

**”Coming to Understanding: Developing Conservation Through
Incremental Learning”**

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Abstract

Lessons in conservation are often seen as resulting from cycles of over-exploitation and subsequent depletion of resources, followed by catastrophic consequences of shortage and starvation, and finally, development of various strategies, including privatization of the commons, to conserve remaining resource stocks. While this scenario has undoubtedly occurred on many occasions, we suggest that it is not the only means by which people develop conservation practices and concepts. There are other pathways leading to ecological understanding and conservation, which act at a range of scales and levels of complexity. These include: lessons from the past and from other places, perpetuated and strengthened through oral history and discourse; lessons from animals, learned through observation of migration and population cycles, predator effects, and social dynamics; monitoring resources and human effects on resources (positive and negative), building on experiences and expectations; observing changes in ecosystem cycles and natural disturbance events; trial and error experimentation and incremental modification of habitats and populations. Humans, we believe, are capable of building a sophisticated conservation ethic that transcends individual species and resources. When conservation knowledge, practices and beliefs are combined, this can lead to increasingly greater sophistication of ecological understanding and the continued encoding of such knowledge in social institutions and worldview.

1. Introduction

Resource conserving practices of indigenous and local peoples drawn from their traditional knowledge systems have been described from many parts of the world and for many different cultures and environments (Blackburn and Anderson 1993; Balée 1994; Berkes 1999; Minnis and Elisens 2000; Berkes et al. 2000; Turner et al. 2000; Alcorn et al. 2003; Hunn et al. 2003). A wide variety of conservation strategies have been documented, ranging from cultural teachings against harvesting specific resources or harvesting at specific times or places, to selective or limited harvesting, to sanctions against waste (Berkes 1999). In fact, Traditional Ecological Knowledge systems are infused with practices and concepts, and modes of teaching and learning, that can be related directly and indirectly to resource stewardship and conservation at various scales. Despite the attention directed towards documentation of these systems and approaches to conservation, however, we still have a limited understanding about their development, evolution and transmission over time and space.

It is generally assumed that developing community-based conservation strategies, ethics and teachings originated as a result of some form of resource depletion or scarcity – some realization or recognition of a “tragedy of the commons” situation, resulting in development of strategies to control resource use: hard-learned lessons to prevent future hardship (Johannes 1998; see also IASCP '04 paper by Fikret Berkes). As Fikret Berkes points out, many authors have questioned whether such resource management systems could be considered to represent ‘conservation’ at all, and, by extension, whether traditional resource managers can be effective conservationists. In part, the argument goes, a “real” conservationist both acts to prevent or mitigate resource depletion and has the *intention* to conserve in these actions (Smith and Wishnie 2000; Johannes 2002). The archaeological record provides many examples of situations in which people failed to conserve their resources, sometimes with dire consequences (Crosby 1986; Krech 1999; Diamond 1997).

Despite the undeniable existence of such human-caused resource depletion, it seems unlikely that conservation arising from direct experiences with depletion and resulting crisis is the *only* way that humans have learned to manage and conserve their resources. Indeed, the pervasiveness of conservation strategies, philosophies and

teachings that result in regulated resource use, or outright care for and conservation of non-resource species, indicates that people are capable of developing and enacting *de facto* conservation through other means. As Heiltsuk cultural specialist Pauline Waterfall noted (pers. comm. May 2004), “We had a form of regulated use based on the understanding that conservation would result if we regulated our use in a mindful and respectful way.” This paper is intended to complement Fikret Berkes’ paper in a later session (see his IASCP ’04 paper). For purposes of discussion we have developed two models for learning conservation: the *depletion crisis model* and the *ecological understanding model*. In this paper, I explore the latter model: what are mechanisms and circumstances, beyond direct response to resource depletion, by which people can come to an understanding of the need to care for their resources and develop ways of promoting conservation?

Using a general schematic for describing the diverse components of Traditional Ecological Knowledge (Turner et al. 2000), I consider the development of conservation techniques and prescriptions based on the various components of Traditional Ecological Knowledge systems. I then identify some possible mechanisms for building ecological understanding. I use the Saanich Reefnet Fishery as an example of complex conservation and resource management strategy, combining the various elements of Traditional Ecological Knowledge. I conclude by discussing the importance of philosophy and worldview in mediating and directing conservation activities. Given that conventional “western” efforts at conserving resources have generally not been successful in meeting conservation goals and objectives in many cases, it is crucial to consider a much higher and more long-standing integration of indigenous systems and conservation perspectives in schemes for adaptive co-management.

Berkes’ (1999: 8) definition of traditional ecological knowledge – “a cumulative body of knowledge, practice and belief, evolving by adaptive processes and handed down through generations by cultural transmission” – is used here. Conservation is defined as “keeping something, especially an important environmental or cultural resource, from harm, loss, or change” and “to use something sparingly so as not to exhaust supplies.” “Resource depletion” refers to a reduction in the abundance or productivity of plants, animals or substances used or required by humans.

2. Traditional Ecological Knowledge Systems and Learning of Conservation

In the framework presented here, *Ecological Understanding* is the term I use to refer to a suite of attributes embodied within traditional ecological knowledge systems, including:

- individuals' and groups' incremental learning and elaboration of environmental knowledge as a result of detailed observation and experience of variations in nature and leading to a sophisticated understanding of the ecosystem in which they dwell;
- development of concomitant belief systems that help avert serious resource depletion and promote conserving approaches; and
- creating and perpetuating ways of encoding, communicating and disseminating both the practical aspects of such incremental learning and adaptive response and the ideologies and belief systems associated with this learning.

Incremental Learning from Observation and Experience: Regarding the first set of attributes, incremental learning and elaboration of environmental knowledge, I contend that humans living in close proximity to their environments are capable of observing, identifying, monitoring and reacting to variations in resource availability, ecological relationships and biological responses to particular circumstances. Such knowledge can be acquired in the same ways as other important knowledge for survival, such as of food and medicine. Learning about new foods and medicines, and how to prepare and process them safely and effectively, for example, has been in large part incremental and cumulative (Johns 1996). There would have been calamitous experiences and tragedies along the way, but more often, judicious tasting, sampling, experimentation, and evaluation would have guided the learning experience. Just feeling sick from eating a small amount of a plant, or detecting a bitter taste or some temporary hallucinogenic effect, would have been sufficiently remarkable to engender further experimentation or trial or to ward off more intensive use. This type of experience, Johns maintains, is the very mechanism whereby people learned to differentiate between food and medicine. Furthermore, observations leading to ecological understanding can be positive, just as

tasting and learning about certain foods can be a positive experience (image a first taste of wild strawberry for someone testing for new foods!). For example, a natural burn attracting browsing deer and increased berry production in subsequent years, would provide an incentive for clearing and development of anthropogenic burning. Pauline Waterfall, Heiltsuk cultural specialist and teacher, writes (pers. comm., May 2004), “My grandfather taught me that observing how animals behaved and used certain natural resources was normal process of basis for experimenting, modifying, learning. For example, he told me that he came across many trees that had old scars with dried sap mixed with many varieties of animal fur. Upon observing, he discovered that animals came along and rubbed themselves against the sap and that these animals had injuries.”

Plant resource management and conservation practices that could have developed incrementally include burning and clearing, pruning, coppicing, tilling, replanting and transplanting, partial harvesting of individual trees and shrubs, selective harvesting for size and life cycle stage, and rotational harvesting through annual or multi-year cycles, as well as genetic selection for maximum productivity or other desirable traits (Williams and Banes 1988; Blackburn and Anderson 1993; Minnis and Elisens 2000; Deur and Turner in press;).

For animal populations, including shellfish, fish, terrestrial and marine mammals, birds and bird eggs and other resources, there are parallel strategies and specific practices applied to maintaining numbers and representative age categories. Many examples of exist of conservation practices including harvest selection by age, sex, size and reproductive stage and season for various species (Berkes 1999), as well as the preparing and maintaining of productive habitats and foods for certain key resource species through the use of fire and other means (Freeman and Carbyn 1988; Young et al. 1991; Brookfield and Paddock 1994; Colfer 1992). Pauline Waterfall (pers. comm. May, 2005) described another conservation practice used by Heiltsuk hunters, namely to rotate areas where one hunted. “For example,” she said, “If lots of deer were caught at a specific area, that area was left alone for a couple of years and other areas were used.”

Belief Systems that Promote Conservation: In terms of developing belief systems that engender conservation, Eugene Anderson’s *Ecologies of the Heart* (1996) suggests that

the complex belief systems that comprise human religions and that are reflected in our social institutions, narratives, ceremonies and day-to-day activities are engendered from an ethic of conservation and responsibility to the environment. The question is: *how* do such complex belief systems develop, particularly in relation to conservation of other lifeforms? We know that attitudes are socially mediated and directed, and that attitudes guide and determine our actions. The notion of “respect” predominates in many traditional belief systems (Callicott 1994; Turner and Atleo 1998; Berkes 1999). As Chief Umeek (Richard Atleo) articulates for the Nuu-Chah-Nulth (Scientific Panel for Sustainable Forest Practices in Clayoquot Sound 1995: 15):

The Creator made all things one.

All things are related and interconnected.

All things are sacred.

All things are therefore to be respected.

Pauline Waterfall reiterated the same perspective for the Heiltsuk (pers. comm. May 2005): "All living things have a spirit life. We acknowledged and still do that every life is worthy of being respected."

Another, related sentiment expressed in indigenous societies is appreciation and thanks. As Tewa elder Vickie Downie explains (Wall 1993: 6):

You give thanks before you even receive your gifts from the Creator. When you ask, you give thanks. Your prayers are thanksgivings for everything--the sun, the moon, the snow, the water, the fire, the rocks. You see them as being alive, having a life of their own. A tree has its own life...

Another key concept in indigenous belief systems, arising from the first two, is that waste is deplorable: “Take only what you need; never waste anything!” is an instruction heard over and over again in traditional teachings (Turner and Atleo 1998; Turner et al. 2000). To what extent do the attitudes of “respect,” “appreciation” and “taking only what you need” within a belief system promote conservation without the experience of serious resource depletion? It may well be that resource depletion – or a series of resource depletions – somewhere at some time in the past did help to engender such belief systems. However, on a broad scale, and over a long time frame, a belief

system, in turn, helps prevent over-harvesting or wanton destruction of other lifeforms, whether conservation per se is the intended result or not (Minnis and Elisens 2000).

Many of the traditional narratives of First Nations that reflect lessons of respect, appreciation, and conservation extend back to a time of profound lack of resources, a time when the human people, sometimes with animal persona, were deprived of even the basic requirements for life: sun, moon, tides, winds, water, fire, and proper food. The stories do not necessarily depict human negligence or overharvesting as the cause of this deprivation, but just the conditions in which they existed. Consider, for example the Saanich story of the Origin of Salmon:

Once there were no seals and the people were starving; they lived on elk and whatever other game they could kill. Two brave youths said to each other, "Let us go and see if we can find any salmon." They embarked in their canoe and headed out to sea.... They journeyed for three and a half months. Then they came to a strange country. When they reached the shore a man came out and welcomed them....

The youths stayed in the place about a month. Their hosts then said to them, "You must go home tomorrow. Everything is arranged for you. The salmon that you were looking for will muster at your home and start off on their journey. You must follow them." So the two youths followed the salmon; for three and a half months they travelled, day and night, with the fish. Every night they took *qexmin* (Indian celery, *Lomatium nudicaule*) and burned it that the salmon might feed on its smoke and sustain themselves. Finally they reached Discovery Island (*Ktces*), where they burned *qexmin* all along the beach; for their hosts had said to them, "Burn *qexmin* along the beach when you reach land, to feed the salmon that travel with you. Then, if you treat the salmon well, you will always have them in abundance."

...Because their journey took them three and a half months, salmon are now absent on the coast for that period. The coho said to the other salmon, "You can go ahead of us, for we have not yet got what we wanted from the lakes." That is why the coho is always the last of the salmon.

The story continues, relating how the Salmon people taught the young men how and when to make and use reef nets and how to honour the first salmon with a ceremony and prayer "...that [the salmon] may always be plentiful (Jenness, ca. 1930, unpublished notes).

There are many other stories, such as the Ditidaht story of the origin of the winds, tides, seasons, fire, fish, sun, moon and daylight (Touchie 1977), in which the resources that people rely on were provided as gifts from the Creator, or from the powers and generosity of individuals like Raven and other supernatural beings and culture heroes. Some convey imperatives for conservation directly, but most rather convey a general sense of the need for appreciating and not wasting these valuable gifts. The end result, however, would be a conserving philosophy.

Perceived kinship with other lifeforms, even trees and other plants, leads to a different way of treating these beings (Salmón 2000). For example, Northwest Coast people had the technology and perhaps even a practical reason to kill cedar trees when they were removing the bark for clothing, mats or baskets. Yet, everywhere, teachings were engrained for harvesters to be careful, and to only remove one or two strips from each tree, so as to keep the tree alive (Deur and Turner in press). Franz Boas (1921: 616-617) explains this practice for the Kwakwaka'wakw:

Even when the young cedar-tree is quite smooth, they do not take all of the cedar-bark, for the people of the olden times said that if they should peel off all the cedar-bark... the young cedar would die, and then another cedar-tree near by would curse the bark-peeler so that he would also die. Therefore, the bark-peelers never take all of the bark off a young tree.

The ultimate motivation for this practice was evidently to avoid needless killing of another lifeform, rather than conservation *per se* in the western sense. Pauline Waterfall (pers. comm. May 2004), however, explained: Needless killing is a teaching that is passed along to impress upon us that if we don't respect another lifeform, it won't return or will die out – thereby depriving us of future access and use. This is an explicit teaching of conservation." In any case, the practice of avoiding needless loss of life for other lifeforms reflects a widespread belief system, at once respectful and utilitarian, that would engender conservation. Gitga'at elder Helen Clifton (pers. comm. 2002) said that

they were always taught as children that all creatures – mice, wolves, birds – had their own families and their own lives, parallel to and as important as those of people. Children were warned not to harm or needlessly disturb them. Mountains, too, were regarded as living beings, with their own stories and their own families, and requiring of respect. For example, there are certain mountains that one should never point to, or they will cause hard luck at some time in the future, especially bad weather (Roger William, Tsilhqot'in, pers. comm. 2003; Elsie Claxton, Saanich, pers. comm. 1998). Children were taught not to pick certain flowers or it might cause rain, or fog, or lightning storms (Turner 2004, in press).

There is a well-known narrative theme, recurring in several language communities on the North Coast (Haida, Haisla, Tsimshian, Tlingit), about the consequences of harming frogs. In the Haida version, centering in the village of Cumshewa, young boys on a fishing outing were playing with a frog, and threw it into the fire. The frog's mother, a supernatural being named *Jilaa quns*, or Creek Woman, was so distraught by this cruelty that she predicted the death of the boys, one after another, and finally, the destruction of their entire village. The lesson is clear: lack of respect for other lifeforms leads to disaster. How closely is such a story based on an actual event, and, if it is, where and when did the event take place? It would have been many hundreds or thousands of ago, yet it still serves to teach one generation after the next about the dangers of willfully harming other species. The Nisga'a stories of the lava that destroyed several villages, said to be caused by the cruel and disrespectful treatment of salmon by a boy in one of the villages, is similar in the power of its lessons, perhaps even more so because of the obvious presence of the lava beds (BC Parks 2000). However, rather than resource depletion, this story and the lessons it embodies had its origins in disrespectful behaviour – in lack of an environmental ethic.

Communication and Dissemination of Conservation Actions and Ethics: The stories and teachings are one example of the ways in which understandings of conservation and environmental ethics can be disseminated over time and space. Just as in learning about edible, poisonous and medicinal plants without need for continuous episodes of fatality, it is not necessary for lessons in conservation to be learned by major catastrophic episodes

of resource depletion. Rather, as previously noted, observations and experiences, and guiding principles, can be taught and acquired over generations, and spread through stories, ceremonies and discourse from one community to another. Children are often taught by parents and elders about their responsibilities to their family, clan and the other lifeforms, as well as being told stories. Occasions of community gatherings, such as potlatches and feasts are also times for reinforcing these values (George 2003). Social relationships, as well, such as the roles and responsibilities of the hereditary chiefs and leaders in relation to their people, resources and territories would also be reiterated at such times (Turner et al. in press). Individuals and groups within a community would hold specialized knowledge to be imparted at appropriate times and circumstances (Turner 2003). Individual words and phrases, as well as stories, and lessons conveyed in art, music and ceremony, are all part of this knowledge system leading to dissemination of environmental understanding. Children, too, participated on a daily basis in activities that fostered conservation. Secwepemc elder, Dr. Mary Thomas (pers. comm.), for example, learned lessons from her two grandmothers about conservation. As a child, she watched and helped while her grandmother carefully moved the carcasses of the salmon after they had spawned, from the banks of the Salmon River back into the water. She explained that the salmon would nourish the baby fish to come. She also observed her grandmother remove and replant the smaller glacier lily and chocolate lily bulbs that Mary and her siblings had selected from the overturned turf and put into baskets. In these demonstrations, and in Mary's participation, her grandmother was reinforcing the values of respect of other lifeforms, and the practices required to sustain resources, imparting lessons that have lasted many decades.

3. Mechanisms for Building Ecological Understanding

The ability or capacity to learn from small and incremental lessons, and from the experiences of others, potentially enables people to develop sustainable practices and ecological understandings without always having to respond to and learn from crisis situations. Not only an event itself, but any inferences, extrapolations or interpretations people draw from it, can be enfolded into an enriched, elaborated system of knowledge and practice. Over time, even within one lifetime, experiences of others blend with

personal knowledge and observations, compounding and accumulating to bring enhanced knowledge and wisdom. Table 1 summarizes the pathways by which lessons in land and resource management and knowledge of the importance of conservation may have been accrued, using examples from northwestern North American Indigenous peoples.

MECHANISMS	EXPLANATION	REFERENCES
<i>Lessons from the past</i>	stories of positive and negative experiences, remembered by individuals, recounted within families and communities, or embedded in art, place names and ceremonies	George 2003, Teit 1912, Nisga'a 200X
<i>Language</i>	Terms that embody conservation concepts, understandings and teachings, e.g., the Heiltsuk word " <i>mnaqels</i> ," which refers to "selectively collecting things outside," and " <i>miaisila</i> ", which refers to someone whose responsibility it is to be a guardian of certain fish-bearing rivers, or the Nuu-chah-nulth word " <i>7uh-mowa-shitl</i> ," to keep some and not take all.	Pauline Waterfall, pers. comm. May 2004; Earl Maquinna George, pers. comm. 1998
<i>Metaphorical sayings and narratives</i>	symbolic and metaphorical stories also teach lessons about conservation (e.g. Nlaka'pamux story of Old One and the Creation of the Earth; Haida <i>Jila quuns</i> story)	Swanton 1905; Teit 1912
<i>Lessons from other places</i>	technologies, products, names, and ideas relating to conservation and environmental stewardship (e.g. use of fire for clearing; digging and propagation techniques; first foods ceremonies) passed from one community to the next through intermarriage, potlatches, trade	Turner and Loewen 1998
<i>Learning from animals</i>	Observations of animal foraging strategies, populations, browsing and predation, behaviours that might engender understandings	Loewen 1998; Hunn et al. 2003; Blackfoot Gallery

	of kinship and reciprocity (e.g. grizzlies foraging for edible roots; birds' egg-laying habits; pack and leadership relationships in wolves; bears "pruning" berry bushes)	Committee 2001; Deur and Turner in press
<i>Monitoring – building on experiences and expectations</i>	routine observation of seasonal changes, animal migrations, plant life cycles, and berry production brings recognition of expected patterns and ability to detect variation from the norm	Lantz and Turner 2003; Davidson-Hunt and Berkes 2004
<i>Observing Ecosystem Cycles and Disturbance Events</i>	Relative abundance and productivity of plants and animals in particular circumstances, both temporal and spatial, can guide peoples' land and resource management strategies (e.g. successional stages following fire; effects of flooding on salmon migration patterns; relation between moisture and berry productivity)	Boyd 1999; George 2003; Thornton 1999
<i>Trial and Error Experimentation and Incremental Modification</i>	Observing the results – positive and negative, intentional or incidental, short term and long term – of people's own activities, such as selective harvesting, or of emulating natural disturbance (e.g. harvesting cedar bark and planks)	Garrick 1998
<i>Learning by association, extension, and extrapolation</i>	If a practice works in one place at one time, it might work in another place at another time; conversely, if a practice or activity results in negative consequences in one circumstance, it might be avoided at another time or place (e.g. knowledge about harvesting or conserving one type of shellfish, berry or root might be extended to other, similar types)	Turner 1998
<i>Elaborating and</i>	Combining the lessons and understandings	Cyril Carpenter

<i>building sophistication</i>	gained from all of these pathways, and building up knowledge, practices and beliefs into complex systems of land and resource management (e.g. Heiltsuk berry gardens; Saanich reefnet fishery)	and Pauline Waterfall, pers. comm. 2002; Deur and Turner in press
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In reality, the knowledge acquisition and learning leading to an environmental ethic, and, ultimately conservation of resources and biological diversity, is highly complex; it is impossible to trace and identify the countless diverse tangled and interwoven threads that comprise Traditional Knowledge Systems and their origin and development. Under these circumstances, it is difficult, if not impossible, to identify *intention* to conserve as separate from a belief system that values and recognizes as kin all lifeforms, from frogs to wolves to cedar trees. Nevertheless, this system, within its cultural contexts, seems to have worked well for people in maintaining their resources over a long period of time. Resource depletion, natural and human-mediated, is a part of the story, but not the whole story, in my view. Another component of learning to conserve is close knowledge and awareness of natural cycles and ecosystems, together with institutions that foster the perpetuation of this knowledge (Davidson-Hunt and Berkes in press). Such understandings, embedded firmly within belief systems and leading to culturally moderated actions and constraints, can enable people to live sustainably in their habitats without the necessity of continuous catastrophic change or major resource depletion.

Towards a Theory of Developing Conservation – Integrating the Two Models

In reality, people would be expected to combine the lessons and understandings gained from all of the pathways, as well as from experiences of resource depletion, and to build up their knowledge, practices and beliefs into complex systems of land and resource management. These systems ingrain social structures, tenure systems, and opportunities for adaptation at many different scales and levels.

The Saanich reefnet fishery (Claxton and Elliott 1994), serves as a good example. Said to be taught to the Saanich people by the Salmon people themselves at the same time

when they first offered themselves to the Saanich (as in the story told earlier), the reefnet system represents technological and social knowledge and skills, conserving and respectful attitudes embodied in traditional Saanich philosophies, and mechanisms for perpetuating these practices, technologies and beliefs from generation to generation (see Table 2).

Table 2. The Saanich Reefnet Fishery as a Complex Conservation and Resource Management Strategy

Practical techniques	Inferred knowledge and understanding
Creation of a false ocean bottom leading to reefnet site	Understanding salmon schooling habits and habitat preferences
cutting swathes through kelp beds to create channels for the fish	Identifying key salmon habitat and preferences
Paired canoes positioned for reefnet activity	Understanding of western red-cedar, woodworking and canoe making technologies
Reefnets of inner bark of Pacific willow and other willows	Understanding of willow seasonality, prime habitat, coppicing, regeneration, harvesting and net making techniques
Use of ecological indicators, like berries ripening, summer thunderstorms	Familiarity of salmon lives in context of overall ecosystems and weather patterns
Belief system	Result in terms of Conservation
Salmon as gifts of the Creator	Constraints against waste; take only as many as needed, and as many as can be properly processed
Salmon viewed as members of families, akin to human families	Need to always allow escapement of a portion of the catch (a built in “escape” hole at the end of the net), to perpetuate families
Humans as responsible to the Salmon and other resources	Respect and careful use

Attachment to territory and place, as in traditional tenure systems	Attention to specific places and changes over many generations
Communication and Dissemination of Practice and Belief	Institutions that help Perpetuate Knowledge and Beliefs
Original absence of salmon	Primary resource depletion, followed by the “gift” of salmon
ritual and spiritual recognition of the gift of salmon	First Salmon ceremony
Recognition of different kinds of salmon	Use of names; taxonomies for distinguishing different species and different
Social organization of fishers, families and leaders	Confirming, teaching and enforcing the cultural constraints against waste and disrespect
Stories, narratives, language and names about the reefnet fishery and the salmon	Reinforcing knowledge and beliefs

The circumstances for the development of the Saanich reefnet fishery are lost in the mists of time, but the Saanich maintain that they have always been careful not to deplete their stocks, and declare that it is only in the last century, since their reefnets were banned in Canada, that the stocks of sockeye, coho and other salmon have declined, in some cases to the point of extinction.

The power and potential of such holistic traditional systems that combine harvesting with resource management and conservation is undeniable. It seems that modern industrial society has not been able to match the success of traditional conservation practices, whatever their origins, even with the knowledge of ongoing catastrophic resource depletion (Pauly et al. 1998). We need something more to help us conserve effectively. Adaptive co-management, incorporating elements of the complex knowledge system from which the Saanich reefnet was generated may enable all of us to live more sustainably. Our worldviews and attitudes are critical components of conservation, and may be more important than any other factor in conserving ecological integrity.

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