

6. The Case of the Missing Sheep Time, Space, and the Politics of "Trust" in Co-management Practice	127
Paul Nadasdy	
7. Local Knowledge, Multiple Livelihoods, and the Use of Natural and Social Resources in North Carolina	153
David Griffith	
8. Integrating Fishers' Knowledge into Fisheries Science and Management Possibilities, Prospects, and Problems	175
James R. McGoodwin	
Part III: Learning from Local Ecological Knowledge	
9. Honoring Aboriginal Science Knowledge and Wisdom in an Environmental Education Graduate Program	195
Gloria Snively	
10. Traditional Wisdom as Practiced and Transmitted in Northwestern British Columbia, Canada	221
John Corsiglia	

Afterword

Making Connections for the Future	237
-----------------------------------	-----

Charles R. Menzies

References	243
List of Contributors	261
Index	265

Introduction

Understanding Ecological Knowledge

Charles R. Menzies and Caroline Butler

From before the time Raven stole the sun and shed light on the world below, the Gitxa'ana people have lived in their territories along the north coast of British Columbia. Gitxa'ana laws (Ayaawk) and history (Adaawk) describe in precise detail the relationships of trust, honor, and respect that are appropriate for the well-being and continuance of the people and, as importantly, define the rights of ownership over land, sea, and resources within the territory. However, since the arrival of the first K'mksiwah (European) in Gitxa'ana territory in the late 1700s, new forms of resource extraction and expropriation have appeared that ignored, demeaned, and displaced the importance of the Ayaawk and Adaawk in managing the Territory of the Gitxa'ana. The new industries—forestry, fishing, and mining—relied almost completely upon K'mksiwah science for the purposes of management and regulation.

One of the major failures of mainstream resource management has been a lack of attention to the long-term implications of resource extraction practices. This has led to spectacular cases of resource depletion and habitat loss (see, for example, Rogers 1995). The local-level ecological knowledge held by people like the Gitxa'ana, rooted in an intimate and long-term involvement in local ecosystems, can be a crucial tool and source of knowledge for long-term sustainability and immediate resource conservation. During the last two decades the value of traditional ecological knowledge (TEK), such as the Ayaawk and Adaawk of the Gitxa'ana, has been increasingly recognized as important (Battiste and Youngblood Henderson 2000; Griffith 1999; Sillitoe 1998).

TEK has a strong potential to contribute to more effective and sustainable approaches to forest management in particular and natural resource management in general. A central strength (and weakness) to TEK is the fact that it is locally developed. Thus TEK can provide highly specific and detailed information crucial for the management of local ecosystems (Berkes 1999). It is important to recognize that this strength can also be a weakness in that locally developed knowledge is often difficult to translate beyond the immediate context. However, this should underscore the importance of documenting, recording, and analyzing TEK in detail in many separate locales. Ultimately, the value of TEK lies in the very fact that it is associated with a long history of resource use in a particular area and is therefore the cumulative and dynamic product of many generations of experience and practice (Berkes 1999; Menzies this volume). It is this aspect of TEK that is best able to provide alternatives to the dominant models of resource management that are in fact relatively new, externally formulated, and rarely site-specific in the way that TEK is.

Despite the growing awareness of the importance of TEK for natural resource management, the current regulations and practices in many regimes still do not provide effective formal mechanisms for the integration of TEK into active management. Beyond limited mechanisms regarding consultative processes with First Nations, for example, regarding cultural heritage (culturally modified trees, burial sites, and former village or camps sites), the knowledge inherent in the Ayaawk and Adaawk is still largely ignored by the dominant models of resource management.

This collection aims to demonstrate, through case studies of local-level ecological knowledge and its application, the powerful benefits and lessons TEK can offer for sustaining ourselves within the context of our environment. This introduction sets the stage for the more specific case studies that follow by first describing the research project that gave impetus to this collection and then reviewing the key elements and aspects of TEK. Although the separate chapters in this volume have their genesis in a variety of different projects, their authors share a recognition that local peoples who rely upon harvesting fish, animals, and plants for their survival, such as the Gitxaana, have much to offer to K'mksiwah science.¹

Forests for the Future: Scope and Objectives

On a recent trip to Prince Rupert, Menzies had an opportunity to speak with the former Liberal Party Member of the Legislative Assembly (MLA). Within the confines of the airport's lounge, the conversation turned to the nature of the work that had brought Menzies back to Prince Rupert. The MLA was a polite, if not completely committed, conversationalist, and it soon became apparent that his evaluation of the research project was not what might be called enthusiastic. Pausing momentarily as he listened to the boarding call, the MLA turned back to Menzies and asked the conversation-ending question: "So, what's in it for industry?"

The central objectives of the Forest for the Future project really has nothing to do with "industry"; at least nothing to do with increasing the short-term profits of the multinational resource extraction corporations that have been dragged kicking and screaming into acceptance, at a minimal level, of the value of Indigenous knowledge.² Nor does it offer any magical solutions for community economic development or any other form of get-rich-quick scheme that may inspire those members of our society who, when they look at a tree, only see its value as a commodity. This is not to deny the importance of making a living by working in the woods. It is, however, to highlight the limited vision of those who see value only in activities that generate immediate profits.

Forests for the Future included research and public education activities designed to facilitate the incorporation of core First Nations values into local sustainable forest management (<http://www.ecoknow.ca>). The project incorporated three central components:

1. applied research into local ecological knowledge
2. policy development and evaluation focused on developing methods for the incorporation of Aboriginal values, rights, and needs into sustainable forest management
3. public education activities designed to facilitate mutual respect, effective communication, and knowledge sharing between First Nations and other natural resource stakeholders.

The research and public education focus of the project was based in the traditional territories of the Tsimshian First Nation, which stretch north-south from the Nass River to Kitasoo/K'lemtu, and west-east from the coast to Kitselas Canyon on the Skeena River. Within this territory, the Tsimshian village of Gitxa'ala was the key focal point of research regarding First Nations knowledge and forestry priorities. Although the project prioritized the development of sustainable Aboriginal communities, it is important to point out that the project results have critical implications beyond First Nations communities.

Following recent court decisions, such as *Delgamuukw v. British Columbia*, it is now clear that effective consultations with and involvement of First Nations is (and will continue to be) of critical importance for the economic and social well-being of all British Columbians, Aboriginal and non-Aboriginal alike. Effective and locally based consultative processes are key ingredients of sustainable forest practices.

Traditional/Indigenous Ecological Knowledge

The relationships between Indigenous peoples and the environment have always been of interest to academics. There is a long history of studying Indigenous land-based practices and traditions. However, during the last few decades, these practices and traditions have become of increasing interest as a source of wisdom about sustainable resource use and environmental conservation. As the disastrous environmental impacts of capitalist industrial development and the shortcomings of contemporary resource management and conservation efforts have become understood, alternative practices and perspectives have been actively sought. The Brundtland Commission report emphasized the potential of Indigenous or traditional knowledge to provide insight for the conservation of biodiversity. Researchers and planners have since focused on the applications of traditional ecological knowledge (TEK) in contemporary environmental and resource management scenarios.

The birth of TEK as a major research focus and resource management

tool is related to the attempted shift to an ecosystem-based management approach. Contemporary resource management has, until recent efforts, been guilty of isolating resources and species in both development and conservation planning. Fisheries management, for example, has tended to operate on a species-by-species basis, which has been criticized for overlooking the links between species in terms of habitat and food competition, predatory relationships, and so forth. Initiatives to conserve one type of fish can result in negative impacts on the health of other species. Forestry practices have tended to focus on trees and to ignore impacts on nontimber forest resources, watersheds, and aquatic species.

Recent efforts to conserve biodiversity and to manage based on the health of entire ecosystems have led to the new valuation of TEK. This emphasis on TEK is based on the understanding that traditional Indigenous economies have tended to involve the simultaneous and proximal use of multiple resources on a subsistence basis, rather than the intensive, isolated, single resource use that characterizes industrial capitalist economies. In other words, the way that Indigenous people live off the land often means that they need to understand the way that the different plants and animals interrelate, how the ecosystem works as a whole, and how they can use that system to sustain themselves. This type of small-scale yet system-wide understanding is the approach that resource managers are turning to in order to better manage natural resources and the environment as a whole.

During the last decade, social scientists, biological scientists, and resource managers in Canada have paid more and more attention to what First Nations know about the ecology of their traditional territories. Having lived in these territories for millennia, and having used the local resources into the present time, First Nations communities have a well-developed understanding of the local environment and their own impact on local resources. Traditional ecological knowledge can complement, supplement, and guide biological science and resource management. TEK can provide both the appropriate questions to ask about natural resources and ecosystems and the missing answers to some existing questions. Furthermore, TEK can provide the appropriate structure for sustainable local resource management.

Traditional laws, harvesting patterns, and stewardship roles can provide the most suitable frameworks for territorial resource use.

This being said, it is also imperative that we do not overcompensate and accept unquestioningly the content of TEK. As discussed below (see Butler, Menzies this volume) TEK does not simply accumulate in an unproblematic fashion. As with all systems of knowledge, TEK grows in spits and spurts. It degrades, changes, and transforms, and ultimately its integrity is dynamically linked to wider social and economic processes. The ability to learn from TEK and to apply its lessons in the contemporary world necessitates that we honestly consider the context within which TEK is produced and maintained. To ignore this context benefits neither local resource users nor contemporary resource managers.

Definitions and Attributes of TEK

Traditional ecological knowledge is the term used to describe the knowledge and beliefs that Indigenous peoples hold of their environments that is handed down through the generations. Jameson Brant, a Mohawk, has described Indigenous knowledge as “A body of information about the interconnected elements of the natural environment which traditional Indigenous people have been taught, from generation to generation, to respect and give thanks for” (in Bombay 1996).

Fikret Berkes has broadly defined Indigenous knowledge (IK) as the local knowledge held by Indigenous peoples, and he suggests the TEK is a subset of IK. TEK is the ecological part of IK, the land-based, practical knowledge of species, and the beliefs regarding human interaction with the ecosystem (Berkes 1999).

In resource management scenarios, TEK is often placed in opposition to Western science, particularly biology. Comparing TEK and science in such a way tends to oversimplify and emphasize the differences between these two ways of seeing the world. This can make them appear incompatible and is therefore somewhat unproductive. Such comparisons can also mask over important points of similarity and commonality such as the fact that the underlying principles of TEK and science rely upon similar principles of observations.

Drawing upon the previous several decades of TEK-related research, the following attributes can be said to typically describe the central definition of TEK: cumulative and long-term, dynamic, historical, local, holistic, embedded, and moral and spiritual. Each of these attributes is discussed below in greater detail.

Cumulative and long-term: TEK is an ever-growing body of knowledge that has been developed over multiple generations. TEK expands and contracts as each passing generation’s experience is compared to the current conditions and past experiences. TEK is often understood as an attribute of communities with long histories of resource use in a particular area.

TEK, as a specifically Indigenous form of knowledge, is often differentiated from what might be thought of as a more inclusive category, local ecological knowledge (LEK; see McGoodwin, Griffith this volume). Many different communities have developed detailed knowledge about the environment around them, such as non-Aboriginal fishing communities in the maritime provinces of Canada. Traditional knowledge, however, is generally associated with Indigenous communities or those with several centuries of accumulated knowledge. In this collection TEK is used to refer specifically to Indigenous knowledge and to LEK when we are referring to the more inclusive set of knowledges rooted in local practices.

Dynamic: While the term traditional ecological knowledge emphasizes continuity and long-term practices, it is important to note that this does not mean that it is static and unchanging. TEK is rooted in, and informed by, a traditional or customary lifestyle, but it adapts to change and incorporates contemporary information and technology. New information is continually added and old information deleted as the environment is transformed, as weather patterns shift, or as species are wiped out or introduced. One generation may have knowledge of how to hunt with traps; the next generation may translate this knowledge into how to hunt with guns (see Menzies this volume). Non-Indigenous knowledge can be incorporated into TEK, thus expanding its scope (Ruddle 1994).

TEK may be revised daily and seasonally through the annual cycle of activities (Scientific Panel for Sustainable Forest Practices in Clayquot Sound

1994); thus each season of resource use increases the depth and scope of the knowledge. TEK is not just a knowledge of the past, but also a knowledge of the present.

There are some academic discussions about the loss or “erosion” of TEK as Indigenous communities become more integrated into regional or national economies. It is important to differentiate between situations where a community’s TEK is adapting to new environmental and economic conditions, and where TEK is being lost due to a disruption of transmission or population loss. Just because land use activities have changed or decreased does not necessarily mean that a community’s TEK is deteriorating.

That said, the emphasis on the importance of elders’ knowledge in First Nations communities is valid. Elders often have different knowledge than the younger generations within a community, and 20th-century Canadian Aboriginal policies have disrupted cultural transmission. It is therefore important to many communities to document their elders’ TEK, and many First Nations have made this a research priority. It is important to emphasize, however, that younger First Nations people also have TEK that can be extremely important for sustainable resource management.

Historical: It is because TEK is cumulative and dynamic that it provides a historical understanding of environmental change. First Nations knowledge, for example, predates European contact and thus provides a multi-generational perspective on the environmental impacts of colonialism and industrial development. In this sense TEK can be understood as incorporating knowledge of environmental changes since European arrival. However, this is not meant to deny or ignore the reality that just as new information or cultural understanding emerges, some knowledge or information will also be disregarded, lost, or ignored (see Menzies this volume). Nonetheless, Indigenous experiences, as expressed through TEK, have the potential to give us a picture of the rapid transformations of the landscape and natural resources since colonial settlement and also a potential baseline indicator that predates much scientific study.

On the north coast of British Columbia, experience of a precontact environment is only a few generations past. This knowledge is extremely valu-

able in identifying pre-industrial levels of species abundance, impacts of industrial pollution, and impacts of newly introduced resource-extraction technologies. For example, the difference between an elder’s fishing experiences and a young person’s fishing experiences can provide insight into environmental change.

Local: TEK is locally developed and provides highly specific and detailed information about areas of traditional resource use. TEK provides an intimate understanding of an area that other forms of research and experimentation cannot match. However, the specificity of TEK has the potential to limit its broad application and requires two basic responses: (1) that in-depth TEK documentation be done for every ecosystem, and, perhaps more importantly, (2) that the ethnographically well-documented motifs of animals as gifts, animal masters, and so on among hunting peoples be understood in their paradigmatic function as an epistemologically rigorous, though alternative, knowledge system to science. All this being said, it is important to also recognize the strong underlying points of similarity between natural science and local ecological knowledge systems in terms of the process of observation, inference, verification, and predication that is common to both modes of apprehending the ecological systems within which human beings live.

Holistic: Traditional knowledge has been described as holistic, meaning that all elements are viewed as interconnected and cannot be understood in isolation. As discussed above, a holistic perspective has been missing from resource management, and efforts are now being made to understand the interrelatedness of species and their environments.

Embedded: TEK is part of a particular cultural context. It is specific not only to an ecosystem, but also to a way of understanding the world. Generalizations about TEK focus on the experience of Aboriginality, the continuity and intimacy of land use, an Indigenous conservationist ethic, and a spiritual connection to the land. It is important to emphasize that there are many traditional knowledges, each one attached to a different Aboriginal culture. A community’s TEK is embedded in the matrix of its unique local culture, history, and traditions. It is thus possible to talk about Gitxaan TEK, Tsimshian TEK, and, more generally, Indigenous knowledge.

It is difficult to interpret and use TEK without understanding its cultural context. Practical knowledge of where to find and how to process resources cannot be separated from the traditional structures of territory and resource ownership, cultural rules regarding resource use and waste, and even issues such as the traditional gendered division of labor within a community. Furthermore, most Aboriginal discussions of TEK insist that this practical knowledge derives from and reflects a spiritual relationship with the land and resources.

Moral and spiritual: In many Indigenous cultures, TEK is grounded in a spiritual and reciprocal relationship between the people and their environment. The natural world is often understood as sentient and proactive and infused with spirit. Thus, there are right ways and wrong ways to relate to and interact with the environment (Clayoquot Sound Scientific Panel 1995). Practices are governed by not just a principle of sustainability for survival's sake, but by a moral sanction against waste or greed. Much of the objective knowledge content of Indigenous peoples is framed within these motifs, which, as discussed above under *Local*, can be understood as providing the epistemological (as well as ontological) foundation for Indigenous "science" or knowledge.

TEK Research Issues

Building upon the central attributes of TEK as described above, the following critical issues in terms of the documentation and interpretation of TEK can be noted: cultural triage, decontextualization and distillation of political influences, evaluation of TEK, and differentiation of TEK. Each of these issues plays a critical role in determining the (im)possibility of deploying TEK in contemporary contexts.

Cultural triage: In contemporary contexts, TEK research and more general data regarding subsistence practices are used to identify lands that must be preserved from development in order to protect culturally important resources. This process, however, tends to open up other areas to development and to potential environmental disruption. Although a First Nation may express a holistic conservation position (i.e., all the resources and areas are impor-

tant), they are often forced to choose between areas of their traditional territory in a way that inevitably results in loss. Stoffle and Evans refer to this process as "cultural triage" (1990). Triage refers to the screening of medical patients to determine their priority for treatments; when not all can be saved, the choice is made to treat those with the greatest chance for survival, and they are ranked according to immediacy of need.

Indigenous communities face cultural triage: "a forced choice situation in which an ethnic group is faced with the decision to rank in importance cultural resources that could be impacted by a proposed development" (Stoffle and Evans 1990:95). This choice preserves some resources but puts others at risk. This form of triage forces an unnatural ranking of species, areas, and heritage sites.

It is crucial that TEK research that contributes to development planning consider both the approaches of holistic conservation and cultural triage. These two positions should be factored into the methodological framework so that participants have the opportunity to emphasize the importance of all resources, while also prioritizing areas and resources if development threatens traditional territory (see Stoffle and Evans for a full discussion of the issues surrounding these two positions).

Decontextualization and distillation: Paul Nadasdy warns that the artifacts of TEK research often possess none of the characteristics that such studies use to define TEK in the first place. During the research process TEK is "distilled" into a product that is easily integrated into the Western resource management system. Although TEK is defined as holistic, oral, qualitative, and intuitive, the research results tend to be categorized, written, quantitative, and analytical (Nadasdy 1999:9; see also Nadasdy this volume). The reports from TEK research are thus often more like scientific reports and remove the traditional knowledge from cultural and ecological context.

Thus a danger of TEK research is that it can simply make TEK a tool of Western science, rather than a complementary approach to resource management. The wisdom of community members is translated into facts and figures that a biologist can use. Furthermore, case studies of several co-management boards suggest that First Nations participants do not feel that their

knowledge is contributing to the research agenda (Nadasdy 1999). Community research priorities are not addressed, but community TEK is expected to be provided in order to benefit scientific research projects.

It is critical that TEK research reflect community goals and priorities, and that TEK reports reflect the way that information is transmitted within the community. TEK should not be translated, distilled, or abridged in order to make it fit predetermined, external data requirements.

Political influences: It is critical to understand the political context of TEK expression and use. The expression of TEK is often part of a movement toward political sovereignty and greater control over natural resources. The highly politicized context of the current struggle over Aboriginal rights and title can influence TEK research in a number of ways.

Despite the fact that current TEK research and documentation may contribute positively to a First Nation's land and resource claims, or might increase the community's involvement in resource management, community members might be reluctant to have their knowledge recorded. Some communities have suffered further loss of resource control by participating in research that records their traditional harvest areas and processing methods. Furthermore, traditional structures of resource stewardship and ownership often influence who is able to use and even talk about specific areas. It is extremely important that researchers understand these concerns and these traditional censures when trying to document the area and extent of particular resource utilization. Individuals may not mention the most important areas where they harvest food in order to preserve those areas. Alternately, an individual who is considered a community expert may not give information on certain areas because they personally do not have the right to publicly discuss that territory. A younger person may want to check their contribution with an elder, before having it recorded.

These limitations, if not comprehended by the researcher, can result in areas of prime importance for subsistence being left out of maps and other documents identifying key resource use areas. This is of great concern if the research is expected to prioritize land use patterns and identify areas open for alternative development. Community control of the research com-

bined with the recruitment of community-based researchers will alleviate most of these issues.

Evaluating TEK: Traditional knowledge provides its traditional users with a practical understanding of their environment and the resources that they use. When TEK is being used by a First Nation to inform its conservation and development planning, this body of knowledge has to be gathered from many individuals and sources. Facts about and relationships between species need to be cross-checked between community participants and against other sources. When TEK is used as a basis for contemporary resource management, it must be validated. This validation should be community-based and rigorous.

Information from TEK interviews needs to be considered in light of each individual's personal history and territorial scope of resource use. What areas do they know about; what years did they spend actively using those territories? Information from an elder about salmon fishing at a particular creek is extremely important; however, if the elder has not fished there for two decades, it is necessary to find a younger person who has fished there recently in order to understand the health of that run of fish. If the elder fished there seven days a week, but his son was limited to fishing two days a week, their information regarding the fish must be considered in light of these different practices. If one used a beach seine and the other a gillnet, that information must be used to interpret their estimates of salmon abundance. If there is no community member fishing there currently, perhaps commercial fishing records can provide some insight. Similarly, archaeological records might assist in extending the temporal scope of the data about fish in that creek.

Chippewa law professor John Borrows emphasizes that Indigenous knowledge is important, but not perfect, and many sources must be consulted in environmental planning (1997). Borrows and other researchers suggest that the disruption of Aboriginal land use by European colonization and the subsequent disenfranchisement of First Nations from their land have resulted in fragmented TEK that must be pooled with other information sources and evaluated in light of the limitations on Aboriginal resource access since contact.

Differentiation of TEK: Traditional knowledge is not homogeneous even within a small community. People in different positions know different things about resources and the environment. Men and women, elders and young people, have different knowledge. When researching TEK it is important to understand the many ways that knowledge might be differentiated within the community. Researchers will thus have to talk to many different types of people in order to fully document the TEK held in the community.

Putting Words into Action

Over the course of the Forests for the Future project we have attempted to connect local knowledge of the environment and the historical patterns of its use to more appropriate models of resource management in which local peoples take a significant role. As part of our mandate a research workshop was held in Prince Rupert January 31–February 2, 2002. Participants in the workshop included the authors of the chapters included in this collection, community-based researchers from Kitkatla, and members of the general public in Prince Rupert.

The authors of the following chapters and other participants in the workshop bring together a wealth of practical experience in researching, teaching, and applying local-level ecological knowledge in real-time contexts. The research and applied contexts within which these authors have worked include ethnobotany, wildlife management, forestry, and fisheries. The people whose knowledge is drawn upon in the following chapters are from the Indigenous nations of the Tsimshian (Gitxa'la and Gitga'at), Nisga'a, Gitsxan, Kluane, and Sto:lo peoples and non-Indigenous communities in the Yukon, northwestern British Columbia, North Carolina, New England, and Newfoundland. In all of these cases the fundamental point of similarity lies in the close connection between local resources users and the environment in which they live and on which they rely for their daily life.

The chapters in this collection are organized in the following manner. The first part of the book consists of case studies that root the discussion of TEK within specific practices of Indigenous peoples of the Northwest Coast. The chapters by Steve J. Langdon and Kimberly Linkous Brown are

concerned with the ecological soundness of traditional Indigenous fishing gear. Langdon describes the ingenious traditional methods of the Tlingit for harvesting salmon by use of tidal drift and stone weirs. Here we can see how this approach to harvesting salmon relies upon a local cultural explanatory framework that combines detailed ecological knowledge of specific fishing sites with a cosmological explanation of fish behavior in which the fish turn downstream and “give themselves” to the fishers. Brown’s chapter examines how traditional fishing techniques are being adapted by contemporary Indigenous fishers within the context of the modern industrial fishery. In this chapter we can see revealed the manner by which historical practices merge with contemporary socioeconomic conditions. Nancy J. Turner and Helen Clifton’s chapter on Gitga’at seaweed harvesting details the practices and knowledge involved in the harvesting and processing of a critically important local food. Charles R. Menzies explores the ways in which wider economic changes interact with local knowledge in ways that underscore the dynamic nature of TEK. In his chapter the argument is made that TEK does not simply accumulate over time but that it is intimately entwined with the subsistence and livelihood practices of a people.

The second part of this collection details the specific obstacles and opportunities involved in attempts to deploy local ecological knowledge in resource management regimes. Caroline Butler reminds us that local Indigenous knowledge must be located within its historical and political economic contexts. Paul Nadasdy argues against TEK researchers’ focus on the “technical” problems of integration and instead argues that the political process of integration is as important, if not more important, than the focuses on technical obstacles to integrating local-level knowledge in resource management regimes. The chapters by David Griffith and James R. McGoodwin engage these issues from the vantage point of non-Indigenous coastal communities. Griffith, drawing upon contemporary and historical data from North Carolina, explores the ways in which the economic and political contexts within which live resource-dependent communities are critical in generating local ecological knowledge. McGoodwin’s chapter details the specific prospects and problems of deploying local-level knowledge by reference to his and other researchers work in fisheries-dependent communities.

The concluding part of this collection explores the ways in which Indigenous knowledge can be deployed in the education of public school teachers (Gloria Snively) and the ways by which Indigenous knowledge is practiced and transmitted among peoples of the Northwest Coast of North America (Snively, John Corsiglia). Here we are reminded that in our quest to integrate local ecological knowledge and the “science” of natural resource management we must be cognizant of the methods by which local-level knowledge is transmitted and taught.

Underlying and connecting the substantive issues discussed in this collection is a concern with putting words into action. It is not enough to simply describe local ecological knowledge or to dissect it. Rather, the sorry state of K'mksiwah science and its track record over the past two hundred years in this region of North America clearly demonstrates the error of ignoring the Ayaawk and Adaawk of the Gitxa'la and other Indigenous peoples. While few—whether First Nations or K'mksiwah—would argue for a complete return to the old ways, it is important to highlight the wisdom of traditional knowledge and its value in contributing to solving our contemporary ecological problems. While the authors gathered here differ in emphasis, theoretical orientation, and substantive case studies, we are united in our desire to integrate local ecological knowledge within contemporary natural resource management as an avenue toward a truly sustainable future.

Notes

1. The Forests for the Future project, as described in the next section, “Forests for the Future: Scope and Objectives,” combines research with community extension and public education. As part of our public education mandate a special research workshop was held in Prince Rupert, British Columbia, Canada, in early February 2002. The chapters included in this volume were written expressly for the workshop (Turner and Clifton, Nadasdy, Griffith, McGoodwin, Corsiglia) or by project team members as part of the project research (Brown, Menzies, and Butler), or they were specifically solicited for this volume (Langdon, Snively). The task assigned to each contributor was to draw upon his or her particular expertise in local ecological knowledge research and prepare a chapter that would be useful for community-based researchers and managers whose community futures lay with sustainable relationships with natural resource harvesting. Specifically, contributors were asked to explore the manner by which resource dependent communities (defined broadly) are attempting to organize their survival (or not, as the case may be) in the

present moment. As part of this discussion contributors were invited to reflect on the importance of local forms of ecological and economic knowledge in charting new ways toward community viability by paying particular attention to the appropriateness of integrating traditional or local forms of knowledge with standard resource management models.

2. Over the past several decades a series of Supreme Court of Canada legal decisions has slowly forced large-scale resource companies and the province of British Columbia to come to terms with First Nations' rights and, in so doing, has placed the local ecological knowledge of Indigenous peoples more and more to the forefront of resource management and development. These legal decisions have combined with a growing ecology movement that—rightly or wrongly—has identified Indigenous peoples as a potential “green salvation.” Taken together, these two social forces have propelled the issue of tek on to the agenda of multinationals whose primary interest is to maintain their control over and access to precious natural resources by nearly any means necessary.