introduction is negatively impacting on the indigenous fish species of the world, which has an effect on how native cultures use that species. The province of British Columbia might want to consider saving the indigenous fish species in the Columbia River. Identification, monitoring, and assessments of the extent of the impacts on these indigenous species need to be carried out, with the scientific co-operation of Indigenous people. One of our main themes is how we share scientific information with clearing house mechanisms.

I belong to the Indigenous Peoples' Information Networks, and we developed a database down in Panama, which we call International Conservation Network Systems: Interactive mapping programs. It has all of the international treaties and Indigenous treaties across the world. We've developed this CD-ROM and given it away for free for Indigenous peoples across the world. We have put it into four languages: English, French, Spanish, and Russian. Those four languages are the four languages that the Indigenous peoples across the world have accepted that we will communicate with each other. Having no instantaneous translation booths, you can imagine the difficulty in carrying on a meeting in four

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different languages. If you can't understand any of these languages, then you are lost. This is a problem at the international level.

The UN Convention on Biodiversity was developed because the world is starting to get worried about the loss of biodiversity. We all know that some science-based knowledge has in fact destroyed biodiversity. We don't have to look any farther than the Thompson River and the Thompson coho. Because we used science-based knowledge to destroy that fish by not implementing sustainable use practices that Indigenous peoples have used for centuries and centuries.

Article 8J reads: respect, preserve, and maintain knowledge, innovations, and practices of Indigenous communities and lifestyles relevant for the sustainable use of biological diversity. And promote their wider application with the approval of such holders of such practices. Encourage the equitable sharing of benefits from the uses of such knowledge and practices.

If there needs to be legal protection in international law in all these ecological areas (i.e., in forest planning), and if Indigenous people were to use their knowledge to sustain the environment, what do they get for the use of that knowledge? Money, trees, the world—what is it that they get? What are Indigenous people trading their knowledge for? Indigenous peoples' position at the world level is not about money only, even though corporations would like to think that. The pharmaceutical worth of Indigenous knowledge is estimated at \$80 billion across the world. Who benefits from the knowledge of those plants? You don't see too many rich Indians in the world, so it can't be them. The potential economic returns from the sharing of Indigenous intellectual property rights is a big issue. There are other areas in Article 8J, and the issues of interest to Indigenous peoples are separated into other UN articles as well.

As part of the Convention on Biological Diversity (CBD), we want to know how Indigenous people participate. We want to talk about a program of work for Article 8J. What does that program of work look like? We laid out a framework for the work plan in Madrid. If Article 8J is subject to international legislation, then all the legal ears go up. Indigenous people said they needed similar legislation in Canada. Canada responded by saying they wanted to do a review. The CBD is one of the few conventions within the UN that has Indigenous peoples' participation. An unfiltered meaning suggests that Indigenous participation is free to a certain level (meaning that Indigenous people have no tape across their mouths). However, at the individual UN working groups and drafting groups, they kick all the Indigenous peoples out of the room when it gets to drafting plans because Indigenous people are not signatories to the Convention.

Another assumption of certain individual countries is that they have full control of genetic resources within their boundaries. This group of countries is known as the Intrasessional Inter-parties Working Group. They have now developed a Convention on Biodiversity (CBD) program which Indigenous people could not participate in because they were not signatories. So, in protest, 40 people from the Indigenous Working Group made a statement by putting tape across their mouths.

There are other problem areas like forestry. The Forestry program of work was actually taken away from under the CBD, shifted under the Sustainable Development program. The Indigenous peoples questioned that decision because they could hardly afford to participate in CBD, let alone another convention. They proposed an alternative work plan for their involvement. The countries participating in the CBD rejected the Indigenous peoples' work plan. Then they tried to take over all forest-related projects because there are growing numbers of non-timber forest products such as mushrooms and

other plants that are gaining economic marketability. The CBD wanted to move these discussions out of the UN working groups and deal with it in the World Trade Organization (WTO) process and not the UN. That has since been rejected, and these working groups must stay in the CBD using Article 8J as a guide.

If Indigenous people have knowledge and own their knowledge, then they must have some kind of ownership of the land. If they receive the knowledge from the land, then this relates to ownership of the land. If Indigenous people are recognized as having control of the land, then it should also be recognized that they also have environmentally sustainable practices. We cannot separate culture, language, and spirituality from the land. We cannot do that as Indigenous people. Our culture and language flow from the land. Language protection is a way to protect our knowledge and traditional land use rights. Nowadays, Indigenous people have to take courses to learn their Indigenous languages, yet there are no laws in Canada that allow us to practise our languages.

How is it possible to bridge the two knowledge systems? What is the dominant science? Is it Western science or IPK science? At the international level, the belief that neither knowledge system dominates is gaining wider acceptance. Saying that those knowledge systems can now work side by side may not be an accurate statement. Indigenous people are still not certain how, or if, this bridging is possible.

The economic forces assume the Indigenous communities must change to meet modern standards. As Indigenous peoples, we feel that the opposite must occur. Science and society must begin to respect the sacred knowledge that we've known for generations. Our knowledge is learned from direct observation of the land over thousands of years. Removal of our people from the land breaks the study of the land. Our knowledge depends on continued use of the land.

There are a lot of things out there working against Indigenous people. I refer to them as economic racism. So what does economic racism mean? It means someone else is making profit off the land and Indigenous peoples are not. Institutional racism is another example as seen with Forest Renewal BC and the Pacific Salmon Treaty. We're not a part of the game as Indigenous peoples, wherever we are in the world. Have you ever noticed that Indigenous people are always advising others and are never in control? This is institutional racism. At the CBD, Indigenous people are advisors and at the UN they're advisors. At the international level, Indigenous peoples are forming a working group under the name ECOSOCK. This is a permanent forum for all Indigenous people who are advising United Nations, situated in New York or Geneva. So we're still only advisors—I don't see us making decisions.

Another problem area: Indigenous peoples across the world are treated as objects of the land. We're treated like the pine tree over there. Not treated as subjects of the land who have a relationship to the land. That's what's happening out there in the world.

I've been working on fisheries now for about 15 years, from the community to the international level. I've learned a lot of things from people, from a lot of the Elders. What did we do within fisheries to start incorporating IPK? We ask, "What did our people do in the past?" We listened to our Elders: In the past we used weirs, baskets, pitch lamping, et cetera, as harvesting techniques. We said, let's go back and start re-using these methods.

How do we educate the non-Indigenous people across our territory and everywhere else about our IPK methods. In many cases, our methods will be in conflict with current practices. We have to change the attitude out there. If we don't do it, no one else will.

How can IPK perspectives on salmon restoration and recovery be incorporated into the Shuswap water-use plan? For example, plan biologists said that there were no salmon in that river to protect, but the Elders said that the salmon were there. So then we had to prove that that there are salmon in that water system.

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Laura Roddan and Arlene Harry

What is community-based forestry?

LAURETTA PRINCE*



We, the Tl'azt'en First Nation, are blazing the trail towards accessing the rights to our traditional lands. We believe that we are the caretakers, we are the stewards of our traditional land, and we want to take care of it.

I have worked with the Tanizul tree farm licence (TFL) since its inception back in 1982. I started working with my nation back in 1979. With all the experience that I have, I've learned that it's all about people, it's all about Tl'azt'en and our survival. We still collect the food off the land. When starting our TFL, the government put all kinds of policy, regulations, and legislation in front of us. They slapped everything in front of us and expected us, our chief, who is now Chief Harry Pierre, they expected us to start from nothing, from standing still, and turn overnight into a full-fledged business that generates revenues to operate the tree farm licence.

I was really disappointed that Annie Booth couldn't be here. She is professor of environmental studies at the University of Northern British Columbia (UNBC). We really thank the university for assisting, with the help of some FRBC dollars, to bring out our story. Annie Booth has been a big part in this project.

My experience is based on administrative skills and of working in the accounting department as administrative support for our company. With that responsibility came along dealing with the day-to-day operations of the company, and with the people. It's so important—I had to sit there at the front desk and listen to the concerns of my people. People just came in and said, "Well, we disagree with this and that decision," and they demanded that Tanizul call a band meeting. A lot of band meetings happened once we acquired the tree farm licence. In the beginning, Tl'azt'en thought, "Jobs, jobs, jobs; great, this is going to bring new knowledge into our community," so the community thought that forestry was a really positive industry to get into. The big logging companies are going to log out our backyards anyway, so we can jump into it ourselves. That's what our attitude was at the time.

And when we got the tree farm licence, and we started to see the herbicides and pesticides coming into our traditional food gathering areas and our Elders said, "No." In 1982, at one of our first band meetings about our TFL, the Elders sat together and made themselves strong in front of the management of Tanizul Timber, who were our own people. Our Elders had to sit in opposition of our own people, the management, all the people who had acquired the tree farm licence on our behalf, and the Elders said there is no way that we're going to accept chemicals in our backyards because we're still collecting our traditional foods off the land there. It's too close to the rivers, they claimed. Don't log down to the rivers because there are two major spawning grounds there. The sockeye runs and the early Stewart run and that river is the home of those spawning runs. It was not only for the people of the Tl'azt'enne, but for the people of all of British Columbia. So our people stood strong and said no

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Prince, L. 2002. What is community-based forestry? *In* Proceedings, Linking Indigenous Peoples' Knowledge and Western science in natural resource management. H. Michel and D. Gayton (editors). Southern Interior Forest Extension and Research Partnership, Kamloops, B.C., pp. 23-28.

chemicals for the tree farm licence. We told the government and the Ministry of Forests (MOF). Since then, there's been no chemical spraying on our lands. We always argue and we have to go over the heads of a lot of people at the regional offices of MOF and go to the Ministers of Environment and Forest Service first and say, "Hey, we want this stopped, and that stopped, the watersheds protected, et cetera."

One of the Elders at the workshop that I conducted last week in the Carrier–Sekani Tribal Council said something quite interesting. He said, "Yeah, we argue, argue with the government saying, 'First Nations people don't want this practice or that practice taking place in our traditional territories because it's ruining the environment and ecosystem.'" He claims that these demands from First Nations are where government gets the thinking for the Forest Practices Code because our people kept arguing our point, and they came up with the Forest Practices Code which is exactly what our arguments were. So never give up on your demand for protection of your traditional lands because there's always ways and means that you're going to be heard with the issues in your areas. We have to depend on ourselves because no one else is going to make those kinds of demands. So that's our argument that the Tl'azt'en Nation is protecting our land. Don't log down too close to the rivers and that's where the riparian zones came into play with the Forest Practices Code. So never give up.

As far as research for the Tl'azt'en First Nation, I don't have too much information on the John Prince Research Forest, but I do have an introductory paper from the RPFs [registered professional foresters] and the Operations Manager for the Tl'azt'en and UNBC Partnership Research Forest. So I can get copies if anyone wants to take a look at the report. As far as community forests, the Carrier–Sekani Tribal Council is working on their licence application now, but I'm not too familiar with that. We had some of the technical people working on that application and they sat in on the workshop that I conducted with the UNBC.

What the Tl'azt'en are doing at this time is sharing our Tl'azt'en story. We are working with communities who are in the process of making tenure applications. We hope that our experience will assist them in obtaining their tenure objectives. I have completed workshops with three tribal councils since January and the next tribal council is Cowichan, and then one workshop for non-Aboriginal resource managers at Prince George.

I'm open to any questions or comments that you might have. Feel free to ask.

Q: *Is Teez'lee mill still closed?*

A: Yes, the mill is still closed. We went through two partnerships. The first was with Northwood and the second was with Canfor and both of them did not work out. They did not meet the needs of our people. On the other hand, Teez'lee did not meet their needs as well, mainly on the volume—they were lower volumes. So we're looking at diversifying and changing it into something non-value-added. Our chief and council are still working on that. It's been sitting since 1997.

Q: *You mentioned that you are working on the research forest.*

A: Yes, we are. The UNBC and Tl'azt'en First Nation have partnered in this research forest—it's called the John Prince Research Forest. We got the tree farm licence and it was industrial based and it didn't really have any cultural value for the Tl'azt'en people. So, based on the studies and the research that UNBC had done on the Tl'azt'en tree farm licence, they thought we should set up our own research forest for the Tl'azt'en Nation and develop the cultural values in it that we

wanted while getting some timber volume out of it at the same time. And it seems it could be very positive on our side, because we're going to have the job creation, the ecotourism that can come out of the research forest, as well as the timber harvesting.

Q: Question dealing with environmental damage to Tl'azt'en traditional territories caused by logging within their TFL.

A: We still struggle with the damages that have happened because of logging. A lot of our people are not willing to damage their own land. So right now the people who are doing the logging are probably the non-native, non-band member contractors, because Tl'azt'en people don't want to be responsible for damaging our own land. We struggle with that. The industrial-based logging is probably harvesting 100,000 cubic metres per year, but now that there is more beetle infestation, that figure will likely rise. So mainly we're really going to cut our own backyard. The damages are in the Forest Practices Code.

What we do, our forestry planners, our own band members, if you have silviculture workers going out to reforest the land, then we teach them about the berries, all the plants, and the cultural values within your licensed area so they know how to protect those plants, the medicine, the roots, the berry patches. So I say teach our forestry planners and silvicultural workers and everything that you want to protect in that tree farm licence.

My husband was working in the juvenile spacing, the brushing and weeding projects, not only in the Tl'azt'enne, the Nak'azdli, but with the Stewart Lake licence and Canfor, the major licence holders, and he worked with the Forest Service projects, and he knew the plants. And he was just not willing to cut or spray in our area.

The Tl'azt'enne are still setting up MOUs [memoranda of agreement] with the licence holders as to traditional values of the licence holders within our traditional Tl'azt'enne territory. Parts of their licences are in our territory so what we're saying is that we don't want spraying, we don't want the chemicals and stuff in our area. So that's the argument. So far the only successful one is the Apollo Forest Products MOU. They were willing to co-operate, which brings more manual jobs, but it's more positive for the environment. But Canfor spoke with our operations manager last week and said they're still not willing to co-operate with us. So it's all a matter of working with your licensees because we know we're right because we took care of the land. We know the cycles. We know when it's going to be a good berry season or a good salmon season—it's our way. So we argue and right now there is 100,000 cubic metres a year and with the beetle infestation it is really bad so we keep an eye out on what's coming into our area. It's also about the protocol to agree with the licensees who come into our territory.

Q: Question about incorporating Tl'azt'en culture into the TFL operations.

A: I think there is a bottom line, there is always a bottom line, which is most important is to work for the best interests of all our people, so that our cultural traditions, our language, and our values come first and we are very culturally rich in our band. They are very active in the hunting and the fishing. Working with the people of my band since the inception of the tree farm licence, I've listened to them and they have good knowledge and I believe they've carried it on for me to understand what the values are. It is my responsibility to carry it on, not only to myself but to others where I could help serve the needs of our people. You see, there will always be that and that's a political thing and I stay away from that. I'm the supporter, the administrator working in

the offices and getting the work done. But I like to listen to the people, to the quietest people in our band because they have so much knowledge, trying to incorporate that into our business planning. But it's all about our people. Our people come first.

Q: Question about how successful the cabinet shop is (as presented in the video).

A: Right now the cabinet shop is also barely operating. We're on our fourth five-year development plan of the tree farm licence. In the third plan, they [referring back to notes with operations manager], and he said that it was not realistic for the people to work with the birch. So I think now we're trying to transfer that to band members owning the cabinet shop. I had a lady here who said she built caskets. And it is scary to build caskets, but we have a high rate of death up in our area. We have about 6,000 First Nations populations in all the surrounding bands of Fort St. James: a high rate of death, illnesses, cancer, suicides, violence, drug, and alcohol, all the negative things. We thought we would go into building caskets which they do for the bands. That's going to be converted back into the band membership, selling that business so certain band members can hold that business.

Q: You said that Teez'lee Forest Products' success was based on your partnerships, based on your experience. What didn't work?

A: The shortcomings of the partnerships that we had with Canfor and Northwood all boil down to their needs and not meeting our needs which are our jobs and some of the revenue coming back in. And basically the sawmill started out with a \$6 million bill, because it had been around that cost to build the old mill. So it was really negative because of obligations that the government had pressured us into, using 20-year-old parts for building our mill. The government forced us to go into this debt right from the get-go.

I think we started building the mill in 1985 or 1986, but it didn't start operating until 1994, and by then the debt load was just so high. The sawmills came in and they tried to give us some financial aid and expertise in operating the facility. So the debts kept building up and we couldn't afford to pay our way out of it because our equity isn't that much. For any First Nation, unless you really have a diversified economy, which we didn't, it was based on our location 40 miles away from the nearest service area. So it was based on our location too.

Q: Question about the marketing of wood chips.

A: Yes, we did try with the chips going to Northwood. We had trade-offs. With the larger logs going into our mills, and the smaller logs going into Fort St. James, there was a number of different ways that licensees tried to assist us with the planning, but it just didn't work out. But a lot of it had to do with stumpage too, because right now we're paying 71 percent to stumpage, we're one of the highest. So it's based on 50 to 70 percent ever since the section 88 program. It's just not viable for our tree farm licence.

Q: It seems that you're caught in a bind with the companies and they're forcing control of your resources on you, and now you might want to exercise your own rights and make your own decisions.

We are right now, according to the interview I had with the operations manager. I asked if there was any argument even to change the tenure type. I believe that anything can happen, and if it's not working and we're not making a buck then there is something wrong. Our argument with the

government was to reduce our stumpage. Look at what you've forced on us, and we don't want to live with it any more. We're stuck with this licence. We have to do something about it. I think our people really have to do something about it.

I spoke with our accountant and I asked if there was any argument about the tenure type and the stumpage and he said that they're going to the financial offices association where we can try to group. And of course we always have to prove ourselves on paper so it's working the numbers based on the volumes, the infestations, the financial costs year after year. So I think that's where we're going to bring our argument up. But it's a slow process.

If you take a look at our forest district, there are people to get along with and you really have to fight twice as hard with our district.

Q: *Question about prescribed burns to manage beetle problem.*

A: That's about all there is with the tree farm licence right now. In talking with the operations manager, we're looking at an increase in cut of 50 percent over the next five years. We argue that point too, that we should let those natural burns go because the beetles are there. If you don't let those natural burns go, then that's what happens.

Q: *It's wonderful that you've shared this story and all the lessons that you have learned. You made the comment that if you hadn't got into it then somebody else was going to log out your backyards anyway. I wonder if you could comment on, despite some of the regrets you might have, it sounds like it was still a better process than having someone else come log out your backyard. So I just wondered if you could comment on that aspect, as that must be very, very positive.*

A: So, the positives about our experience about us logging our own backyard out? Yeah, it was a good experience and although there is a lot of negatives coming out of this, the positive is that we were able to run the process all the way through. We had the hands-on experience in operating the licence, whereas if we didn't do it back then we would never have had this experience to share with the people, especially in B.C. So, we find ourselves to be the trail-blazers and it is a big plus because we know what the government can do and what damage can happen. And this is what we want to share to turn it around. So it is a big positive on our side, although we take care of the people that are logging. They know. That's a positive because we still have all our berry bushes, we still have the medicines. If someone else was there for 20 years we probably wouldn't have that because of all the pesticides and herbicides.

I'll tell you a story. A couple of weeks ago, we had someone shoot a moose in his territory and it was all green inside. We have a cancer research project happening in our nation. There is a high rate of cancer. We're one of the highest rates in B.C. There was a mercury mine up there and a lot of that has been dumped in the lakes, so there is a lot of that that's happened already. My dad passed away from cancer two years ago. I know what it's like because there is such a high rate. Out of that I think we have some studies coming out. I think the Nak'azdli Health Centre has some research happening right now on that and our nation. So there is some good information on that. The use of herbicides and pesticides. I know that in the rest of B.C. there is not so much chemical use but up there it is bad. And also telling us to start taking care of what we're eating. Be aware.

Q: How did the band finance the TFL?

A: It was our own band. We did it ourselves. We took some money out of our trust fund, out of our capital. It's interesting that you brought it up is that when you acquire the land in our tree farm licence application, it is very important that you do your own planning in your own First Nations. Because otherwise someone comes in and does it. We had this happen to us, we had a consultant come in and tell us the type of tenure that you should apply for in your area, and then we did not know the stipulations of which the tree farm licence, and we were tied to it and stuck with it.

Q: Question about what are good models of Aboriginal business.

A: Oh yeah, the competition is really a nightmare part of it. The tree farm licence is really competitive which brings the lot price down. So basically we're running a deficit situation and we're still struggling with that too. What I think should happen, this is me, Laretta, is that partnerships are good, they're really good. There's a good positive story of the Nak'azdli First Nation that people should go and take a look at that model. It's working. Their politics is totally separate from their business. They are very professional. Money is flowing into the community. They have a gas bar, they have a building supply store, and they have Tl'oh Forest Products that was a finger-joint facility in partnership with Apollo Forest Products. There are 40 jobs coming out of there. They also have an I-joist plant which runs easily. They just acquired another 100,000 cubic metres a year last week out of another licence. So they're going to be expanding their sawmill, which means more jobs for their community. So that's a great model to look at, a very positive community. That's the Nak'azdli at Fort St. James.

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Verna Miller and Chris Ortner

Science and Indigenous Peoples' Knowledge (summary)

KEN LERTZMAN*



PERCEIVED OBSTACLES TO INTEGRATING INDIGENOUS PEOPLES' KNOWLEDGE (IPK) AND WESTERN SCIENCE

- Different world views
- Different cultures
- Different power relationships to management
- Different criteria for “proof” and “evidence”

WHAT IS SCIENCE?

- Science as a community and a social institution
- Science as noun: body of knowledge
- Science as verb: process and method

SCIENCE AS VERB

- “Science is a systematic process whereby ideas about the nature of the world are challenged by observations.”
- Science supported by paradigms, theories, hypotheses, and data.
- The focus is on rejecting hypotheses using carefully collected and controlled data.
- Scientific knowledge is dynamic and changing as we learn more about the world around us.

Traditional knowledge systems and scientific knowledge systems are both dynamic in time and each have their own mechanisms for establishing the validity of ideas and beliefs.

The generation of testable ideas is a point of contact between the scientific process and Indigenous Peoples' Knowledge. A classic example of this can be found in the work of Gottesfeld et al. (1991) where they documented a massive debris flow near Hazelton 3,500 years ago, corroborating an event that has always resided in Gitksan oral history.

CITATION —

Lertzman, K. 2002. Science and Indigenous Peoples' Knowledge (summary) *In* Proceedings, Linking Indigenous Peoples' Knowledge and Western science in natural resource management. H. Michel and D. Gayton (editors). Southern Interior Forest Extension and Research Partnership, Kamloops, B.C., pp. 29–31.

SIMILARITIES AND DIFFERENCES BETWEEN IPK AND WESTERN SCIENCE

- Both systems are empirical and dynamic.
- Traditional knowledge systems tend to see connections between the “natural” and “supernatural.”
- Science is careful to draw boundaries between the “natural” and the “supernatural.”
- Rejecting a scientific idea doesn’t “reject” Indigenous belief.
- In general, science looks for differences, IPK makes connections.

EXAMPLE OF IPK AND WESTERN SCIENCE WORKING TOGETHER: FRASER VALLEY BURNING PROJECT

- Collaborative project between Sto:lo Nation, archaeologists, paleoecologists, and ecologists.
- Integrated analysis of traditional resource management practices and fire history.
- Objectives of Sto:lo Nation as well as scientific objectives were met.
- Interviews with Elders formed the basis for defining research hypotheses and selecting study sites.
- “Special people...burned it, they knew the weather... [There was] one way of doing it for the blueberry and one way of doing it for black huckleberry.” (Lawrence Hope, Yale)

LESSONS FROM FRASER VALLEY BURNING PROJECT

- Significant scientific results about long-term patterns of fire.
- New results about the rarity of wildfire in subalpine coastal forest.
- Documentation of IPK about burning practices and locations.
- Evidence of “light footprint” of traditional resource management.
- Ongoing relationship developed among partners, and extended beyond life of project.

SECOND EXAMPLE OF WORKING TOGETHER: SCIENTIFIC PANEL FOR SUSTAINABLE FOREST MANAGEMENT IN CLAYOQUOT SOUND (CLAYOQUOT SCIENTIFIC PANEL)

- Nineteen Panel members included four Nuu-chah-nulth Elders.
- Charged with using Western science and IPK to design new standards for forest management.
- Recognized that Western science and IPK are complementary.
- All recommendations accepted by provincial government.

WORKING PROTOCOL OF CLAYOQUOT SCIENTIFIC PANEL

- Founded in Nuu-chah-nulth approach to group process: Respect and open discussion in the pursuit of consensus.
- Respect for each other, for different values, and for data founded in both science and traditional knowledge.

MAJOR CONCLUSIONS OF THE CLAYOQUOT SCIENCE PANEL

- Ecosystem-based management and Hishuk Ish Ts'awalk.
- Integrating different sources of knowledge is essential for ecosystem management.
- Many recommendations to incorporate Nuu-chah-nulth people, values, knowledge, and cultural resources into management.
- Panel did not focus on examples of mismanagement in either culture. "We are here to represent the best of our traditions." (Roy Haiyupis)

TAKE HOME MESSAGES

- Neither system legitimizes the other; both are legitimate ways of knowing.
- Both are grounded in empirical experience.
- Both should represent the best of our traditions.
- Both should emphasize ecosystem-based management.
- Both should start from the basis of mutual respect.

REFERENCE

Gottesfeld, A.S., R.W. Mathewes, and L.M. Gottesfeld. 1991. Holocene debris flows and environmental history, Hazelton area, British Columbia. *Can. J. Earth Sci.* 28(10):1583-1593.

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Chris Hollstedt and Natalie Chambers

Lignum–First Nations partnerships

BILL BOURGEOIS*



The Lignum–First Nations partnerships centre on forest management and community stability. It is the integration of these that has contributed to our collective success in building positive relationships. To fully understand the relationships, it is critical to know the company and its philosophy with respect to both forest management and First Nations.

Lignum is a privately held forest products company established over 55 years ago by Leslie Kerr. His two sons, Jake and Tim, now own it. The company consists of a sawmill and associated woodlands operations in Williams Lake. A head office in Vancouver includes a lumber trading business. The company has been known for years for its innovation, commitment to excellence, and leadership in the industry.

The forest management philosophy of Lignum includes recognizing the long-term responsibilities of managing a forest on Crown land. These can be summarized into contributing to environmental sustainability, economic security, and community stability. To achieve the objectives embedded in this philosophy, Lignum must provide leadership to the industry, receive community support, and build partnerships. These partnerships include those with First Nations.

Lignum developed a forest management concept in 1995 that is referred to as *The Better Forest Mandate*. The implementation of this concept is done through the Innovative Forestry Practices Agreement (IFPA) that Lignum signed with the Minister of Forests in 1997. The IFPA is located on 75 percent of the Lignum operating area in the Cariboo Forest Region and covers 610,000 hectares. It transects nine First Nations Traditional Territories. The overall objective of the agreement is to investigate innovative forest practices that will improve forest management and build on the three components of the company's forest management philosophy. Integral to this are the First Nations partnerships and the resulting contribution to stability in these communities.

The Lignum approach to forest management includes:

- long-term strategic planning
- focus on habitat conservation
- intensive forest management
- co-operative management (partnerships)

It has long been known that the best approach to forest management is to base it on a forest level strategic plan. Know what you want from the forest and then determine the methods and practices you will use to achieve the objectives. Lignum has adopted this approach.

CITATION —

Bourgeois, B. 2002. Lignum–First Nations partnerships. *In* Proceedings, Linking Indigenous Peoples' Knowledge and Western science in natural resource management. H. Michel and D. Gayton (editors). Southern Interior Forest Extension and Research Partnership, Kamloops, B.C., pp. 33–38.

Much of the forest management in British Columbia is focused on timber production. Lignum has decided to put the focus on habitat conservation. It is from these plans that the available timber for harvesting is based. The company believes this is a more sustainable way to manage the forest. One component of the management is the practice of intensive forestry. This will allow economic stability to be developed along with environmental and community stability.

No one company, agency, or individual can do all the things required to implement a Sustainable Forest Management (SFM) initiative. Partnerships are required. In the Lignum case, First Nations partnerships are critical to the success of the overall SFM objectives.

Lignum recognized the importance of First Nations partnerships some years ago. Since then, a Lignum philosophy relative to First Nations partnerships was developed and includes:

- base business relationships on sound business decisions
- develop mutual respect
- obtain equitable contribution from Lignum and the First Nation
- build the business to meet the needs of both partners
- stay with forest management
- start small and think long term
- build capacity within the First Nations community including technical training
- separate politics from business

It is on the basis of this philosophy that Lignum has been working with First Nations for over 40 years. The partnerships come in various forms such as formal joint ventures, co-operative studies, log/lumber trades, logging contracts, and silviculture contracts.

The formal joint venture partnerships have received the greatest publicity. There are three objectives to the joint ventures:

- building positive relationships
- contributing to community stability
- making a profit

The most important of these are the first two. Lignum believes that every business relationship should consider making a profit. However, this cannot be the primary focus. There have been numerous examples in Canada where a short-term focus on profitability has resulted in failure of the business and the relationship. Lignum would like to prevent this from happening.

The Lignum approach to joint ventures includes:

- start small
- First Nations have to request the partnership
- create a 50/50 partnership
- share capital investment
- First Nations have a buy-out option after five years, Lignum does not
- build capacity within the First Nations community

When a company and First Nation begin a joint venture, there is a steep learning curve for both parties. This includes understanding the needs and objectives of each, building expertise in the joint

venture company, and learning to work together. If these challenges are within a large operation, they become greater to achieve than if you start small. It is on the basis of this principle that Lignum operates.

First Nations have to want the partnership. Therefore, it is critical that they initiate the business relationship discussion. Once this has been done, Lignum believes the partnership should be equal. This sends a message that we are partners and neither has control over the other. The equality is also reflected in an equal contribution of capital to the venture. In instances where the First Nation is unable to provide its share immediately, Lignum has contributed more but has been reimbursed to the 50 percent share from the returns of the business.

The joint ventures are intended to build capacity and stability in First Nations communities. One component to the agreement is that the First Nation has the option to buy out Lignum after five years. This sends the message that Lignum is assisting the First Nation but not intending to be involved directly if the community wants to go alone. Lignum will continue involvement in any joint venture as long as the presence of the company is meeting the needs of both parties. The experience to date is that until capacity has been built within the First Nations community, Lignum continues to be a participating partner.

Lignum began joint ventures before they became popular within the British Columbia forest industry. The first joint venture was signed in 1990. The number has increased to four, all under the philosophy and approach previously noted.

Although the joint ventures and other business relationships were begun as stand-alone initiatives, they have now been integrated into Lignum's forest management. The IFPA strategic plan requires a number of forest management activities be conducted on the area. To date, these have primarily involved silviculture treatments. First Nations conduct all of the intensive forest management activities within the IFPA area. This has resulted in creation of both a significant silviculture workforce and capacity within the communities.

Lignum believes these business relationships have been a success. However, the company and the First Nations cannot rest on their laurels. There is a lot of work to be done if the SFM objectives are to be attained and First Nations communities are to become stable from an economic perspective. The next steps include:

- developing long-term employment and training plans and associated funding that will meet the strategic forest management objectives of the IFPA
- growing the existing joint venture companies
- developing capacity agreements with First Nations that go beyond silviculture
- using First Nations knowledge in Lignum forest management

Fulfilling these next steps will be a challenge for both Lignum and the First Nations. However, if the positive relationships that exist today are used as a base, they can be achieved. Co-operation and mutual respect are key.

QUESTIONS AND ANSWERS

Q: What is the maximum allocation of harvest that Lignum has awarded to a First Nation?

A: There's one which is 50,000 cubic metres. In other cases they're probably in the order of 5,000 to 10,000 cubic metres.

Q: How do you work profit out? Does Lignum assess its profit making over its whole business operation or do they do something innovative here and cut in other areas?

A: This is very easy. The joint venture is not a major part of our business. If we lost some money on joint ventures, then it's not going to break the company. But our main concern in the joint ventures is that we have to go after a profit for that company, but profit doesn't have to be the number one objective. Time frames of about 10 years would be the longest for not having a profit, but there are many other spin-off jobs. Each one of these joint ventures wants the money to go into the workers, and others want it to go into the band. To date, most has gone into the workers.

Q: Expand on archaeological partnerships.

A: I'm not sure of all the details. The archaeologists are selected by the band, and band members work with the archaeologists throughout the process.

Q: You mention community as it's different from the band. How does Lignum define community?

A: When we talk about First Nations community, we talk about that band and everybody in it, including people who belong to the band who are not necessarily living there. Beyond that, we have communities like the City of Williams Lake and all the people who live there, the provincial community, and all people in the province.

Q: You said one of the objectives of Lignum is to use First Nations knowledge but this is a scary comment. What process do you intend on using?

A: We haven't figured it out yet. We recognize IPK. We need to start thinking about what that is and how to incorporate it into our planning and management.

Comment: You will have to get the consensus of First Nations people as a whole to incorporate their knowledge into your business practices. You can't just ask one person—you need everyone. In the North in the treaty process, we all have different ways of practising traditional values and each nation is different. The knowledge keepers are also not willing to share their knowledge because it's sacred to us. So you need the consensus. When we talk about the community we're talking about our nations.

Q: You mentioned that the joint venture board had three Lignum and three First Nations members. So at a board level, doesn't that issue come up?

A: If it has, I'm not aware of it, but it has come up in discussions with other First Nations who are not in partnership with us. One thing to keep in mind is that the joint venture company is basically

doing contract work for Lignum. It's not a joint venture that says we're in the business of managing the IFPA together. There are other things like developing MOUs with one band, for example, that outline how we're going to work together and bring our interests into our existing forest management.

Q: *Does the partnership cut into your allowable cut?*

A: No, most are sivilculture contracts. If there are ones who are logging, they are logging part of our allowable cut.

Q: *What approach have you taken to separate political and business issues?*

A: That tends to be where the operations people in the Williams Lake office step in, I stay the heck out of it. That's wise for everybody. When we talk about treaties and interim measures, then I start to pay attention to it because that is a management issue. So that is how we separate the two.

Q: *Has any community come to Lignum to talk about ecocertification?*

A: Lignum is very involved in the Forest Stewardship Council (FSC). We made application for FSC certification, but our proposal is shelved. FSC has to come to some clear principles with regards to Indigenous rights. Once that happens, we'll find out if we can take our application process off the shelf or not. At the moment, we're asking the IFPA to be certified, not areas outside of that. I'm part of the FSC steering committee and Lignum is a member of FSC.

Q: *Sounds to me like Lignum's done a good job of separating business and politics. What steps are taken at the tribal council for separating business and politics?*

A: There are steps taken in the Council. The board members are usually chiefs and council members. There are problems there. Communications within the community are a problem. We communicate well with the board of directors and the council, but the community sometimes does not know what we're doing.

Q: *A comment in relation to traditional knowledge and the science. As keepers of the knowledge and the language, there is (shouldn't call it a fear), but the word more than fear needs to be respect. Respecting the combination of the sciences and traditional knowledge that we have. I think the respect that we expect from forestry companies is that there [should] not [be] a real heavy pressure on giving out all of our traditional knowledge information. We have certain protocols in our own families, and communities, and we have to be really sure of the protocols in our own families before we give out information. When we think about communities, we think of everyone in our community. When we talk about Band, we're talking about another term. When you talk about Band, it's everyone who's on the Band list, living all over the world. As holders of language, there needs to be a certain respect.*

Right now we're doing a moose study in Williams Lake. Before we went into the study, we had certain expectations we wanted to be met before we let companies go in and do their clearcuts. One area was really sensitive moose habitat area. We got all the knowledge that we needed from our community members. I co-ordinated the study then, and once we got our IPK and had it packaged, we said, "Okay, let's try and link these two together." Then we wanted the licensee to provide us with their information, their moose study, their scientific knowledge about moose study. Our knowledge

keepers told us where the moose calve, where they forage for food. We knew that information and before we would allow a licensee to go into that area to do any logging, we needed to have their information about that area. That fear that I have is a respect for the land, for those moose and their habitat. That traditional information that I hold wasn't just given to me overnight. It was a long process of listening and learning and requiring a lifetime commitment. This knowledge is given you a lot of the time because of respect, and as a knowledge keeper, you have to handle that knowledge because of the respect and you have to respect the person who you're going to give that information to.

A: We understand that incorporating that knowledge will take some time. We are patient with that, the trust has to be built. So you gave us some information, so now we have to decide how we are going to incorporate that information and adjust our planning. So this is good for us.

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Randy Butcher

Nicola–Similkameen Innovative Forestry Society: Incorporating Indigenous values into resource management

STUART AIRD AND VERNA MILLER*



The Nicola–Similkameen Innovative Forestry Society, established in November 1998, is pioneering groundbreaking changes to the way forestry is being managed in the Merritt Timber Supply Area (TSA). Six major licensees holding Innovative Forestry Practices Agreements (IFPAs) have joined together in a spirit of unprecedented co-operation to manage the IFPAs as one.

Through the Society’s structure, the First Nations community is participating as equal partners with industry and government in the management of the Merritt TSA. Through First Nations participation, the Society is working to develop methods to incorporate Indigenous values into the initial stages of resource management, a first for the province of British Columbia.

Society members include:

- Ardew Forest Products Ltd.
- Aspen Planers Ltd.
- Nicola Tribal Association (NTA)
- Ministry of Forests Small Business Forest Enterprise Program
- Riverside Forest Products Ltd.
- Tolko Industries Ltd.
- Upper Similkameen Indian Band (USIB)
- Weyerhaeuser Company Limited
- 9135 Investments Ltd.

Through the support of the Society, local First Nations have an opportunity to acquire timber. Seven Indian bands within the Nicola Tribal Association, along with the Upper Similkameen Indian Band, hold a major forest licence and IFPA through their company, 9135 Investments Ltd.

Since its inception, the Society has been working to achieve the following strategic objectives, which are to:

- create an innovative forest management environment
- support communities
- support First Nations communities
- increase the sustainable harvest
- enhance environmental values

CITATION —

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- strengthen sustainable forest management technology
- develop community involvement
- increase administrative efficiencies
- increase Forest Renewal BC's effectiveness

First Nations participation in the Society at every level is helping to achieve a number of our strategic goals. It will help to create an innovative forest management environment, support First Nations communities, enhance environmental values, and increase community involvement.

The Society is providing funding to gather and incorporate First Nations traditional land use practices into both strategic and stand level planning within the Merritt TSA. Tmixw Research, through the Nicola Tribal Association in Merritt, has been working with the Society to research First Nations traditional uses. Ongoing projects to date include a literature review of existing studies; interviewing First Nations Elders and advisors to record their traditional use knowledge and experiences in the areas of hunting, gathering, and spiritual activities; and incorporating this data into one central database using geographic information systems (GIS).

To protect the proprietary nature of the information, it will continue to be controlled and interpreted by the First Nations people. Information gathered by Tmixw Research is housed in a number of areas, including an archive and research centre of excellence, archaeological lab, museum, GIS central database, and resource management centre. This information, however, needs to be available in a way that biologists and foresters will be able to use for resource planning on the Merritt TSA.

The Society is adapting Predictive Ecosystem Mapping (PEM) to provide a new opportunity to cost-effectively integrate the full range of local forest values into resource management planning. These values not only include First Nations traditional uses, but also biodiversity, wildlife habitat, water quality, fish habitat, community stability, and timber supply.

PEM works by combining GIS map layers with expert ecological knowledge. For example, traditional use information is used to validate and update the database by overlaying hunting and gathering areas with the results of wildlife and plant models. All First Nations and other non-timber values will be linked with the PEM database for utilization with timber supply review, high level strategic planning, and stand development. Spatial models are developed that will allow updating of information as required and predictions of values into the future.

Through PEM, resource managers will be able to predict where specific ecosystems can be found and what type of values they support. For example, PEM will be able to predict important First Nations locations such as bear spring feeding range, mule deer fall range, or huckleberry and soapberry distributions. One of the unique features of PEM is that it can be used to predict ecosystem locations across the entire Merritt TSA—covering 1.1 million hectares of land.

Typical PEM uses will include:

- rare ecosystem planning
- wildlife capability and suitability planning
- reserve area locations for TSA planning
- site-specific planning issues especially related to strategic silviculture regimes
- traditional use modelling

- traditional values capability and suitability modelling and planning
- biodiversity planning for higher level plans
- site index for timber supply analysis

Using both traditional use studies and PEM information, we are able to ensure that First Nations values are incorporated into land base management. Traditional use studies give us historical information. PEM can help us understand what's on the land today and predict future ecological patterns of use.

Like our name suggests, the Society is based on the concept of innovation. But how do we evaluate innovation? On the surface, some of the Society's projects may not always appear innovative—we're adapting, not inventing, some of our approaches. However, on closer look, innovation is clear.

Through the Society, productive working partnerships are being forged at all levels. New levels of co-operation are emerging in a structure that includes First Nations as co-managers of the land. Our diverse members—who have traditionally worked in isolation of one another—have signed an agreement that includes how an increase in annual allowable cut will be shared. A wide range of timber and non-timber values is being incorporated into the initial stages of resource planning. And, for the first time, the Merritt TSA is being managed as one land base with solid new practices being applied at the field level.

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Francis Seymour

Ancient values/new tools: Innovative methods and technologies for integrating cultural values in forest management

JOHN J. LEWIS AND DR. STEPHEN R.J. SHEPPARD*

Although the planning techniques foresters use have grown increasingly sophisticated in recent years, the task of accommodating cultural values in resource management plans has become more, rather than less, problematic. This is particularly evident in resource management issues involving First Nations' cultural values. In recent years, disputes over places such as Gustafsen Lake, Ipperwash, and Meares Island have crept into the consciousness of the Canadian public. At the heart of these controversies are complaints involving not only unceded territory, but also the greater issue of culturally significant land.

Conflicts over culturally significant land are pervasive because resource management processes ignore cultural values, often because they are difficult to incorporate within conventional modes of land management. This paper reports on an initiative with the Cheam First Nation that explores their cultural perceptions of forested lands, and identifies the ways in which resource management affects cultural uses of place. In addition to documenting the land-based cultural values that involve identity in social groups, modes of material sustenance, and spiritual activities, we found that forest development activities, because they are directly tied to the land and concepts of place, contribute directly to the undermining of Native cultural values. Moreover, we have made the unprecedented finding that placing land-use information in standard cartographic format impairs cross-cultural communication between First Nations and resource managers. Three-dimensional visual models of the landscape are the most effective means of eliciting community reactions to management plans across several dimensions including cultural uses, aesthetics, and spiritual values. To be effective, shared decision-making in forest management requires new and relatively untested tools for cross-cultural communication (e.g., "socio-cultural" planning frameworks, landscape visualisation, etc.) that can facilitate the incorporation of cultural values into standard forest management methodologies.

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Closing plenary discussion

Editor's Note: In an open and freewheeling discussion, participants were asked to comment on two questions: "What principles should be respected in linking Indigenous Peoples' Knowledge (IPK) and Western science?" and "What did this conference mean to you?" This is the record of an unrehearsed and dynamic play, with many voices.

- We (government, industry) need to begin integrating Indigenous Peoples' Knowledge, but First Nations people must first tell us what principles should be respected, what the limits and boundaries are. This came across in Lauretta Prince's presentation.
- It is important to develop that process first, before we (First Nations) decide who's going to get that information. Who and why? That's one of my main concerns.
- The question we are addressing assumes that there is a gap between Indigenous Peoples' Knowledge and Western science. Is that really the case? Is there a gap?
- If there is a gap, and the two systems are fundamentally different, then you can't link them. Or if you did, it would be one-sided, with Western science calling the shots.
- These are complex issues, and it's hard to know how to tackle them. Knowledge systems are justified through different beliefs. In IPK, people believe something because they've been told it by someone they respect or because they've seen it for years and years. Western science doesn't have this approach. This IPK approach is a good one.
- It's going to be tough to say what First Nations people want as principles because of the trust, honesty issues. First Nations are still being asked how much they can share. They are tired of talking and just giving out information. For non-native organizations, cross-cultural awareness workshops are important. A lot of people think we're living off program dollars, but we are actually putting money in and giving money back to Canada. These workshops could help us gain respect and honesty about our contributions to Canada.
- First Nations people hear the comment that "Indians should get a job." When are the complainers going to give us power and decision-making control over the ability to get those jobs? To make decisions? There is a dichotomy between what people think they see, and what's really happening. For instance, all the partnerships Lauretta discussed in her presentation fell through. Tl'azt'en were trying their best to make the partnerships with industry work, but government kept putting up roadblocks, making a workable partnership impossible.

CITATION —

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- This brings me back to Don Gayton's castle image in his introduction. He says that both science and First Nations are outside the castle, banging on the decision-makers' doors. But a lot of people in British Columbia think that "those god-damn Indians" are actually inside the castle, directing decision-making. In that sense we get credit for way more power than we have. We're still on the outside of the castle. But there is always this comment that labels our knowledge as something in the past, something old-fashioned and unusable. Our knowledge is actually very current and dynamic and we're still learning it day by day. By framing IPK as something old-fashioned and unusable, it is made to appear as only important to past generations. That simply isn't true. Jean Williams told us about people who have been given the responsibility as knowledge keepers. IPK happens today and it's going to continue. Children are being trained as the keepers of that knowledge now. We can't continue to frame IPK in the past; it needs to be framed in the future.
- Some people think that science is coming full circle, and is beginning to resemble the alchemy of 3,000 years ago, where all matter had spirit and those spirits were connected. If this is true, then it puts IPK right on the cutting edge of the new science. So there is good reason for scientists and First Nations to unite, and try to get into the castle together rather than from separate doors. Together we can help change the more mechanical and linear thinking in industry.
- Let's not automatically assume that we ought to link the two systems. There are principles that should be respected if we are going to link IPK and Western science. This would include acknowledgement that First Nations don't have to share, that they might choose not to. Another principle is to acknowledge that the two systems are separate, but there's no hierarchy. That's important for me, that we don't set one system above the other. They have totally different ways of approaching the same ponderosa pine tree, but they are equally relevant.
- We should be looking at some of the things that we didn't look at today. If there is anything that is true about Aboriginal knowledge, then it is the ability to change. We've come to this conference. It's adapt or die. Four thousand years ago we primarily survived on land animals, and when salmon came up the river we adapted to them and changed how we lived. And that's what we're doing here today, we're just trying something different.
- And even with that adaptation we've survived quite nicely.
- I believe openness and learning from each other should be principles. We need a solution-focused perspective. Another principle is creativity and a commitment to be creative.
- We (First Nations) have to identify ourselves and find our way as knowledge keepers. Is the knowledge for self-gain, or for all the people in Canada?
- Who really has control of the knowledge? Fred Fortier gave us some really good information in his talk because he's looking at the global perspective. It's time for us to take back control of our knowledge.
- I was very fortunate to be a part of a workshop that looked at strategies that the Indigenous people could offer to this conference. In that workshop, one of the principles that came clear is that there are some good places to start. We don't have to start at the beginning. The Forest Stewardship Council certification process, for example, if carried out in the spirit that Aboriginal people understand, offers a good opportunity for the incorporation of Indigenous Peoples' Knowledge.

- I want to refer back to what the Elders said about the gap between the knowledge systems. To them, there is no gap. In fact, we've got everything backwards. The real issue is not the linking of IPK to Western science but the reverse—to link science to IPK. First Nations would watch the scientists going out and doing their tests, and they were testing the things that the Elders already knew. They were like children testing a hot iron to see that it's hot. We have already done our own kind of science on this stuff that the scientists are studying. We don't have the gadgets, but neither did the Western scientists until the last 100 years or so. They are the new guys on the block, and our knowledge has gone far beyond that point.
- A good example is the scientific project up in the Yukon on the snowshoe rabbit population cycles (proving how they are linked to climate changes caused by sunspots). One of the first things I said to my partner is, "Why didn't they ask the Elders?" Those scientists spent millions of dollars, and instead they could've asked the Elders. Millions of dollars linking the scientists and glaciologists. The Elders could've told them that the climate changes every 10 years.
- Given that we're dealing with a body of knowledge that was developed in pre-industrial times, but now people's activities affect the environment in a much more substantial way. Can you say, are you confident, that the wisdom of Indigenous people can on its own address today's environmental questions?
- Can you say that about Western science? That it is addressing all the environmental questions? You've got to come together within yourselves first.
- I'm into trying to implement things. My career in the forest industry is coming to an end, and I want to do something instead of just yapping about it. When we talk about this, we get into who's right and who's wrong, and who's in control and who's not. That's not conducive to getting into the issue. If you buy into the idea that there is value in both types of knowledge, then you can say how we can best move ahead in trying to use both of these bags of knowledge. My experience is that we've been brought up to think in terms of negotiating positions. If you start thinking about interests first, rather than negotiating positions, then you start to look at what the needs and the interests are of the other group. With positional thinking, you go back to in-the-box type of thinking. If we're going to move things forward on the ground, then I want us to start looking at interests instead of positions, then we can talk about working together, about dialogue, and about moving ahead. If we say, "No, I'm going to stay positional and wait until I find out who's in control, who has the power," then we'll all be old and gone before the linkage of IPK and Western science ever goes anywhere.
- I agree on parts of that statement. I didn't have the opportunity to grow up in my own Aboriginal culture, and a lot of people in my community don't have access to that knowledge either. We should identify what that knowledge is. My training was in forestry, and I believe we can use forestry technical knowledge to protect and enhance our culturally sensitive areas, and show how that will benefit those people in the long term. We've also got to store that knowledge in some meaningful database. We're going to lose it otherwise.
- What's being proposed here is to separate politics from business.
- I don't think First Nations people are saying that we want to use our own IPK base and nothing else. But many times Western science does not recognize or respect the knowledge that's out there

on the land already. They spent millions of dollars trying to find out about some species when they only had to ask one person. Up in the North, they were spending lots of money looking for whales from helicopters and couldn't find anything. Then they went for coffee with an Elder and he told them. Maybe we could better spend this money trying to do some project we both agree on.

- I think we should focus on potential points of intersection between IPK and Western science. I think sustainability is a good one; it is an area of “partial overlap” (to use Ken Lertzman’s phrase) between IPK and Western science. Another area is ecosystem management. A third one is local community input—linking local communities to the science that’s being done in their area.
- There are different categories of knowledge. There’s what I know and you don’t, what you know and I don’t, and what we both know. Let’s categorize our knowledge and share what can be shared.
- One of the challenges posed to the group yesterday was that First Nations people are always giving, we’re always making it comfortable for non-Indigenous people to operate in their own area of knowledge. These are the things that Indigenous people have to think about.
- When are white people going to start learning our ways? Think how hard that’s going to be for you. First of all to get to the “in” crowd. Not to become an Indigenous person, but come to a point where you have a level of understanding: Am I saying the right thing? Am I doing the right thing?
- I’ve been thinking about the discussion and where it’s going, and I hear that there is a type of science that could be acceptable to us as First Nations. We heard Ken’s presentation about Clayoquot Sound: science that’s done properly and respectfully can make progress in linking IPK and Western science. The problem why that type of science isn’t happening more generally is that it’s too costly. Temporally, it’s too long for the economic turnarounds that government and industry want. In the pre-conference workshop, the Elders said that processes like the FSC certification could actually work if they are carried out in a way that is respectful of Indigenous knowledge and rights.
- There seems to be an attitude about a certain type of science that is negative, but there is some level of science that seems to work quite well, and it seems to be the science that is community driven. In that process, the Elders’ councils participate in creating the hypothesis that the scientific method needs. That way, the research reflects local needs and cultures, and is responsive to them. This conference could propose this concept as one we could take forward.
- I’ve been a little skeptical of this whole process. Western science has been taking from IPK for hundreds of years. As an example, where did science get the idea for aspirin and other things they’re using now? They take our knowledge, put labels on it, and call it other things, and there’s absolutely no benefit for First Nations people. The fact that we’ve given information over and over, and have been burned so many times—that brings my skepticism out.
- The comment about the taking of knowledge brings up the issue of intellectual property rights. We also experience this taking of knowledge with academics. Even today the “hit and run” researcher comes into the community for a brief time, and a couple of months later they present a nice big fancy paper without any acknowledgement of where the information came from.
- First Nations learning is cyclical. We think and work in cycles. If I were going to talk about salmon, first I’d need four years to understand the whole life cycle of salmon. We don’t think in little

blocks, we think in complete cycles. We would think about a complete watershed, not just one little stream in it.

- I want to get back to the general question, “What are we going to get out of the whole process of linking Indigenous Peoples’ Knowledge with Western science?” Response: More action, more examples, more coming up with solutions.
- I want to talk about responsibility. I’m saying this to bring us back together. As a result of coming here, we accepted a certain responsibility for linking both sciences. We looked at the responsibility of sharing, projecting, and accepting the challenges. Lauretta Prince brought out the phrase “trust, respect, and understanding” in her break-out session. We are accepting the challenge to build that respect.
- You’re right—I think respect is our biggest challenge, and this is a beginning.
- It seems that everyone wants to separate Indigenous peoples from science. I’m a First Nations scientist, and I don’t believe that the two bodies of knowledge have to be separate. I grew up trapping and fishing, and I didn’t see the difference when I started studying biology.
- When I was doing my Master’s degree on culturally modified trees in the Fraser Canyon, I attended a meeting with the Parks people. It was amazing to me to see how government people would come in and ask for important information from Elders. I was sitting there as a biologist and thinking, the government would never have asked a bunch of biologists to sit down and give all their information, for no money. At that same meeting, I was patronized as a member of the Nation, but then someone said, “She’s got degrees.” Suddenly, I was treated differently when they realized I was an academic.
- Western scientists have the money and we have the knowledge, but they’re scared of the skeleton in the closet.
- Earlier there was a definition of science and traditional knowledge: both systems are based upon observation.
- I’d like to talk a bit about how science has failed. Science sees the world as lifeless, lacking spirit, whereas IPK sees it as full of spirit, a spiritual relationship.
- Science is politics by other means. Relations of power, control over land, who has the army. Science is a tool with a mandate as a political tool. Much of the time science is funded by political bodies for political purposes.
- A defining feature of Western science is that it depends upon writing things down. It enables things to be preserved, and it completely misses things that don’t get written down.
- As a government worker, how do I walk away from this meeting now with what I’ve heard? I don’t think there’s too much of a gap between social needs, environmental needs, and community needs. We don’t want unhealthy communities. I don’t think our communities talk enough together—politics always gets in the way. Yesterday, Jeanette Armstrong talked about the consensus approach: working away until you find something mutually acceptable. We don’t always hear First Nations; we need to talk to each other, we need to understand where intellectual property rights

come in. I don't have much of a say in things because politics always enters in. Even district managers don't have much power to change things. Our structure is a majority rule. I'd hope that some day we'll move closer towards a consensus-based approach.

- We're stalled as we're trying to define science and define IPK. My hope is that we can move beyond this stage. But as we do that, the Elders are dying and opportunities are passing us by. We all have to work together to survive. We need to start learning how to work together. We need to get on with what we need to do and go beyond the definitions.
- I came here trying to understand a little more about Indigenous knowledge, and I think now I do understand it a little better. I think our task is understanding, and how to use this information responsibly.
- I'm amazed at how much time science spends on one project, when First Nations already have knowledge on the topic. I see the frustrations in the ministry, the staff, and First Nations. Education is an important way of dealing with those frustrations. Try using cross-cultural awareness workshops so people can learn to understand one another, to talk to one another, and to work together.
- I did learn a lot at this conference, I really enjoyed listening.
- When I came to this workshop I was expecting to see more Elders. With more Elders present, we would have learned more about the issue of respect, and how to incorporate our knowledge with industry. It seems like we're always in "fix-up" mode, trying to repair the damage that's already done. First Nations values are different than industry or government values.
- Mike Arnousse talked about this basic principle of survival. Thinking globally and acting locally is very important in that survival today is very different than it was 50 years ago for Indigenous people. First Nations do what they have to do to survive. They need opportunities to survive. What's left out there for them? We live in a world that is truly globally connected. I just came from a conference where we discussed technology and how technology is used for decision-making. We are a global village today. We are all affecting the environment, and we have had to make changes because of that. We're destroying the very biosphere that we need to survive. Decision-makers are relying more and more on information technology, but how much information do they have, and what is the quality of that information? It's not just First Nations that are frustrated with this reliance—the local communities are as well.
- I've heard a lot about structure and how we think we can't change the structure. And I heard about how Western scientists don't have much power to change things. I was really surprised by this. So it seems like we are restricted by legislation. We have to remember that the structure might change gradually. Collectively, we all know a lot of people, and when we leave this conference, we need to talk to them about these issues. And we need to see this not as "work" but as a way of table.
- This conference has inspired me to investigate the potential of incorporating these two knowledge systems further. I've gotten some inspiration. The title of the conference focuses my goal in life—accepting other ways of being.
- I work with the Ministry of Forests. I came to this conference to get some examples of positive

interaction between Aboriginals and non-Aboriginals in the forest sector. I don't know how it will be integrated or how I can bring it in every day to how I work.

- Principles. It's my understanding that there are some fundamental Indigenous peoples' principles, based on natural law: integrity, respect, trust, honesty, et cetera. As natural resource managers and decision-makers we will have to build these principles into our mandate in natural resource management. I believe that these principles are the same throughout the world, and they are guidelines for practices and interrelationships that allow different people to be able to work together. In other words, what techniques are required for you to understand each other, assuming that there is a will to work together? Judging from the response I've received from being a listening post evaluator, I have heard that there is a will to carry this concept on, to further conferences.
- Fundamental communication skills such as active listening mean that, through discussion, you work to understand both sides of the issue. Once you have an understanding of both sides of the issue, you can get a clearer understanding of how to integrate IPK and Western science and, from there, move forward to common goals.
- My understanding of the last five years is of Indigenous people collecting IPK for their own use. Many communities are scared of losing that information because of the Elders' age. For that community, they see a value in collecting that information for future use. However, this process has had some difficulties. One real concern has been the storage, retrieval, and control of IPK information once it's collected. There are many fears related to the misuse and appropriation of IPK. I believe that First Nations want to make sure their IPK is maintained and can be passed along to future generations and that to continue collecting IPK for their communities is important.
- The biggest fear for First Nations is whether government and industry will use our information against us. Information needs change over time. In the early 1900s, there were a lot of academics collecting anthropological data on First Nations. Much of that information collected has been copyrighted and is controlled outside our community. Now, because First Nations have experienced this appropriation of our cultural knowledge from anthropologists, archaeologists, and other academics, there is the fear of sharing our traditional knowledge.
- I am taking away from this conference the fact that all of us at this gathering care about how the land is being used. There have been a number of models presented that could allow that to happen. The opportunity exists for us to redefine our methods of enquiry to suit both First Nations people and the larger community. There's enough here to do the right thing.
- I think everybody here shares many of the same concerns. We're all sharing the same land and we all want to survive. We all need money to survive. Because I work with Elders gathering IPK, I talk to them on a personal level. Most of the time, Elders are very willing to hear about incorporation of IPK with Western science because they have that pride in themselves, they are proud that they are giving valuable information. They never ask what they're getting in return because of their traditional upbringing. I've heard from several people at this conference about the mistrust and anger that First Nations have about sharing their IPK. Once these knowledge systems are linked, how will IPK be used? What will it be used for? I ask that because our Elders will need to feel comfortable with how their knowledge will be used before they will be willing to share it.
- An important step in incorporating IPK is developing closer ties to the land and to natural life

forms. As First Nations people, we need to identify what is our personal relationship with the animal world. This requires that we receive the cultural and spiritual training that connects us to the natural world. Right now, the salmon, trees and other species are being studied to death. If people changed their approach to how we learned about them, not as objects of inquiry but partners in our shared survival, then our information needs would better meet the survival needs of all living things.

- This conference has made me more aware of my layers of learning, and about my own sources of cultural knowledge. I think I've peeled off a layer of cultural knowledge only to find that there is another layer underneath. For example, as an American citizen, I can see how Canada sees Americans very differently than Americans see themselves. Take the concept of the dollar for example. Americans aren't aware of the power differences Canadians perceive about the dollar, and cannot understand why Canadians are so worried about their dollar compared to the American dollar. Similarly, if the incorporation of IPK and Western science is going to take place, then Western society must become aware of the power perceptions of Indigenous people.
- I just came back from the United States. After hearing the discussions between the natives and non-natives there, I think they've got something to say about the incorporation of IPK and Western science. But I got the impression that Americans will say, "I'm going to do it my way."
- What I think I have learned at this conference is that Western scientists and Indigenous peoples have different perspectives on learning. I am going to make it a personal mission to communicate that to the public to encourage them to take the opportunity to come and listen for themselves. I want to suggest that if you think Western scientists are ignorant of Indigenous peoples' ways, then you must also consider the ignorance in Western society about Western science.
- The status quo is that it is through the economic and industrial development ethic that our society goes forward. It will be necessary for science and IPK to challenge that kind of development ethic if we mutually agree that it is destroying our natural resources.
- During the conference, I've heard us struggle with labels. No one knows what to call us white folks. The most bizarre label I heard to describe us was "non-holders of traditional knowledge." Let me suggest that you just call us white folks.
- There are multiple cultures in the Indigenous universe, just as there are within the white community. Probably the subculture that has the most in common with Indigenous people are environmentalists, ecologists, and the "new age" folks, for lack of a better term.
- Some of the other comments: GIS is an emerging tool. Somehow we're getting back to visualization, which is a very ancient and time-honoured tradition. Henry Michel was right that a key failing of the conference was not getting anyone from the FSC [Forest Stewardship Council] process. I agree with his observation that the FSC process is one area where we can insert some of the concerns of IPK and Western science into the same process.
- I feel that people came here because one of the drawing cards was the title of the conference: "Linking Indigenous Peoples' Knowledge and Western Science in Natural Resource Management." I think that a lot of people came here with some expectations but not really knowing what to expect. The conference has taken a better part of the last year to organize. It wasn't until last month that we secured the funding although we decided about two months ago that we

would go ahead with it regardless of funding shortfalls. Because the Aboriginal extension mandate of SIFERP is a big portion of the Partnership's program, we were prepared to absorb the losses. That was our way of acknowledging how important incorporating IPK and Western science in natural resource management is, and how important it was for us to initiate this dialogue.

- I come to this partnership because I am in training, like Verna Miller here. When speaking in public, I hear myself saying to people that when it comes to IPK and spirituality, culture, and tradition, I'm very lucky to have some background and training. Because that background and training have allowed me to do this kind of work. I have the fortune of having mentors, teachers, and guides, and that allows me to take the risks needed to do this kind of work. I was told by one of my mentors that people out there are just waiting for your thinking, and that they will take up the cause and bring the necessary skills to support your objectives. This conference has demonstrated that for me. Being in training means I have to take all the baby steps to actualize that training. I have gone on vision quests. In my vision quest, I pray for direction and what do I see? I see file folders! Imagine that, file folders in a vision quest! I don't know what other people see. I sometimes wish for great visions, but I see my office and file folders. I have learned that those file folders direct my work. I believe that this work is headed in the right direction. I went out and I sought the Elders' permission. The prayers have been real important for me, and for the conference process. I don't know if you realize how crucial those fires and prayers are to integrating IPK. We put tobacco on the fire, and the fire took our prayers into the environment. It may seem like a small act, but the thinking behind the prayer is that you're asking permission for that act. We've probably made some horrendous mistakes. But spirit and intent are important, and people didn't come here with negative intent. People came with a real good spirit; the fire at the beginning told me that.



The conference was held at the Quaaout Lodge, near Chase, British Columbia.

APPENDIX 1 DISCUSSION TABLE SUMMARIES

Editor's Note: Conference participants were asked to participate in one of four discussion table sessions offered. The topic of discussion was how language affects the perceptions of society in general, and First Nations in particular, to natural resource management. This exercise asked workshop participants to discuss the meanings and implications of the words "management," "respect," and "mandate" as they relate to their experience in natural resource management. Discussion table facilitators were Chris Ortner and Verna Miller; Francis Seymour and Dick Cannings; Ken Lertzman and Lauretta Prince; and Chris Hollstedt and Rhandi Alphonse. The following summarizes findings from the four groups.

Management

The use of the word "management" is a source of contention for First Nations as it represents a level of human control over land and all natural living systems that as Indigenous peoples, First Nations do not feel they possess. Conference organizers felt that this difference in perspective could be best handled in a focused dialogue on the understanding of the term. The following points emerged from that dialogue:

- Principles and values of management are based on conflicting attributes (for instance, emotional values about land and nature conflicting with commercial values).
- Current management of natural resources is on a continuum (or a pendulum) that fluctuates from little intervention to major intervention by government. This fluctuation usually depends on the economic climate.
- The principles of natural resource management differ from the Indigenous people to Canadian society. This difference can be characterized as community well-being versus the individual (corporate) accumulation of wealth. Our challenge is to find that point of intersection, which is sustainability.
- The principles of natural resource management have historically been control, manipulation, dysfunction, regression, and adaptation. Management as a function of man. Sometimes it should be women who direct natural resources; in that way, the emphasis would be on managing the cycles of those resources.

Timber management/organization

- A Secwepemc word from Northern Shuswap, *weculecn*, means the land: something you really look after. Kristy and Jean gave that word.
- A more holistic view of natural resource management is happening. For instance, non-timber forest products (NTFP) issues such as protecting berry and root production, the development of NTFP products, and the timing and effectiveness of such natural resource management practices as silviculture activities like brushing, spacing, and use of herbicides and pesticides are being tailored to NTFP needs.
- In general, participants felt dissatisfied with the term "management." They felt that other words—such as "care-taking" or "stewardship"—would better describe the responsibilities of taking care of the land and its natural resources. The Western concept of management suggests that humans have greater control and influence over the land and its natural resources than animals, plants, and other life forms. This concept is foreign to the Aboriginal world view.
- The term "traditional resource management" is an oxymoron—the words don't fit together very well. Management is something that is controlled by people, and sometimes controls people; it is a term that can be applied for people systems more than for controlling ecosystems.

- For First Nations, the term management carries a lot of baggage with it because First Nations lives have been managed for so long. The perception always seems that government and industry encroach on First Nations rights and territories through their management principles. So it is hard to separate the new and innovative approaches to natural resource management that government and industry offer the First Nations, because of the past negative connotations of words. But a new legislative framework embodies all of this terminology and so we have to start with that and recognize that as the reality of today.
- There is a lot of baggage behind the term “management.”

Respect

Once again this term points out different understandings of the natural world. For Indigenous people, respect can be given to all living things and to many things that the Western world would consider inanimate and therefore not deserving of any human emotions such as respect. This necessary dialogue produced the following comments:

- Respect means the right to speak and be heard in a consensus-based approach. Respect recognizes that an individual’s knowledge is based on their life experience and world view.
- Respect entails understanding, listening, and being equal—the Elders and youth. In traditional societies, respect was earned from an individual’s wisdom, respect, use, and sacredness of their knowledge. In many cases, a respect protocol is required before First Nations people will share knowledge.
- There’s a dichotomy in the Western view of things: authority is a mandate granted by law and from government. However, in First Nations context, it has more to do with the responsibility that an individual, family, or group earns through the gaining of respect from the community as an authority in a certain skill area.
- Some participants felt that the word “respect” was where this discussion table should have started. That as First Nations, we feel we are here to talk about the respect for all living things, the understanding that all life forms are one. To talk about the ability to listen, observe, and understand the respect for the land, other creatures, other humans, and natural resources. However, Western society sees these issues as separate. It may be a cultural difference in understanding the idea that Indigenous people give respect to other parts of the ecosystem.
- In Western society, you earn respect from community by gaining the necessary knowledge credentials to speak from a position of expertise. For First Nations, respect embodies more than just knowledge and credentials.

Mandate

Mandate is another contentious term for Indigenous peoples. They have seen their traditional use and practices dwindle as the encroachment of industry expands. For First Nations, all of these issues are part of the complicated Aboriginal and treaty rights question. This conflict is capsulated in the following comments:

- A foreign word, with “man” as its root (again!).
- In Western societies, responsibility and mandate rest with people, whereas in an Indigenous peoples sense, mandate and responsibility would come from the Creator.
- So whether from government, as in Western world, or from the Creator in the Indigenous world, we need to look at the current mandates in natural resource management and see where we should be going in light of the many pressures that society faces—pollution, climate change, global warming, exponential population growth.

APPENDIX 2 LISTENING POST FEEDBACK

Conference Feedback

- The idea of this conference is good, but it will take time (up to two years) to make any meaningful change.
- Develop some sort of plan to bring Indigenous Peoples' Knowledge (IPK) and Western science together.
- Following the workshop, there should be a report on the key results. There should be a plan for following up actions such as a further conference in a designated period of time.
- Use PowerPoint to show how resources can be renewed.
- Two break-out sessions drew out differences rather than how we can work together.
- It is about time to have this type of conference to bring IPK and Western science together.
- Don't delay a follow-up. Even a year is too long. Don't want to lose interest and momentum.
- The First Nations political leaders should be informed and involved.
- This conference is needed. It is about time to have it. More follow-ups are needed.
- Conference well organized with good format and venue.
- This is a good start, but this initiative should reach the ears of government and First Nation leaders in British Columbia, Victoria, and Ottawa.
- Elders should be more involved in this type of conference.
- This is a good start, but it should be a continuous process with following conferences building on each other so that results are progressively upgraded.
- What's a "listening post"?
- I think that it's a great idea!
- Some people tend to open up more in smaller groups.
- I've never heard of a "listening post" before.
- This is a great place. I've never been here before!
- I came to the conference to try to learn how traditional practices and knowledge can be used with existing planning processes, especially in relation to fishing on the coast.
- First Nations are the teachers.
- We learn from one another.
- I'm here to learn.
- I'm very interested in what I hope to learn from this workshop.
- With all the studying and projects that happen, I don't see too many Elders in the field. All I see are students who don't know the history or traditions.
- It's good to talk about this but I think that it's time we started actually doing something about it together.
- I don't see too many of our local First Nations here.
- Yesterday was very informative.
- I enjoyed what I heard yesterday. I really enjoyed what Jeannette had to say. I would like to have an opportunity to walk around in the woods with her, and to hear her views again.
- I heard a lot of good information yesterday. It gives me hope for the future.
- Potentially a missing topic: the social/spiritual context of knowledge.
- Something we'd like to continue working on (i.e., definitions/language).
- Still lots of difference in understanding in words. In the past, catering to non-Indigenous perspectives; accommodation to First Nations perspectives is needed.

- Some of the presentations may have been beyond the understanding of some participants (What is GIS? Academic language). Would it be possible to elicit the level of experience and knowledge of technologies of participants so that presentations could be developed accordingly?
- A thought: What are the barriers to discussing gaps in understanding, need for more information? It's probably not reasonable to expect people to come forward during a presentation and say they require more basic information to understand the overall message.
- Very worthwhile for making contacts that will be useful in developing databases, programs, education/skills development.
- No snacks for Friday AM coffee break. Some suffering hypoglycemia.
- Try to find higher platforms for audio-visual screens, particularly for videos. There are 5- or 6-foot platforms to roll the TV around on.
- Substantive issue: Some avoidance of concrete, practical issues on behalf of industry representatives (e.g., locations of sensitive habitat are concrete and specific). That type of knowledge or information isn't that difficult to understand or use, so talking about how complicated the communication process on integration of industry planning and Indigenous knowledge is, and how much trepidation the company has about how to "use" Indigenous knowledge, is a cop-out. Acknowledge that there are complicated political and spiritual issues, but not all issues are complex—assuming the objective is to protect the environment.
- Equal "playing field"—there was a good mix of people. No dominant group. Therefore, the environment was quite comfortable for people to share their thoughts and feelings, without feeling adversarial or hostile.
- Having said the above, the absence of government "managers" and decision-makers was notable. Need to get the types of information discussed at the conference to the attention of decision-makers.
- Disappointed that more Western scientific practitioners did not attend.
- Hoping to see more Elders; would have probably provided for more respect of knowledge and issues.

Use of IPK feedback

- We don't want to lose the knowledge of Elders in IPK that can improve natural resource management. Industry and government must pay for the research to gather information that already exists in IPK.
- Confidentiality of IPK is an issue. Gathering, storing, and accessing the information are challenges.
- In terms of IPK, we always seem to be giving, giving, giving. The question is, what are we getting back in return?
- Comment in regard to Jeannette Armstrong' talk: "Jeannette's talk has certainly opened my eyes and mind to a different way of looking at, and thinking of things. But at the same time, it has diminished my confidence in the sense of process and allowing us to move forward."
- With all the studying and projects that happen, I don't see too many Elders in the field. All I see are students who don't know the history or traditions.
- "I was born on the land, and I'm still there. I took it upon myself to look after the land as my parents and their parents did."

Incorporation of IPK/workshop feedback

- While we are talking about blending the two knowledge systems, options are being restricted by population growth and a whole array of impacts and demands on the land.
- Take IPK and non-native knowledge and advance it by working together.

- A few years ago we were talking about “bridging” (i.e., bridging between cultures). Now I think that we can start using the word “link” (i.e., a small link in a chain, a link of different knowledge).
- There is a need for more dialogue with respect to the sharing of, or access and understanding of, IPK. Not only do philosophies and principles have to be examined and/or developed, but also parameters have to be identified and set.
- Institutional arrangements in planning (respect for cultural knowledge “ownership”). Reciprocity is required.
- What is knowledge in Aboriginal cultures? In Western cultures, knowledge is co-modified, is power, is a key to “positions,” jobs, and manipulation. Do differences in the positioning of knowledge between Aboriginal and Western cultures need to be understood before we can share, or even understand, the types and scope of sharing we (different cultures) can undertake?
- The “critique”—orientation of science is disrespectful for some First Nations people.
- Respect is the “main” reason we’re at the conference (break-out group C).
- The presentations stressed the distinctiveness of Indigenous and scientific knowledge, but they’re not distinct in all ways (e.g., both based on observation). [This comment came before Ken Lertzman’s presentation that described similarities.]

Skills Training Feedback

- Young First Nations perspectives on values are different from those of older First Nations and the younger First Nations can’t be heard because the older people don’t like change.
- More young people should be involved and give presentations at any future conferences.
- People need to be educated immediately, and change our path before we indirectly destroy our natural resources.
- If studies are done on traditional territories, there need to be training programs that allow youth to get involved with the Elders for their knowledge.

Other Comments

- If we are greedy and want all of the wealth now, it will destroy our economy as well as our resources.
- This should have started 20 years ago and we could have protected the burial grounds, calving grounds, and hunting grounds.

Cross-Cultural Comments

- Must get past media propaganda dividing races. We are one nation—Canadians. There have been past traumas done to certain people, which should be resolved.
- It was a great reminder that differences in modes of communication (oral and written) are important to recognize when asking for input on resource plans. That is, not all people are comfortable providing written comments/information.
- There’s a need for government and industry to take all input seriously—attempt to overcome biases that favour written, scientific information.
- Learning about layers of bias: conference helped to highlight the existence of the layers.

APPENDIX 3 CONFERENCE EVALUATION

April 2, 2001

To: Indigenous Peoples' Knowledge/Western Science Conference Steering Committee members
From: Shawn Morford, IPK conference evaluation facilitator

As you know, I have been facilitating the evaluation of the Indigenous Peoples' Knowledge (IPK) conference held at Quaaout Lodge last month. I would like to thank you for the opportunity to take on this rewarding task. Based on our earlier conversations about our objectives for the conference, as well as pre- and post-conference interviews and notes from the conference, I put together this draft report for your review. It outlines the purpose of the evaluation, describes the process I used, presents the results, and offers some recommendations. Since I have not had the opportunity to meet again with the committee since the conference, this draft reflects outcomes from the perspective of the participants, but doesn't yet include outcomes from the perspective of the committee members.

DESCRIPTION AND OBJECTIVES OF CONFERENCE

"Linking Indigenous Peoples' Knowledge (IPK) and Western Science in Natural Resource Management" was a two-day conference designed to bring traditional knowledge keepers and cultural and knowledge experts from First Nations in the Southern Interior of British Columbia together with representatives from the forest industry, government, academic institutions, and research organizations. It was designed to provide a neutral environment of respect where people could examine their own perspectives regarding natural resources and knowledge, learn about other approaches, and work toward common principles of sustainability based on Indigenous approaches and Western approaches.

The steering committee met during the fall of 2000 to discuss expectations for the conference, and agreed upon these objectives:

- To define terms and develop principles for the inclusion of Indigenous Peoples' Knowledge into sustainable natural resource management plans and strategies.
- To explore operational principles for joint (co-management) partnerships, where natural resources are managed by a combination of Indigenous knowledge and Western science. Appropriate research projects, pilot projects, and possibly specific locations could be identified.
- To develop a process for defining the components of IPK that can be shared with the non-native community and the components that will remain private.
- To enhance the profile and recognition of IPK by the larger Indigenous community.

PURPOSE OF THE EVALUATION

The committee considers evaluation a key part of the conference. Since this was the first time in British Columbia that members of the Indigenous community and Western scientific/land management com-

munity came together to discuss linking the two knowledge systems, the committee felt that documenting the impacts of the conference was important for:

- contributing to the body of knowledge about the process of linking the two knowledge systems in natural resource management
- identifying “next steps” and improving the process or presentation
- “telling the story” to future funders to enhance the possibility of funding for follow-up activities and events
- giving direction for future efforts
- recording any unexpected outcomes

The committee members listed several questions they hoped would be answered through the evaluation. These include:

1. To what extent were the objectives reached?
2. In what ways did the conference increase awareness and change attitudes of participants?
3. What was the level of respect and safety felt by participants?
4. To what extent did participants’ knowledge of the other system increase (IPK for Western science participants, and Western science for Indigenous participants)?

As a result of the conference, committee members also hoped that:

- there would be a discussion of principles for the integration of IPK and Western science;
- in the longer term, follow-up events, meetings, and new research partnerships would occur regarding the linking of IPK and Western science; and
- there would eventually be an action plan identifying “next steps” in the development of mechanisms for linking the two knowledge systems.

EVALUATION PROCEDURES AND ANALYSIS

Four sources of information were used to address the evaluation questions and objectives listed above.

1. Pre- and post-conference interviews with six conference participants. One-on-one interviews with six individuals (three from Indigenous community, three from non-native community) were conducted by telephone and in person between January 4 and March 14. The pre-conference interviews were conducted to record expectations and aspirations of people who intended to attend the conference; post-conference interviews were held with the same individuals to record their reaction in relation to their expectations and objectives of the conference.
2. Notes taken by listening post volunteers at the conference who were strategically located to listen and record comments from conference participants. Conference participants were invited to provide comments to three volunteer listening posts that mingled among participants during breaks and meal times. Listening posts were given a list of questions to ask participants who approached them. During times when no participant approached the listening posts, they initiated discussion with participants.
3. Observation by committee members and testimonials offered by participants since the conference. Through observation, it was possible to determine whether principles were developed, and if follow-up events, meetings, and new research partnerships were formed. Several unsolicited

testimonies from participants to steering committee members after the conference were additional sources of information.

4. Plenary session near the end of the conference where participants offered their feedback on the conference. A fourth source of information, although not planned, became available during the plenary session near the end of the conference. Participants were asked by the moderator to comment on the conference, and many offered perceptions that directly addressed the evaluation questions.

Another way of depicting the evaluation questions and sources of information is shown below:

Evaluation questions posted by the committee	Source of Information
To what extent were the objectives reached?	Pre- and post-conference interviews Listening post notes Observation Plenary session
In what ways did the conference increase awareness and change attitudes of participants?	Pre- and post-conference interviews Listening post notes Plenary session Testimonials
What was the level of respect and safety felt by participants?	Pre- and post-conference interviews
To what extent did participants' knowledge of the other system increase (IPK for Western science participants, and Western science for Indigenous participants)?	Pre- and post-conference interviews Testimonials
Additional questions of committee	
Is there a set of principles (reached by consensus of participants) of the integration of IPK and Western science?	Observation
Will follow-up events, meetings, and new research partnerships occur as a result of the conference?	Post-conference interviews Observation
Is there an action plan identifying "next steps" in the development of mechanisms for linking the two knowledge systems?	Observation

RESULTS

Nine themes that address evaluation questions of the committee emerged from the interviews, listening posts, plenary session, and observations/testimony. I have organized comments made by participants by theme. I have summarized each of the themes on the following pages (participant comments are listed in their entirety in Appendix 4).

Themes	Summary
A = increased awareness	Most respondents agreed that this conference was an important start in building awareness and changing attitudes about the assumptions that each culture has regarding natural resources, one's world views, and the potential for linking the two knowledge systems. It was, as one participant said, "a step in the right direction."
B = change in attitude	Several respondents agreed that participants appeared to attempt to understand their own biases through discussion at the conference. Most respondents discussed what they observed in others, while only one respondent referred to their own attitude change.
C = level of safety and respect felt by participants at conference	Most respondents agreed that the environment was generally conducive to sharing and that the organizers tried to respect traditions. One respondent commented on feeling uncomfortable while listening to some speakers but added that the feeling did not interfere with the overall experience.
D = increased knowledge	While many participants referred to many attitudinal and awareness changes, fewer gave examples of how the conference increased their knowledge. However, a few comments generally referred to new information gained. "Yesterday was very informative." "Learning about the layers of bias. The conference helped to highlight the existence of the layers." "Lauretta's talk was very informative. Her talk showed us what is being done, from a First Nations perspective."
E = follow-up, next steps, networking	Many participants commented that the conference played an important role in providing networking opportunities, and expressed a desire for some kind of follow-up. "There is a will to carry on with this conference." "Don't delay a follow-up. Even a year is too long. We don't want to lose the interest and momentum." "This process should carry on."
F = discussion of principles	This objective was a "yes-no" question. Did the conference result in discussion of principles? Yes, it did reach that objective as the committee had envisioned it.

Table continued on page 63

Table (Continued)

Themes	Summary
G = increased profile within Indigenous community for IPK	It would be difficult to assess the level to which this conference contributed to an increased profile within the Indigenous community since Indigenous respondents were not distinguished from non-Indigenous respondents in the compilation of listening post feedback. Indigenous people in the community at large were not contacted for feedback. This objective appears to be a longer-term objective. One interviewee commented that this kind of forum is “important for teaching young First Nations people about old ways” and felt that young First Nations people should be encouraged to come.
H = unexpected outcomes	Some participants came to the conference questioning the assumption that was inherent in the title of the conference: “Linking Indigenous Peoples’ Knowledge and Western Science in Natural Resource Management.” Some participants were not convinced that these two knowledge systems should be linked.
I = logistics/facilities/conference format/participation	Many participants commented on characteristics of conference participants and felt that the conference would have been more significant if others had also come. “The absence of government managers and decision-makers was notable.” “More young people should be involved and give presentations...” “I was disappointed about who wasn’t there. The Victoria-based, regional, and district people need to hear this.” Others commented on the presentations and break-out sessions: “Some of the presentations may have been beyond the understanding of some participants.” “Two break-out sessions drew out differences rather than how we can work together.”

ADVANTAGES AND LIMITATIONS OF THE EVALUATION METHODS

Evaluating using a qualitative approach such as this (through interviews and other non-numeric means) provided a more in-depth look at the impacts of the conference as seen through the eyes and experience of the participants than would be provided through a more typical end-of-conference written questionnaire. The pre-conference interviews were important for building trust with the participants and led to more meaningful information sharing during the post-conference interviews. Using verbal feedback through listening posts, interviews, and the plenary moderator was more inclusive than a written questionnaire because it did not require reading and writing skills.

At the same time, the verbal response method may have inhibited responses from people who preferred to remain anonymous. The number of interviews was not large enough to measure the “average”

participant's perspective, so it is unreasonable to generalize across all participants. With additional time, I would have included a written questionnaire in addition to other feedback sources to provide some broad results and to offer an alternative response method to those who preferred not to speak up.

This evaluation captures only the short-term outcomes as perceived by participants because it was conducted during and immediately following the conference. Two conference objectives relate to longer-term outcomes and will require further investigation.

CONCLUSION AND RECOMMENDATIONS

The objectives established for the conference demonstrated that the committee had high expectations about the immediate outcome of the conference ("principles and terms discussed, process in place"). These should more realistically have been called long-term objectives for a more comprehensive program that could have this conference as its genesis. The fact that the plenary session of this conference that was designed for discussion of principles evolved into a critique of the conference is one indicator that participants were not ready for that leap.

Participants perceived that the conference played a significant role in creating awareness and changing attitudes, which are important first steps in substantive change. The unsolicited testimony and action taken by industry and government within two days of the conference should be taken as significant indicators of impact.

Through their comments and actions, participants are sending some key messages to the conference committee.

1. Many people who attended the conference gained new insight regarding their own perspectives and world views.
2. There is substantial energy to move this discussion from talk to action.
3. This conference was seen as an important "first step."
4. Substantive changes are not expected overnight.
5. A wider range of people (decision-makers, Elders, youth) need to be brought into the discussion.

Few participants stated specific preferences about "next steps," but one person suggested a series of similar workshops throughout the province to give other people the same level of awareness provided to participants of this conference. At the very least, SIFERP and the En'owkin Centre should produce a series of articles written in non-technical language that address cultural assumptions and make them widely available through popular sources as well as professional sources such as *British Columbia Journal of Ecosystems and Management (JEM)* and *LINK* newsletter. In addition to the conference summary, participants should receive a list of participants' names and contact information (those who are willing to share that information). Since networking appeared to be a high value to participants, some way to keep communications and involvement among participants active could have significant spin-offs. SIFERP and the En'owkin Centre could play an important role in facilitating communications among the people who attended the conference. Participants could be asked to volunteer in some capacity at future events, if funding was available to cover their expenses.

REFERENCES

Kiernan, M.E. 1999. How to evaluate a conference informally with listening posts. *Journal of Extension*, Dec. 1999. Available from: <http://www.joe.org/archives>



Ken Lertzman, Alan Wiensczyk, and Shawn Morford provided evening entertainment.

Comments relating to specific conference objectives

These comments were arranged under the following categories.

A = increased awareness

B = change in attitude

C = level of safety and respect felt by participants at conference

D = increased knowledge

E = follow-up, next steps, networking

F = discussion of principles (this would be more observed than reflected in interviews and plenary)

G = increased profile within Indigenous community for Indigenous Peoples' Knowledge (IPK)

H = unexpected outcomes

I = logistics/facilities/conference format/participation

A = increased awareness

- I gained new understanding from this conference.
- This helped people look back at the way we (native people) were stereotyped. Western science is afraid of the skeleton in the closet.

B = change in attitude

- Not sure how to apply this to my work.
- The gap between IPK and Western science isn't really that big. We both want a healthy environment.
- My hope is that we can move beyond this and get some rigour around the definitions.
- We need to think globally and act locally.
- Survival is different today than it used to be but it's why we are all here. The essence is that we are a global village. Indigenous people have much to offer because they have been doing it (survival).
- This conference has been a step in the right direction.
- We can find ways to redefine our methods of inquiry (to incorporate IPK).
- All of us here, we share similar things: survival, food, land.
- We need to identify our personal relationship with the plant and animal world. We need to listen to them.

D = increased knowledge

- I found the presentations *extremely* constructive.

E = follow-up, next steps, networking

- "Names and faces" networking has happened here.
- I will take these contacts home. This is a start.
- If we keep talking to people, things will change.
- There is a will to carry on with this kind of conference.

I=logistics/facilities/conference format/participation

- More examples of linking IPK and Western science are needed.
- I was hoping to see more Elders here. We need to be listening to Elders.
- I agree that we should question the assumption in the title of this workshop that we should try and link the two knowledge systems.

Comments that were related to the topic, not the impact of the conference:

- Science is politics by another name.
- Research is politics—it is funded by political bodies.
- Western science relies on writing—if it's not written, it doesn't exist.

Listening post feedback: Comments relating to conference objectives

Coding system:

These comments were arranged under the following categories.

A = increased awareness

B = change in attitude

C = level of safety and respect felt by participants at conference

D = increased knowledge

E = follow-up, next steps, networking

F = discussion of principles (this would be more observed than reflected in interviews and plenary)

G = increased profile within Indigenous community for IPK

H = unexpected outcomes

I = logistics/facilities/conference format/participation

A = increased awareness

- Jeannette's talk has certainly opened my eyes and mind to a different way of looking at and thinking of things. But at the same time, it has diminished my confidence in the sense of process and allowing us to move forward. This comment also falls into the "change in attitude" category.

B = change in attitude

- First Nations are the teachers.
- We learn from one another.
- There's a need for government and industry to take all input seriously—attempt to overcome biases in favour of written, scientific information.
- I'm here to learn.
- I heard a lot of good information yesterday. It gives me hope for the future.
- I'm very interested in what I hope to learn from this workshop.
- In terms of IPK, we always seem to be giving, giving, giving. The question is, what are we getting back in return?
- If we are greedy and want all of the wealth now, it will destroy our economy as well as destroy our resources.
- Must get past media propaganda dividing races. We are one nation, Canadians. There have been past traumas done to certain people, which should be resolved.
- Take TEK and non-native knowledge and advance it by working together.
- It is about time to have this type of conference to bring TEK and Western science together.

C = level of safety and respect felt by participants at conference

- Respect is the “main” reason we’re at the conference
- Equal “playing field”—there was a good mix of people. No dominant group. Therefore, the environment was quite comfortable for people to share their thoughts and feelings, without feeling adversarial or hostile.

D = increased knowledge

- Yesterday was very informative.
- I enjoyed what I heard yesterday. I really enjoyed what Jeannette had to say. I would like to have an opportunity to walk around in the woods with her, and to hear her views again.
- I heard a lot of good information yesterday.
- Learning about layers of bias; conference helped to highlight the existence of the layers.
- I came to the conference to try to learn how traditional practices and knowledge can be used with existing planning processes, especially in relation to fishing on the coast.
- It was a great reminder that differences in modes of communication (oral and written) are important to recognize when asking for input on resource plans. That is, not all people are comfortable providing written comments/information.

E = follow-up, next steps, networking

- The idea of this conference is good, but it will take time (up to two years) to make any meaningful change.
- Develop some sort of plan to bring TEK and Western science together.
- People need to be educated immediately, and change our path before we indirectly destroy our natural resources.
- If studies are done on traditional territories, train the youth and involve the Elders for their knowledge.
- Don’t delay a follow-up. Even a year is too long. Don’t want to lose interest and momentum.
- Following the workshop there should be a report on the key results. There should be a plan for following up actions such as a further conference in a designated period of time.
- We don’t want to lose the knowledge of Elders in TEK that can improve natural resource management. Industry and government pay for research to gather information that already exists in TEK.
- It’s good to talk about this, but I think that it’s time we started actually doing something about it together.
- This is a good start but it should be a continuous process with following conferences building on each other so that results are progressively upgraded.
- This conference is needed. It is about time to have it. More follow-ups are needed.
- Something we’d like to continue working on (i.e., definitions/language).
- Very worthwhile for making contacts that will be useful in developing databases, programs, education/skills development.
- There is a need for more dialogue with respect to the sharing of, or access and understanding of, IPK. Not only do philosophies and principles have to be examined and/or developed, but also parameters have to be identified and set.

F = discussion of principles (this would be more observed than reflected in interviews and plenary)

- This is a good start, but this initiative should reach the ears of government and First Nation leaders in British Columbia, Victoria, and Ottawa.
- The First Nations political leaders should be informed and involved.

I = logistics/facilities/conference format/participation

- Use PowerPoint to show how resources can be renewed.
- More young people should be involved and give presentations at any future conferences.
- Two break-out sessions drew out differences rather than working together.
- The absence of government “managers” and decision-makers was notable. Need to get the types of information discussed at the conference to the attention of decision-makers.
- Conference well organized with good format and venue.
- The presentations stressed the distinctiveness of Indigenous and scientific knowledge, but they’re not distinct in all ways (e.g., both based on observation). [This was prior to Ken Lertzman’s presentation that described similarities.]
- Some of the presentations may have been beyond the understanding of some participants (What is GIS? Academic language). Would it be possible to elicit the level of experience and knowledge of technologies of participants so that presentations could be developed accordingly? (A thought: What are the barriers to discussing gaps in understanding, need for more information? It’s probably not reasonable to expect people to come forward during a presentation and say they require more basic information to understand the overall message.)
- This should have started 20 years ago and we could have protected the burial grounds, calving grounds, and hunting grounds.
- Elders should be more involved in this type of conference.
- No snacks for Friday AM coffee break. Some suffering hypoglycemia.
- Try to find higher platforms for audio-visual screens, particularly for videos. There are 5- or 6-foot platforms to roll the TV around on.
- Potentially a missing topic: the social/spiritual context of knowledge.
- This is a great place, I’ve never been here before!
- Disappointed that more Western scientific practitioners did not attend.
- Hoping to see more Elders—would have probably provided for more respect of knowledge and issues.
- I don’t see too many of our local First Nations here.
- I think that it (listening post) is a great idea!

Comments that were related to the topic, not the conference:

- Confidentiality of TEK is an issue. Gathering, storing, and accessing the information is a challenge.
- While we are talking about blending the two knowledge systems, options are being restricted by population growth and a whole array of impacts/demands on the land.
- Young First Nations perspectives on values are different from those of older First Nations and the younger First Nations can’t be heard because the older people don’t like change.
- What’s a “listening post”?
- Some people tend to open up more in smaller groups.
- I’ve never heard of a “listening post” before.
- A few years ago we were talking about “bridging” (i.e., bridging between cultures). Now I think that we can start using the word “link” (i.e., a small link in a chain, a link of different knowledge).

- With all the studying and projects that happen, I don't see too many Elders in the field. All I see are students who don't know the history or traditions.
- I was born on the land, and I'm still there. I took it upon myself to look after the land as my parents and their parents did.
- Still lots of difference in understanding in words, in the past catering to non-Indigenous perspectives, accommodation to First Nations are needed.
- What is knowledge in Aboriginal cultures? In Western cultures, knowledge is co-modified, is power, and is a key to "positions," jobs, and manipulation. Do differences in the positioning of knowledge between Aboriginal and Western culture need to be understood before we can share, or even understand the types and scope of sharing we (different cultures) can undertake?
- The "critique"—orientation of science is disrespectful for some First Nations people.
- Substantive issue: Some avoidance of concrete, practical issues by industry representatives (e.g., locations of sensitive habitat are concrete and specific). That type of knowledge or information isn't that difficult to understand or use, so talking about how complicated the communication process on integration of industry planning and Indigenous knowledge is, and how much trepidation the company has about how to "use" Indigenous knowledge is a cop-out. Acknowledge that there are complicated political and spiritual issues, but not all issues are complex, assuming the objective is to protect the environment.



Larry Casper

APPENDIX 5 REFLECTIONS

Editor's Note: Tom Wood, a conference participant, sent us these reflections after the conference.

We're really very much the same in our world views. That was the message I took away from the workshop at Quaaout Lodge. We got to this place from quite different directions. But there are striking similarities in the way traditional Indigenous cultures know the world, and how many of us engaged as natural resource managers see the world around us.

Jeannette Armstrong eloquently described her traditional Okanagan upbringing; her family's way of living *in* the world; their cultural value system with a high premium on respect for diversity and healthy community; her questioning of Western concepts of "use" of the land; her difficulty with the term "management" as a regime of constructed Western values.

I got to thinking about Aldo Leopold. Jeannette spoke of the important Salishan ceremonies, to remind the people that they are an essential part of nature. Aldo decried the loss of the "Land Ethic"; that realization that humans are citizens of the natural world, with responsibilities to it.

Dr. Leopold is known as the father of wildlife conservation in North America. He was more than that, a bridging thinker who spanned the wide gap between the Western scientific world view in which he was raised, and the holistic view of the world held by Indigenous cultures. Dr. Leopold arrived at this holistic understanding by a different path, one based on careful observations as a scientist.

At the end of the 19th century, the boy Aldo rambled bluffs by the Mississippi River, developing a keen interest in field ornithology and a sense of wonder for the natural world. A decade later, with a doctorate in forestry from Yale, Aldo shipped west with the U.S. Forest Service. He spent 15 years working in the canyon country of the Arizona Territories, before moving to the University of Wisconsin to establish the first Chair of Game Management.

The young forester's personal observations in the field taught him far more than his classical scientific education. The seed of the land as a living organism was planted, nurtured into the idea of complex natural communities where all the parts are connected, finally blooming into an understanding that humans are citizens of a holistic natural community, with responsibilities for its health and well-being.

In the dust bowl years of the 1930s, the Leopold family bought a degraded farm in the sand hills of Wisconsin. Here, Aldo continued his lifelong work of healing the earth by carefully restoring its natural productivity. His classic essays in *A Sand County Almanac* trace, in the landscape of his burned-out Wisconsin farm, man's failure to appreciate his ethical position in, and responsibility to, the natural world. Man had lost his "Land Ethic," those basic human values and responsibilities towards the land.

Conservation was a growing movement when Aldo was young, a reaction by a small number of intellectuals to the massive abuses of wildlife, forests, soil, and other resources in North America. In the beginning, conservation was equated to "wise use," a simple extension of the dogmas of Manifest Destiny and Social Darwinism: these lands and resources are here for the benefit of the European masters of the universe. Early conservationists observed these excesses, and counselled greater care. Dr. Leopold gave the word conservation real meaning: a state of harmony between humans and the land, where

humans live up to their ethical responsibilities as stewards of their world.

On the way home from Quaaout, I thought about this convergent evolution of worldviews, and tried to imagine a conversation between Aldo and Jeannette. One certainty is that both would identify with a world where humans exist in harmony with the land, and meet their ethical responsibilities as stewards of the natural world. Both would doubtless agree on the need to join forces, in a balanced and ethical effort for sustainability.

AUTHOR

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Mike Keefer and Rhandi Alphonse