

Mobilizing Traditional Knowledge and Expertise for Decision-Making on Biodiversity

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CASE STUDY CONDUCTED IN THE FRAMEWORK OF
THE CONSULTATIVE PROCESS TOWARDS AN IMOSEB

EXECUTIVE SUMMARY

What institutional design would best serve Indigenous organizational needs and priorities in the creation of an International Mechanism Of Scientific Expertise on Biodiversity (IMoSEB)? Shedding light on an appropriate institutional design entails more than just a pragmatic approach to the question of *how can traditional knowledge and expertise be mobilized for decision-making on biodiversity conservation and management?* It also involves philosophical, ethical and legal considerations. Thus, the question at stake may be more accurately phrased as *how should traditional knowledge and expertise be approached to ensure their implementation in biodiversity decision-making occurs in respectful and culturally-appropriate ways that benefit (rather than harm) the source communities involved and support (rather than sever) interrelationships with biodiversity and the protection of Indigenous biocultural heritage?*

This paper argues that the primary goal in incorporating traditional knowledge into biodiversity decision-making cannot be premised on simply “integrating” western scientific and traditional knowledge systems and methods. Rather combining knowledges must be founded in mutual respect, and in support for parallel processes that stem from different beliefs and worldviews. Fundamentally, working together in ethical and equitable ways that lead to the most rigorous understanding of biodiversity and robust approaches for biodiversity management and conservation requires sharing of power in making decisions, and ensuring the capacity exists to participate in decision-making. Power-sharing begins with which questions about biodiversity will be asked, which will go unasked, and which methods and tools will be used to provide answers.

The aim of the study was to undertake a preliminary scan of legal, non-legal and other practical tools that have been developed and used by Indigenous organisations, Indigenous communities and those working in collaboration with Indigenous peoples to facilitate the simultaneous protection and application of traditional knowledge and expertise in biodiversity conservation and management. Of particular interest were tools that facilitate links with scientific expertise and transfer of technology while supporting traditional resource rights and intellectual property protection mechanisms. The types of tools and examples included in the study are biodiversity information networks; template agreements, community research protocols and policies; external research codes; innovative legal agreements and contracts; community traditional knowledge databases and registers; community-controlled and collaborative research projects; structures for Indigenous co-management; and creation of new institutions for governing biocultural diversity research and management.

The diverse range in types of tools examined speaks to a parallel diversity in community needs, priorities, and capacities. Importantly, no one-size-fits-all solution emerges for how traditional knowledge and western science can be brought together in a synergistic and complementary way that is grounded in mutual respect for difference. Common themes and issues identified through the scan include: needs for access to and exchanges of information, needs for models and templates that have been tested on-the-ground, guidance on how to engage and disengage in ethical and equitable relationships (both within and outside of communities), needs to store and manage vast amounts of information in various forms and with built-in mechanisms for multilevel or tiered access and degrees of stringency in control of information flow. While some

examples illustrate the highest levels of community control achievable, most are premised on active participation and full and active representation, working and making decisions in collaboration, co-creating and co-managing new knowledge – and ultimately, sharing power. The inherent inequity in distribution of power, combined with capacity issues, appear to be the greatest hurdles to governments, academic scientists, policy makers and others seeking meaningful collaborations with Indigenous organisations and communities

Contemporary approaches and tools that facilitate links with scientific expertise and transfer of technology, are necessarily going to be those that support traditional resource rights and mechanisms of intellectual property protection, such as ensuring: free and prior informed consent of knowledge holders and source communities; that knowledge linked to biodiversity is traceable to its origin, that original knowledge holders and source communities retain rights and due credit to their knowledge, practices and innovations, and that benefits are shared equitably. among contributors.

It is clear that a pragmatic or linear approach to incorporating traditional knowledge and expertise into dominant western scientific and legal paradigms is inadequate and potentially detrimental to both biological diversity and those Indigenous, traditional and local communities whose existences and wellbeing are interdependent with biological and ecological systems. Due consideration and understanding of cultural diversity as inextricably linked to biological diversity is needed, and should be widely fostered through development of curricula and educational strategies. Indigenous community capacity-building and information sharing should be seen as responsibilities linked with biodiversity research, conservation and management; an appropriate scale of investment is needed in these to build bridges between western scientific and traditional knowledge systems. Reciprocal information sharing (not just one-way knowledge use) and capacity-building are pre-requisite to active partnership arrangements in research, management, decision-making and devolution of decision-making on local biodiversity to the local community level. Wider recognition of customary law is needed as a basis for the use of Indigenous community knowledge and resources, and the basis for equitable sharing of benefits arising.

Further development and implementation of the types of approaches and tools examined in this study, along with increased biocultural awareness and wider consideration of the issues raised, should be seen as small but important steps along the power continuum, toward respectful and meaningful partnerships in research, management and decision-making, and toward scientific and policy solutions that contribute to maintaining the diversity of life on earth.

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Awareness of the plight of traditional knowledge has risen dramatically during the last fifteen years or so. Ironically, this has been the result not so much of concerns to protect indigenous cultures but an indirect result of increased interest in the potential of traditional knowledge to provide leads for new product development. (Tobin n.d.)

1. INTRODUCTION

There is growing international acceptance in western scientific and policy-making arenas that the knowledge and practices of Indigenous peoples, traditional societies and local communities make important contributions to the maintenance of biological diversity³. Among the many international declarations, statements, conventions and codes comprising international law and policy, this acknowledgement has most recently been affirmed by the International Society of Ethnobiology (ISE):

The ISE recognises that culture and language are intrinsically connected to land and territory, and cultural and linguistic diversity are inextricably linked to biological diversity. Therefore, the ISE recognizes the responsibilities and rights of Indigenous, traditional and local peoples to the preservation and continued development of their cultures and languages and to the control of their lands, territories and traditional resources as key to the perpetuation of all forms of diversity on Earth.⁴

Simply put, traditional knowledge⁵ and expertise cannot be ignored in biodiversity science, conservation and management efforts. The key challenge at present is to move beyond merely

³ In this paper, the term **Indigenous peoples, traditional societies and local communities** refers to peoples who have traditionally occupied and continue to occupy lands or territories even as a minority within those lands and territories, who have and continue to maintain and practice a distinctive culture and identity, and who themselves identify as Indigenous or traditional peoples.

⁴ Preamble of the “Code of Ethics of the International Society of Ethnobiology.” Adopted November 2006, Chiang Rai, Thailand. See www.ethnobiology.org.

⁵ We acknowledge that there is no single agreed definition of **traditional knowledge** and it is not our intention to impose one definition over another. For the purposes of this paper, we draw upon the following working understanding as found in Bannister and Solomon (2006): The term traditional knowledge refers to the inter-generational accumulation of the collective stories, experiences, practices, genealogies, legends, mythologies, customs, laws, lore, spiritual teachings, wisdom, values and knowledge that have been passed down from one generation of Indigenous or traditional peoples to the next. Most, if not all traditional knowledge based systems, share the commonly held belief that there is an inter-dependence and holistic relationship existing between the physical and spiritual worlds. Integral to these belief systems is that the physical and spiritual well-being of present and future generations is dependent upon maintaining the physical and spiritual health and vitality of the environment in which they live. Traditional knowledge is generally collective in nature and is usually, although not exclusively, utilised and practiced for the benefit of the wider group and may be utilised for the benefit of individuals or groups within the collective who are recognised by the collective as having authority to do so. Although ‘traditional’ in the sense that it has evolved and matured over time and thus gained legitimacy as a characteristic or attribute of the peoples concerned, it is not limited in time or space and continues to evolve and respond to the modern world and events happening around and within it. Regarded in this way,

accepting in principle the importance of traditional knowledge in policy-making related to biodiversity, to ensuring these knowledges and practices are fully considered and implemented in policy decisions in a more systematic way. This is, however, a complex and multifaceted challenge that involves a number of practical and philosophical considerations of vital importance. Moreover, the situations and priority concerns of Indigenous peoples, traditional societies and local communities are not uniform across the world, so due care is needed to avoid generalizations or extrapolations that may overlook significant regional differences or diversity and lead to erroneous outcomes.

Ultimately, a balance must be found between the need to document and make more widely available traditional knowledge related to maintenance of biodiversity on the one hand, and the need to ensure protections against unfair or harmful exploitation of the knowledge and interrelated biocultural resources. The tensions between these agendas for “promotion” and “protection” are not polarized along clear lines of division. Expressions of need and interest to document and transmit traditional knowledge (as well as build bridges with tools and methods of western science) arise as much from within source communities as from sectors of wider society (e.g., government, industry, academe). Likewise, concerns about inadequate control by source communities over traditional knowledge access and use are raised by many (but not all) Indigenous organisations and communities as well as an increasing number of academics, activists, governments and others.

However, as more attention by western scientists and Indigenous practitioners has focused on linking traditional knowledge and western scientific systems to solve emergent human and ecosystem health problems, an important caution has emerged. That is, the primary goal in incorporating traditional knowledge into biodiversity decision-making *cannot* be premised on a straightforward “integration” of western scientific and traditional knowledge systems and methods. Rather combining knowledges must be founded in mutual respect, and in support for parallel processes that stem from different beliefs and worldviews. This is not to preclude meaningful exchanges and collaborations between western scientists and Indigenous or traditional peoples – clearly, working together in ways that lead to the most rigorous understanding of biodiversity and robust approaches for management and conservation is the ultimate goal. Respect for parallel processes, however, is about working together while maintaining the integrity of one’s own epistemology and being mindful of necessary self-limits, such that one belief, process or system of knowing (typically the dominant western system) *does not trump* the other. As one contributor to this study noted, “I can respect other beliefs without believing them, but first I need to know they exist”. Thus, respect for parallel processes also requires sufficient awareness and understanding of the “other”, *i.e.*, a level of cross-cultural “competency”, and is fundamentally about sharing of power to make decisions.

Within the biodiversity science arena, such power-sharing begins with which question(s) about biodiversity will be asked (as well as which will go unasked), and which methods will be used to provide answers. To date, it has been the “asking” and “answering” processes of western science and western law that have dominated and been supported through financial, institutional,

traditional knowledge may be seen as dynamic, collectively held, and inter-generational by nature, and is generally used for the benefit of the collective and authorised individuals or groups within the collective.

political and other means. Moreover, to date, the incorporation of traditional knowledge into biodiversity conservation and management has largely been accomplished through the work of western-trained academics and other intermediaries, following the largely linear, extractive academic convention of documenting and publishing traditional knowledge related to biodiversity (e.g., ethnobiological research on food and medicinal plant species, traditional technologies, phenological indicators).

Notwithstanding the many individuals and organisations who have gone to great lengths to ensure their work is conducted as ethically and equitably as possible, some common consequences of placing traditional knowledge in the “public domain” (e.g., academic literature and open access databases) include: (i) diminishing the context in which the knowledge evolved (and therefore the sense of responsibility to source communities), and (ii) making the knowledge accessible for “free and unfettered use” by third parties. As seen over the last two decades of intensive literature-based biodiversity prospecting, all too often third parties from the commercial sector (e.g., biotechnology, pharma, herbal, floral) lack sufficient awareness or incentive to address the inequities and potential harms to source communities and ecosystems of such enterprises.

Tobin (n.d.) notes:

While the international debate has tended to focus primarily on the question of biopiracy, there are many more immediate threats to traditional knowledge which require attention if it is to be conserved and strengthened. These include loss of land and language, insensitive educational and health policies, agriculture and fisheries extension programs, and the impact of organized religion, amongst others. Development of any effective global program for protection of [traditional knowledge] should, therefore, include not only a means for the recognition of ownership rights but also a system for strengthening the continued use and development of [traditional knowledge] as part of the global body of science, and a mainstay of the populations in developing countries, where local sustainability and development opportunities are closely linked to the integrity of [traditional knowledge] systems.

Layered upon a colonial history of inequity and injustice related to treatment of Indigenous peoples, traditional societies and local communities in many parts of the world, the cumulative impact of what has been called “biocolonialism” has been a strong political reaction by many Indigenous organisations, spanning local to international levels. Clearly, access to and use of traditional knowledge must be balanced with calls for protection of knowledge not just because of moral objections to what is seen as “unjust enrichment by corporations who take knowledge without authorization”, but because of real biological and cultural harms that may result in the inability of Indigenous societies to maintain access to their traditional foods and medicines, and lifeways (Hardison 2006).

The key question for this background study then, is not only a pragmatic problem of “how *can* traditional knowledge and expertise be mobilized for decision-making on biodiversity conservation and management?” It is also a philosophical and moral (and in some cases legal)

matter of “how *should* traditional knowledge and expertise be approached to ensure implementation occurs in respectful and culturally-appropriate ways that benefit (rather than harm) the source communities involved and support (rather than sever) interrelationships with biodiversity and the protection of Indigenous and local peoples’ collective biocultural heritage⁶?”

This study sought examples of legal, non-legal and other practical tools that have been developed by Indigenous organisations, Indigenous communities and those working in close collaboration with Indigenous peoples to facilitate the simultaneous protection and application of traditional knowledge and expertise in biodiversity conservation and management. Of particular interest were tools that facilitate links with scientific expertise and transfer of technology, and support traditional resource rights and intellectual property protection mechanisms, for example through ensuring: (i) free and prior informed consent of knowledge holders and source communities has been established, (ii) knowledge linked to biodiversity is traceable to its origin, and (iii) original knowledge holders and source communities retain rights and due credit to their knowledge, practices and innovations. Examples of co-management arrangements were also sought, particularly those that support sharing of rights and responsibilities within a self-determination context.

Ultimately, this study is intended to contribute to addressing the question of what institutional design would best serve Indigenous organizational needs and priorities in the creation of an International Mechanism Of Scientific Expertise on Biodiversity (IMoSEB). This study is an initial step only. Information was gathered through a combination of published information, internet scan and targeted follow-up through interviews and requests for supporting information. While examples and perspectives were sought from all major regions of the world, interactive responses were primarily received from North America, South America, and Australia. While further information gathering would enable an analysis that more fully addresses the question of IMoSEB institutional design to meet Indigenous organizational needs, involving Indigenous organisations directly in the design of IMoSEB would most accurately answer the question.

2. EXAMPLES

As summarized below, the types of tools and examples included in this study range widely and include: biodiversity information networks; template agreements, community research protocols and policies; external research codes; innovative legal agreements and contracts; community traditional knowledge databases and registers; community-controlled and collaborative research projects; structures for Indigenous co-management; and creation of new institutions for governing biocultural diversity research and management.

To the degree possible and based on availability of information, examples were selected to

⁶ **Collective biocultural heritage** is the cultural heritage (both the tangible and intangible including customary law, folklore, spiritual values, knowledge, innovations and practices) and biological heritage (diversity of genes, varieties, species and ecosystem provisioning, regulating, and cultural services) of Indigenous peoples, traditional societies and local communities, which often are inextricably linked through the interaction between peoples and nature over time and shaped by their socio-ecological and economic context. This heritage includes the landscape as the spatial dimension in which the evolution of Indigenous biocultural heritage takes place. This heritage is passed on from generation to generation, developed, owned and administered collectively by stakeholder communities according to customary law (ISE 2006).

provide a range of types and geographical origination, with an effort to include those with innovative features. A brief description of each example is included, as well as a source or citation for further information. Many more examples exist and those included should only be viewed as a small sample set to raise awareness and stimulate further discussion.

2.1 Indigenous Information Networks

A number of self-managed discussions and clearinghouses on issues related to biodiversity have been developed by Indigenous peoples. While networks are often poorly documented and occur using more traditional routes of communication, many Indigenous groups have started to exchange documents using CD-ROMs. In a number of countries, Indigenous peoples have set up community radio programs for extension outreach, with programs related to biodiversity, conservation, sustainable use and traditional resource rights.

A few have set up clearinghouses on the internet and several discussion lists related to the exchange of biodiversity-related information have been established. For example, the National Tribal Invasive Species Committee (NITSC) of the United States has established a mailing list on tribal invasive species issues. The Union of British Columbia Indian Chiefs maintains the Protecting Knowledge discussion group that regularly carries information on traditional knowledge and biodiversity related issues, with a focus on traditional knowledge protection (see http://groups.yahoo.com/group/protecting_knowledge/). The Snowchange site, affiliated with the World Wide Fund for Nature, presents news on climate change from an Indigenous perspective (See <http://www.snowchange.com/>).

These initiatives remain a small part of the total internet-based traffic in traditional knowledge and biodiversity related information. Most of the initiatives are under-funded and under-supported. Moreover, much of the traffic in traditional knowledge remains out of the direct control of or oversight by traditional knowledge holders themselves, and there are few explicit codes of conduct or protocols regulating the sharing of primary traditional knowledge. A variety of examples of networks are include below.

2.1.1 Kaitiaki.org.nz (<http://www.kaitiaki.org.nz/matou/>)

A multilevel community website with tiered access and use for Kaitiaki Māori working on behalf of whanau, hapu and iwi, particularly on environment and resource management issues. Set up by a non-profit society to promote the interests of Kaitiaki Māori and operated by the Kaitiaki community.

2.1.2 Indigenous Women's Biodiversity Network (<http://www.nciv.net/engels/IWBN/IWBN.htm>)

An organizing and information dissemination network of Indigenous women working on environmental issues, co-organized by the African Indigenous Women's Organisation (a pan-African indigenous women's organization located in Nairobi, Kenya) and the Netherlands Centre for Indigenous Peoples (NCIV). The network goal is to ensure the

active participation of Indigenous women in international environmental fora, and promote the role of Indigenous women in protecting the environment.

2.1.3 Indigenous Biodiversity Information Network (<http://www.ibin.org/>)

A network that was initiated by Indigenous delegates at the Convention on Biological Diversity (CBD) in 1994 to serve as a communications tool to aid Indigenous peoples in understanding and negotiating the terms of the CBD, and promoting Indigenous views on issues related to the conservation and sustainable use of biodiversity. The network is informal, primarily working through electronic mail and mailing distributions. The website has been poorly maintained and is currently undergoing revision.

2.1.4 International Indigenous Forum on Biodiversity (<http://www.iifb.net/>)

A forum that only exists during the meetings of the CBD and its subsidiary bodies and working groups, whenever there is sufficient Indigenous representation to form a regionally-representative caucus. The Forum has recently established a website that has both public (open) and private discussion areas.

2.2 Template Traditional Knowledge Agreements

Until recently, few documents have been made public that set out explicit regulations on sharing primary traditional knowledge. Two Canadian templates are include below, both having emerged from specific projects and subsequently shared in more generic template formats with the intent to assist other Indigenous communities in developing tools to protect their traditional knowledge and cultural heritage.

2.2.1 Template Traditional Knowledge Protocol (Kaska First Nation with Merle Alexander, 2005)

A template originally used as the basis of an unprecedented protocol agreement between the Kaska Nation and Foothills Pipe Lines Ltd (BC, Canada) to establish Kaska involvement in planning, construction and operations of the Alaska Highway Pipeline Project. The template was shared for use by other First Nations who seek to confirm their ownership and control over their traditional knowledge (including intellectual property rights, and prior informed consent for access) and support the leadership role of Elders in decision-making related to gathering, use and management of traditional knowledge.

A number of limits are defined on the subject of research, such as no collections of heritage or cultural materials, no disclosure or use of traditional knowledge outside of the research partnership, no disclosure of cosmetic or medicinal properties derived from traditional knowledge, no selling or claiming rights to plants as herbal medicines or cosmetic products, and no entry on sacred sites or disclosure of their location. The model promoted has a high degree of community involvement and control over primary research on traditional knowledge; traditional land stewards from the community undertake the

primary interviews with knowledge-holders and outside researchers are only given restricted access to the secondary information for specific agreed uses. Optimal use of the template requires a fairly elaborate combination of community oversight bodies and processes (e.g. traditional knowledge oversight committee to review protocol and work plans, traditional land stewards to document traditional knowledge, legal council to assess work plans).

2.2.2 Community-University Research Alliance (CURA) Research Contract between Hul'qumi'num Treaty Group and the University of Victoria Department of Linguistics. Template Document

(Hul'qumi'num Treaty Group and University of Victoria, 2004)

A detailed template agreement established as part of a collaborative, community-based research project on Coast Salish language revitalization involving university and Aboriginal community researchers. The aim of the project agreements governed by the contract are to ensure First Nation customary stories and related teachings do not become the property of researchers, First Nations laws related to transmission of teaching and knowledge are respected, and terms and conditions of ownership of the material extracted from the First Nations by researchers are clear.

The agreements governing the language project are explicit, detailed and innovative with respect to ownership and cultural heritage rights. The innovation is in the incorporation of positive and negative ownership clauses, and in that University intellectual policy applies to project activities and outcomes, *subject to* the agreements in the research contract. Some examples include: First Nation ownership and possession of original audio and visual recordings (with copies to researcher); researcher ownership and possession of original notes, transcripts, photos, and records other than audio/visual recordings (with copies to First Nations partner); researcher ownership and possession of researcher's own creative works emerging; First Nation's right to maintain 'non-copyright' (*i.e.* no one may claim copyright or exclusive ownership) over Hul'qumi'num stories, legends, myths, folklore, or customary intangible property as these are the acknowledged intellectual property of the First Nation community or community members; and the granting of a license to researchers to publish information for scholarly and educational purposes.

With respect to limits on research activity, the language project agreements specify there shall be no recording of customary intangible properties (with specific examples given) and no publishing of these or placing them in the public domain. The model includes a well-defined oversight body (Steering Committee) comprised of community and university members, and an Elders Advisory Board to review the research plan, identify and delimit customary intangible property, and resolve disputes over proper management of customary intangible property or traditional knowledge.

2.3 Community Research Policies and Protocols

Many Indigenous communities are developing research protocols and institutional controls

restricting and regulating research access and conduct within their traditional territory. Most are tribe- and community-specific, but are increasingly being recognized in national legislation and policy, and upheld by government, academic and corporate institutions that instigate research and development activities. Some North American examples are included below.

2.3.1 Gwich'in Tribal Council Traditional Knowledge Policy

<http://www.gwichin.ca/TheGwichin/traditional.html>

(Gwich'in Social and Cultural Institute, 2004)

A policy to guide the ethical conduct of the collection, use and dissemination of Gwich'in traditional knowledge and ensure Gwich'in are acknowledged and respected as holders of the knowledge. Detailed procedural instructions are included, as well as resources and expectations related to informed consent, research licensing requirements, and other aspects of research. Also included is a framework agreement for working with Gwich'in traditional knowledge in the Gwich'in settlement region, which sets out the terms of any agreement negotiated between a Gwich'in organization and researchers.

2.3.2 Hopi Tribe's Protocol for Research, Publications and Recordings

<http://www.nau.edu/~hcopo-p/hcopo/>

(Hopi Cultural Preservation Office, n.d.)

Guidelines to protect the rights of the present and future generations of the Hopi people developed by the Hopi Cultural Preservation Office (Kykotsmovi, AZ) on research, publications, recordings (motion, visual, sound, whether oral or written) via multimedia or other mechanical devices discovered or yet to be discovered, by non-Hopis. The guidelines intent that the Hopi Tribe be consulted on all activities that involve Hopi intellectual resources and the activity be reviewed and approved by the Cultural Preservation Office through a permitting process or other contractual agreement. The protocol is not meant as an invitation for commodification or commercialization the Hopi Tribe maintain their right to not have expropriated from them certain knowledge or information.

2.3.3 Huchoosedah Protection Act

(Tulalip Tribes of Washington, forthcoming)

This Act is under development by the Tulalip Tribes of Washington. *Huchoosedah* is a Coast Salish word meaning "Our way of Being". It is roughly equivalent to the meaning of "intellectual property rights", but avoids expressing collective heritage terms in the individual-oriented language of property rights. The Act reflects the principles in Article 8(j) and related articles of the Convention on Biological Diversity, and it covers a wide range of activities that involve the use and transmission of traditional knowledge, such as business practices, sale of traditional arts and crafts, rights to genetic resources and associated traditional knowledge, and research and publication of traditional knowledge. It is the first comprehensive code being developed by Indigenous peoples in North America, but it follows on many similar codes being developed in New Zealand, Australia, the Andean Pact nations, and elsewhere.

The Act sets up specific procedures for research that proposes to access tribal members or resources. It institutes a tribal review process for determining how research may be made available, and includes an Aboriginal copyright to accompany any research that involves traditional knowledge. The Act also asserts tribal ownership of genetic resources and associated traditional knowledge on the tribal reservation, and sets up processes to regulate access and benefit sharing for these resources. Additionally, it deals with the issue of transboundary genetic resources, since tribes share genetic resources in common through gene flow in gene pools, and in some cases considerable genetic resources exist in *ex situ* collections. The Act is based on the recognition that, unlike material resources, genetic resources are “non-rival”, i.e., they can be acquired and consumed by one party without affecting another’s access to and use of the resource. The rationale is that Nation states have large bioprospecting catchment in which many gene pools may be wholly contained while Indigenous peoples have much smaller territories where gene flow and transboundary genetic resources dominate. Since bioprospectors are interested in material samples as a means of accessing genetic information, any policy based on geography alone will not likely protect access and benefit-sharing rights. The Act asserts a tribal co-right to manage access and benefit sharing arrangements to any genetic resources utilizing species in traditional use at the time of the signing of their treaties, or species producing properties of the soil, air and waters that were culturally important.

2.4 External Codes for Researchers

While numerous research guidelines and codes of ethics have been developed by academic and professional societies, most are generically based on international and national standards for research involving humans. Few offer specific and detailed guidance on accessing and using traditional knowledge. Two exceptions are included below.

2.4.1 International Society of Ethnobiology Code of Ethics (www.ethnobiology.org) (International Society of Ethnobiology, 2006)

An international consensus-based document adopted by diverse membership of the International Society of Ethnobiology to guide biocultural diversity research and related activities. Comprised of 17 principles and 12 practical guidelines, the goals of the Code are (i) to optimise the positive outcomes and reduce the adverse effects of research and related activities of ethnobiologists that can disrupt or disenfranchise Indigenous peoples, traditional societies and local communities from their customary and chosen lifestyles; and (ii) to provide a set of principles and practices to govern the conduct of all members of the ISE who are involved in research in all its forms, especially that concerning collation and use of traditional knowledge or collections of flora, fauna, or any other element of biocultural heritage found on community lands or territories. The ISE Code of Ethics recognizes and honors traditional and customary laws, protocols, and methodologies extant within the communities where collaborative research is proposed. It is intended to enable but not over-ride such community-level processes and decision-making structures, and it should facilitate the development of community-centered, mutually-negotiated research agreements that serve to strengthen community goals. The

document was developed with significant input from Indigenous individuals from all parts of the world and is seen as providing guidance to ethnobiologists and other researchers, business leaders, policy makers, governments, non-government organisations, academic institutions, funding agencies and others seeking meaningful partnerships with Indigenous peoples, traditional societies and local communities. The ISE is currently developing a mechanism for other organizations to formally adopt and register their support and compliance with the Code.

2.4.2 Guidelines for Health Research Involving Aboriginal Peoples (Canadian Institutes of Health Research, forthcoming in 2007)

New guidelines (in final stages of approval) that were developed by a national working group of majority Aboriginal individuals who were appointed by the premier academic granting agency in Canada, the Canadian Institutes of Health Research. The guidelines are for health research that involves Aboriginal peoples, where the concept of health is broadly conceived and fundamentally includes traditional knowledge and biological resources as integral to community health. Compliance with the guidelines, once they are formally adopted, will be a condition of funding from the granting agency. Guidance is given over a spectrum of difficult philosophical and practical issues including community jurisdiction and approval; research partnership methodology; collective and individual consent; collective and individual confidentiality and privacy; respect for individual autonomy and responsibility; inclusion and responsibilities of Indigenous knowledge in research; protection of cultural knowledge; benefit sharing; community empowerment and capacity development; the rights of control over collection, use, storage and potential use of data; use of biological samples; and expectations regarding interpretation and dissemination of results.

Progressive features of the draft *Guidelines* include a requirement for researchers to obtain collective consent from the Aboriginal community and not just individual consent, a requirement that communities be given the option of a participatory research approach, use of data and biological samples by researchers based on ‘loaning’ and ‘licensing’ concepts that vest ownership in Aboriginal individuals and communities, and explicit support for cultural protocols and Aboriginal communities’ own research ethics guidelines and processes where they exist (including local Aboriginal ethics review boards).

2.5 Legal Agreements

Beyond conventional contracts and intellectual property protection mechanisms, a number of *sui generis* legal protections have emerged from Indigenous communities and Indigenous organisations. A diversity of examples is included below.

2.5.1 Inter-community Agreement for Equitable Benefit-sharing Derived from Uses of Collective Biocultural Resources (Association for the Conservation and Nature and Sustainable Development, n.d.)

As part of an international investigation on "Common Law and Genetic Resources", the Association for the Conservation and Nature and Sustainable Development (ANDES) recently developed a legal agreement among the six Quechua communities of the Potato Park that regulates the fair and just distribution of non-monetary and monetary benefits accrued from repatriated potato varieties and derived from uses of collective traditional knowledge, associated genetic resources and ecosystem goods and services. The agreement is based in Quechua customary law and traditional mechanisms of distribution and redistribution for well-being and economic solidarity among the communities (i.e., benefit-sharing is guaranteed to all as long as it is fair and equitable and is conditioned by customary laws of resource conservation and use). As such, the Inter-community agreement is based on equitable political and social relations and upholds Andean principles of reciprocity and equilibrium. Key features include: process governing prior informed consent which involves the General Assembly of the Association of Communities of the Potato Park; procedure for benefit-sharing (for several different classes of benefits); access and use rights afforded by the Potato Park; and procedure regarding enforcement and conflict resolution with the General Assembly as the competent authority (Alejandro Argumedo, pers. com. to K. Bannister Nov. 2006; Argumedo and Pimbert 2006; Swiderska 2005)

2.5.2 Covenant on Repatriation, Restoration and Monitoring of the Agrobiodiversity of Indigenous Potatoes and their Associated Systems of Traditional Knowledge

In December, 2004 the association of Quechua communities of the Potato Park (Pisac, Peru) signed a covenant with the International Center of the Potato (CIP) that assures restitution for the native potatoes varieties and the associated traditional knowledge that were taken from the region decades before by the CIP without the informed consent of the communities of the area. Following the terms established in the Convention of Biological Diversity and the International Treaty of the FAO, the covenant restores the intellectual property rights of the communities to their cultural and biological patrimony and calls upon CIP to recognize the benefits that have been generated based on the genetic material taken from the communities. This covenant is unique in its kind inasmuch as it reverses the paradigm of conventional access and establishes an important precedent that the communities have the right to access and repatriate their biocultural resources from the genetic centers where they are currently maintained. The agreement also strengthens the control of Indigenous communities over access and benefits-sharing from the use of their knowledge, while promoting the conservation and sustainable use of agrobiodiversity in a holistic way (Alejandro Argumedo, pers. com. to K. Bannister Nov. 2006)

2.5.3 Know-how License Agreement (Aguaruna Federations and Searle & Company, 1996)

This novel license was developed as part of the International Cooperative Biodiversity Groups bioprospecting project in Peru (ICBG-Peru) initiated in 1993 and led by Washington University. The license was entered into between several participating

Indigenous Aguaruna federations and the U.S. pharmaceutical company Searle & Co. All use of the knowledge by Washington University and the other participating universities was made dependent under a sub-license from Searle. The license established the conditions for collection and use of Aguaruna traditional knowledge, treating traditional knowledge as a form of information technology, and defining know-how to include all relevant traditional knowledge of the Aguaruna peoples whether or not it has fallen into the public domain. The license regulated access to and use of both traditional knowledge and associated genetic resources, covering the use of plants, plant extracts, natural products isolated from plant extracts, and any compounds whose structural design was developed based upon the structure of such natural products isolated from plant extracts. The license prohibited the use of traditional knowledge in development and patenting of life forms. Upon termination of the license all parties were to terminate use of all genetic resources unless otherwise agreed with the Aguaruna Federations. In using a licensing arrangement, the Aguaruna chose not to relinquish ownership, and rather came to agreement with the other parties about the conditions of use, levels of compensation, confidentiality, and eventual termination of use (Tobin et al. forthcoming; Tobin, n.d.).

2.5.4 Aboriginal copyright (Tulalip Tribes of Washington, forthcoming)

The Tulalip Tribes is developing an Aboriginal copyright that will accompany any research that is made using tribal traditional knowledge. Non-traditional, factual information, such as historical record is explicitly exempt. The copyright must accompany any publication, and while researchers and publishers may claim copyright in works as-a-whole, rights in passages marked by Aboriginal copyright are retained by the tribes in perpetuity. The intention is to limit uses that may be made of published information. Amendments can only be made by contacting the traditional knowledge holders. In some cases, publication may be allowed only if special provisions are made for certain kinds of protection, such as the development of special collections with access controlled by the tribes. The code is designed to respect the tribes' collective ownership over traditional knowledge, and their rights to set the terms of its use.

2.5.5 Traditional use agreements for sustainable harvesting

Traditional Use of Marine Resource Agreements (TUMRAs) have been developed between the Great Barrier Reef Marine Park Authority and Traditional Owners⁷ in the Great Barrier Reef region of Australia. TUMRAs are legal agreements that attempt to protect cultural practices within Park rules and regulations by guiding how agencies work with local Aboriginal people. Harvesting rights on certain species within the marine park are set out in the agreements, which are negotiated within a partnership relationship that includes reciprocal exchange of information. In some cases, Traditional Owner information is entered into a computerized system that has various levels of control access and control. Information may be made available to an agency with permission of group. TUMRAs are intended to facilitate the shared objective of Traditional Owner

⁷ Traditional Owners are Aboriginal and Torres Strait Islander people who have cultural authority over who is allowed to hunt in their sea country, as determined by customary law and cultural practices.

groups and the Park Authority to ensure that hunting of green turtles and dugongs occurs at sustainable levels within the context of human-related causes of decline on these species. TUMRAs are not seen as a “quick fix” to managing biological and cultural diversity, rather they create a framework for engagement between scientists and communities, from planning and information gathering, to information and technology transfer and capacity building S. Schnierer, personal communication to K. Bannister, November, 2006; Great barrier Reef Marine Park Authority, n.d.).

2.6 Community traditional knowledge databases

Compilations of traditional knowledge into digital collections of materials such as videos, photographs, audio clips, digital documents and textual descriptions of traditional knowledge, practices, and languages. The compilations are compiled and managed by Indigenous and local communities or representative organizations chosen by them. They may have some features that are secondarily deployed in a legal context, particularly in providing documentation of traditional use for land demarcation, treaty negotiations, or traditional resource claims, but their main function is to serve community aspirations.⁸ Note that a number of existing public and private traditional knowledge databases have been created without the knowledge or involvement of Indigenous or local communities. While they raise a number of important issues and opportunities, such examples are not the specific subject of this paper.

2.6.1 ICONS Database and Cultural Stories Project of the Tulalip Tribes of Washington (<http://www.culturalstories.net> and (www.tulalip.nsn.us/index.html))

The ICONS Database was developed to aid the Tulalip Tribes in implementing their Cultural Stories Project. It is a searchable database system for storing and managing information related to traditional knowledge. Several portions of the database system are for tribal members and staff only, but a number of component databases, such as Sources, Organizations, Periodicals and Acronyms have been made publicly available. The database as a whole contains over one million records with global coverage on issues related to biodiversity, traditional knowledge, sustainable livelihoods and sustainable development. Over 50,000 of these records relate directly to Indigenous peoples and traditional knowledge. A larger site, with an on-line encyclopedia and other component databases, is planned for deployment in mid 2007. The online searchable database is available directly, or through links with other web sites such as the Indigenous Biodiversity Information Network. The underlying databases are designed to be compatible with open data exchange.

2.6.2 Kaska Traditional Knowledge Network (<http://www.ictdevgroup.com/land/casestudies/ktkn.htm>)

An integrated Indigenous-controlled and owned web-based information network under development by the Kaska Dena Nation (British Columbia, Canada) in partnership with the ICT Development Group. The goals are to manage and share traditional knowledge

⁸ As defined in Hardison, Preston (2005).

among Kaska communities in northern British Columbia and the Yukon using innovative forms of environmental stewardship facilitated by high-speed connectivity, a web-based portal, a traditional knowledge directory and geospatial data applications that preserve Indigenous knowledge in its orally transmitted form by collecting all such knowledge in digital video format. The aim is for Kaska to benefit from improved communication and decision-support tools related to natural resource management, health and education, while protecting their sacred knowledge.

2.7 Community traditional knowledge registers

Traditional knowledge collections that function as legal registers to document rights over property. These databases originate in specific legislation to provide evidence for land claims, the demonstration of prior art for patent reviews, the protection of traditional knowledge under trade secrets law, or traditional knowledge protection under *sui generis* intellectual property law. These registers raise significant issues of authority and legitimacy regarding the formal registration of traditional knowledge.⁹ Community registers, developed and maintained by local and indigenous communities can help to define rights over community knowledge within a community. However, their legal effect as a means for protection of traditional knowledge is limited in without recognition of their status under national and/or international law. In the absence of specific legislation to recognize rights over knowledge in databases or registers, the information they contain may be considered to have been placed in the public domain, resulting in loss of rights (Hardison 2995; Tobin n.d.).

2.7.1 The Potato Park's Collective Biocultural Heritage Register (www.andesproyectos.org/khipu)

The Association for the Conservation and Nature and Sustainable Development (ANDES) prompted the inventory and registration of collective biocultural resources in the Potato Park in Písaq, Peru. The Potato Park is an Indigenous biocultural heritage area¹⁰ involving six Quechua subsistence-farming communities who have a wealth of biological and genetic resources and associated Indigenous knowledge. The objective of the register is to evaluate the state of the knowledge, practices and systems of traditional innovation and associated cultural, biological, and genetic resources, and to establish the legal protection of these. The purpose is to use traditional methods of identification classification, assessment and cataloguing of the biocultural resources to create a multimedia database. The organization of the information in the database is based on the traditional taxonomy of Andean knowledge. This characteristic and the use of customary laws permits the local communities to define the levels of protection. The Local Registration establishes a positive protection and defensive of the traditional knowledge guaranteeing local rights to traditional biocultural resources of the Indigenous communities (A. Argumedo, pers. com. to K. Bannister Nov. 2006; Argumedo and

⁹ As defined in Hardison (2005).

¹⁰ An **Indigenous biocultural heritage area** is a community-led and rights-based approach to conservation which protects and enhances local livelihoods and biocultural diversity using the knowledge, traditions, and philosophies of indigenous peoples related to the holistic and adaptive management of traditional agricultural landscapes (ANDES website <http://www.andesproyectos.org/khipu/contenido.htm#local>).

Pimbert 2006; Swiderska 2005)

2.8 Indigenous community-controlled and collaborative research projects

Community-based and collaborative research projects encompass a wide diversity of research approaches and methods that fall along a spectrum of power-sharing arrangements. In some parts of the world, research involving Indigenous cultures, languages, and territories is increasingly being controlled at the community level, through Indigenous research review procedures and stipulations on planning, conducting and sharing of results and benefits from research. Projects and programs are being developed by Indigenous communities for their own use and conducted by community researchers where local capacity is established, and/or in collaboration with others (academics, consultants) who have complementary expertise. In many cases, growing concerns about cultural appropriation and commodification issues have led to increased controls, both formal and informal, over information sharing (examples are found in previous subsections). Lack of capacity and infrastructure are major barriers preventing many communities from take a leading role in their own research. Other types of institutional barriers and disincentives (e.g., lack of sufficient time, funds, academic merit) prevent many academics from engaging with communities in collaborative research that is truly equitable. However, with increasing pressure from civil society for more socially-relevant and democratic approaches to research that address pressing social and environmental problems, support for community-based participatory research is on the rise in many parts of the world. A range of examples from community-controlled to collaborative is included below.

2.8.1 Biocultural mapping projects

2.8.1.1 Hokotehi Moriori Trust (Rekohu-Chatham Islands) has embarked on a comprehensive program of recording, protecting and managing Rongomaiwhenua-Moriori cultural heritage, taonga (precious treasure), taputapu (tools or means) , waananga (experience) , matauranga (knowledge) and matatau (expertise) on all the Chatham Islands. The research programme is informed by a literature review, archaeological land-base survey, anthropological analysis and recording of oral histories. It includes the development of a cultural heritage landscape database. The research question that underpins this project is “how did Rongomaiwhenua-Moriori live on Rekohu-Chatham Islands before the arrival of others.” (Cracknell 2006).

2.8.1.2 Tmix^w Research (British Columbia, Canada) is an Indigenous research organization that undertook community-controlled ethnobotany and cultural mapping projects at the interface of traditional knowledge and western science. A combination of western scientific and Indigenous scientific worldviews was used to develop methods and policies to protect and maintain custodianship of Nlakapmx traditional knowledge. This included: fluent language speakers as researchers on the project to original meanings and ensuring interpretations were not compromised; developing relationships with corporations in the natural resource sector to advise them of their obligation to consult before any extractive activities took place; using a community archaeology team to perform impact assessments and overviews; basing tools for engagement on Nlakapmx

“social policies” or protocols, and applying these to the development of “Memorandum of Agreement” and an “Agreement to Participate”; using Geographic Information Systems (GIS) to capture and record Nlakapmx Elders knowledge and using a “circular process” to collect and verify the data; developing a database that could hold both spatial and non-spatial data to address community issues and ensure stringent security measures in place to prevent compromising community information (Miller 2006).

2.8.1.3 The conservation value of sacred sites of Indigenous peoples of the Arctic: A case study in Northern Russia. Partnership research between the Conservation of Arctic Flora and Fauna (CAFF), the Russian Association of Indigenous Peoples of the North (RAIPON) and with funding from the Danish Environmental Protection Agency (DEPA) to document the cultural and biological significance of and status Indigenous peoples’ sacred sites in the North, and explore protection measures. Indigenous research teams worked in collaboration with local authorities, research institutions and Indigenous communities for two case studies based in the northwest part of Siberia with the Yamal-Nenets Autonomous Okrug, and the Russian Far East with the Koryak Autonomous Okrug. Reported as a preliminary effort only, the project documented almost 150 sacred sites and accompanying spiritual and other cultural values attached to the surrounding environment. Building capacity of the research teams to ensure standardized approaches, identifying effective action research methodologies, and overcoming logistical challenges related to large geographical distances were some of the issues addressed in the project. Safeguard measures to protect knowledge and information, such as transparency with participants and tiered levels of information access, were discussed and addressed to the best of the ability of the research teams and project partners. Policy dialogue with regional leaders as well as other stakeholders (protected area managers, mining companies, scientists) was seen as an integral part of the research agenda. Strengthening Indigenous grassroots involvement in managing Indigenous heritage in parallel with policy dialogue was viewed as vital in effecting protective legislation and policy (Conservation of Arctic Flora and Fauna, 2004).

2.8.2 Community-based health and environmental projects led by the Russian Association of Indigenous Peoples of the North (RAIPON)

2.8.2.1 Local health and environment reporting by Indigenous peoples in Russian Arctic, a pilot survey headed by the Russian Association of Indigenous Peoples of the North (RAIPON) conducted in partnership with the Global Resource Information Database (GRID-Arendal), which is a United Nations Environment Programme (UNEP) centre. The study involved use of questionnaires to assess the capacity of Indigenous peoples of the North, Siberia and Far East to observe and register physical environmental changes interfering with their traditional way of life and well-being. The study found the main driving forces and transformations leading to the negative impacts on traditional lifestyle were linked with poaching, forest fires, tourism, commercial logging, illegal clearing of forests for firewood (due to fuel deficiency), industrial water pollution and contamination of local fish stocks, and decrease in harvests of wild plant and animals. The study concluded that the capacity of the Indigenous peoples to observe and register

physical environmental changes interfering with their traditional lifestyle was outstanding and could be effectively applied in environmental impact assessments, social and ecological monitoring, elaboration of the local programs of sustainable development and the regional environmental policy (RAIPON 2002).

2.8.2.2 Indigenous people's traditional knowledge about disaster management, the first project in Russia to study and learn from Indigenous people's traditional knowledge about disaster management, conducted in 2005 by RAIPON in partnership with the Division of Environmental Policy Implementation of the UN Environment Programme (UNEP) and UNEP/GRID-Arendal. The study was based on interviews with over 200 Indigenous peoples in two regions including the Nenets Autonomous Okrug (NAO) and Kamchatka. The aim was to document how individuals perceive and manage natural disasters and extreme weather events, such as blizzards, strong winds, floods, icing and fires. The study also documented early detection and coping strategies and perceptions of short and long term impacts of weather events on biodiversity. The role of traditional knowledge in prevention, early warning, preparedness, response and mitigation of disasters was also assessed. For example, one coping mechanism identified was being in a constant state of preparedness for the disaster, which included the proper use of traditional tents and clothing. Observations of conditions and events that are considered to be warning signs were the main strategies described for early warning of natural disasters. The most common warning signs were related to animal behaviour and to appearance of the sky (clouds, moon, sun, etc). Information on attitudes to traditional knowledge, knowledge transfer, and disasters was also documented.

The study concluded that Indigenous peoples of the Russian North continue to apply traditional knowledge in detecting and mitigating negative consequences of natural disasters. Challenges in transferring traditional knowledge between generations were identified and it was concluded that disseminating information related to traditional knowledge on disaster management among the Northern indigenous peoples in addition to other groups in Russia and globally would be valuable (RAIPON 2005).

2.9 Supportive structures for Indigenous community-based management and co-management

A wide diversity of formal and informal structures exist in support (to varying degrees) of community-based management of local biodiversity. Examples of Indigenous community-based management and co-management arrangements concerning water-based and land-based biological resources are increasing in many parts of the world. However, there is significant variation in the role of Indigenous peoples in such arrangements, depending on if the goal is biodiversity management and conservation only, or if self-government negotiations are involved. Degrees of power-sharing also vary but the recognition of customary laws and practices and traditional institutions for decision-making are core elements of Indigenous community-based arrangements (Borrini-Feyerabend et al. 2004).

2.9.1 Regional Biodiversity Committees

Regional structures that support local involvement in biodiversity decision-making are

one mechanism for participation that can enable Aboriginal people to give comprehensive input into environmental initiatives. In Australia, numerous regional advisory committees exist, with the assumption that the potential for local biodiversity protection is higher when there is devolution of decision-making closer to the level that biodiversity exists. Regional bodies are both an opportunity for Aboriginal people to steer their own involvement in the management of natural resources, local biodiversity and cultural heritage, and a mechanism for government bodies to meet obligations to involve Aboriginal people in the process of consultation. However, a key to successful structures is representation that reflects unique and diverse people-place relationships throughout different regions, since one Aboriginal community cannot speak for another group, even if from the same area. Three Australian examples are included below.

2.9.1.1 Richmond Regional Vegetation Committee, established in 1998 under the Native Vegetation Conservation Act (1997). The Committee has two local Aboriginal representatives who also sit on a related Aboriginal Liaison Task Group created to maximise Aboriginal involvement in the development of a Richmond regional vegetation management plan, and identify potential problems and solutions with Aboriginal involvement (Schnierer, et.al. 2001).

2.9.1.2 Lake Victoria Advisory Committee, established by the Murray-Darling Basin Commission in 1996 to assist in balancing the cultural, spiritual, social, economic and environmental values of the lake with the need to use Lake Victoria as a major water storage. Establishing the Lake Victoria Advisory Committee, with a majority of local Barkindji elders, formalised the Aboriginal elders' role in decision-making about the management of their heritage at Lake Victoria. (Lennon 2006).

2.9.1.3 Walgett Regional Planning Committee, which was preceded by the formation of the Namoi Aboriginal Resource Committee, and formed through community meetings facilitated by the Department of Land and Water Conservation. The Namoi Aboriginal Resource Committee had diverse functions focused on natural resource management, and a primary role in providing a consultative group in each region that truly represented the local Aboriginal community, including traditionally affiliated people, and those who live out of their traditional country (Schnierer, et.al. 2001).

2.9.2 Partnership Approach for Sustainable Harvest of Turtles and Dugongs

A Partnership was established in 2005 between the Australian, Western Australian, Northern Territory and Queensland Governments, the Torres Strait Regional Authority, Great Barrier Reef Marine Park Authority, and relevant Aboriginal and Torres Strait Islander communities. The Partnership is a forum to provide advice and expertise (particularly regarding traditional knowledge of the Indigenous members) to the Natural Management Resource Ministerial Council for use in developing and implementing management measures to ensure the sustainable harvest of turtles and dugongs by Aboriginal and Torres Strait Islander peoples. The Partnership approach was developed by the Marine And Coastal Committee of the Natural Resource Management Ministerial Council.

The core goal is ensuring the conservation and protection of turtles and dugongs to enable the continuation of sustainable Indigenous harvest. The Partnership operates on a “roving” basis with partnership meetings held in different regions and hosted by Traditional Owner representative organisations. Issues and recommendations identified at the regional scale are communicated to Government at the national level. Participation in the Partnership has the flexibility to expand as needed to address regional and local issues, with membership comprised of on-going members, key champions/ambassadors, and regional/local participants. The operational model is based on: improving the information base available to Indigenous communities for managing the sustainable harvest of turtles and dugongs; respecting Indigenous and non-Indigenous knowledge and management; improving education and awareness; identifying and addressing the economic, social and cultural factors that may contribute to unsustainable harvest levels; and protecting “Sea Country Resources” (Natural Management Resource Ministerial Council 2006; S. Schnierer, personal communication to K. Bannister, November, 2006).

2.9.3 The Gwaii Haanas National Park Reserve and Haida Heritage Site

(http://www.pc.gc.ca/pn-np/bc/gwaiihaanas/index_e.asp)

The *Gwaii Haanas Agreement* established in 1993 is a unique agreement between the Council of Haida Nations and the Government of Canada that acknowledges the existence of two distinct but equal land designations for Gwaii Haanas on Haida Gwaii (Queen Charlotte Islands located off the west coast of Canada) - as both a National Park Reserve and a Haida Heritage Site. The agreement provides for an Archipelago Management Board (made up of two Haida representatives and two Parks Canada representatives) to co-manage the archipelago land-based resources based on consensus decisions that take into account Haida values and concerns. Employment opportunities have also been created by the Park itself (more than 50% of Park staff is Haida people. For example, trained Haida Gwaii Watchmen serve as guardians of culturally significant sites and educate visiting tourists about the eco-cultural heritage of the area. There are also provisions in the agreement to create a marine protected area, proposed as the Gwaii Haanas National Marine Conservation Area, which would have a co-management arrangement similar to that of the park reserve and heritage site.

2.9.4 Tado Cultural Ecology Conservation Program (Indonesia)

(<http://www.ecosea.org/culturalecology/tcecp.html>)

In partnership with the Ethnobotanical Conservation Organisation for South-East Asia (ECO-SEA), Tado Cultural Ecology Conservation Program is the first biocultural diversity research and conservation effort in Eastern Indonesia to be fully administered and implemented by an Indigenous community. Fifteen research associates are on staff, working on individual research projects including surveys of medicinal plants and ethnobotanical knowledge, traditional foods, community nutrition, edible insects, heirloom rice cultivars, and Tado genealogy, history, and cultural practices (ECO-SEA n.d.).

2.10 Creation of new institutions to govern research

2.10.1 International Institute on Traditional Knowledge

A feasibility study by the United Nations University – Institute of Advanced Studies to establish an International Institute on Traditional Knowledge in Australia found that such an Institute could address a gap in the United Nations University programme and make an important contribution to the challenges facing traditional knowledge. United Nations University anticipates launching a pilot phase of the Institute due to commence in 2007. Key pilot themes and activities identified include: *Traditional Knowledge in a Changing World* – The impact of climate change on the traditional knowledge and sustainable livelihoods of Indigenous peoples; *Traditional Knowledge and Other Systems of Thought* – Indigenous peoples and traditional knowledge for water management; *Supporting the Empowerment and Capacities of Traditional Knowledge Holders* – Information and policy analysis for indigenous and local communities on emerging issues in traditional knowledge discussions in international fora (United Nations University 2006).

2.10.2 Nunavik Research Center in Kuujuaq

(<http://www.itk.ca/environment/tek-itk-mandate-research.php>)

A research facility, developed in the north by Inuit communities and organizations. The Center plays an active and expanding role in bringing the benefits of research to all of Nunavik and in helping to build Inuit scientific capacity based on the integration of both Inuit knowledge and western science. The research center is based on five main objectives: To identify the research needs and priorities of the Nunavik Inuit and develop a relevant and effective program of studies; To establish a set of principles and guidelines to govern Inuit participation in all phases of research, and recognize the intrinsic value and the scientific importance of Inuit knowledge to the future success of northern science and research; To encourage Inuit participation in scientific work through programs of training and education, and foster the exchange of knowledge and skills through the development of a cooperative working relationship between Inuit and non-native researchers; To establish a database and expertise within Makivik Corporation to be used to inform decision-makers, help in the formulation of policies and programs related to northern development and assist Inuit communities and their organizations; To provide a center capable of conducting precise scientific work on the testing and measurement of toxic substances.

3 CONCLUSIONS

The sample size and geographic scope covered in this preliminary study are limited and draw heavily on North American examples, nevertheless it is clear that a wide range of innovative and sophisticated approaches and examples of legal, non-legal and other practical tools have already been developed by Indigenous organisations, Indigenous communities and those working in close collaboration with Indigenous peoples to facilitate the formidable task of simultaneous protection and application of traditional knowledge and expertise in biodiversity conservation and management. In most cases, it is too early to assess the direct impact and effectiveness of these tools and mechanisms on maintaining biodiversity. However, it can be reasonably assumed that wider use and further evolution of these types of approaches and tools – and the underlying premise upon which they are based - will lead to fundamental changes in the ways biodiversity is conceptualised, assessed and managed for conservation purposes and the benefit of all life forms.

Returning to the key questions underpinning this study, what has been revealed about how *can* and how *should* traditional knowledge and expertise be mobilized for decision-making on biodiversity conservation and management? Some basic conclusions are that a pragmatic or linear approach to incorporating traditional knowledge and expertise into dominant western scientific and legal paradigms – without due consideration and understanding of cultural diversity as inextricably linked to biological diversity - is not only inadequate, but potentially detrimental to both biological diversity and the Indigenous, traditional and local communities whose existences and well-being are interdependent with biological and ecological systems. More widespread use of the term “biocultural” in conjunction with “biological” may assist in fostering a needed expansion in awareness, particularly among some of the scientific and policy-making communities who may not yet see the reciprocal nature of direct and indirect biological and cultural interconnections.

The diverse range in types of tools – targeting new ways of working together, managing information, and managing biodiversity – speaks to a parallel diversity in community needs, priorities, and capacities. Importantly, no one-size-fits-all solution will or can emerge for how traditional knowledge and western science can be brought together in a synergism founded on complementarity, which ultimately is based on mutual respect for difference. Common themes that emerge from the scan include: needs for access to and exchanges of information, needs for models and templates that have been tested on-the-ground, guidance on how to engage and disengage in ethical and equitable relationships (both within and outside of communities), needs to store and manage vast amounts of information in various forms and with built-in mechanisms for multilevel or tiered access and degrees of stringency in control of information flow. While some examples included illustrate the highest levels of community control achievable, most are premised on active community participation and full and active representation, working and making decisions in collaboration, co-creating and co-managing new knowledge and innovations – and ultimately, sharing power. Aside from significant capacity issues in most cases, beyond all other hurdles to mobilizing traditional knowledge and expertise for decision-making on biodiversity is the inequity in distribution of power that is inherent to western political, academic and economic institutions, thereby standing in the way of governments, academic scientists, policy makers and others seeking meaningful collaborations with Indigenous organisations and communities.

New knowledge and innovations that directly result from collaboration and co-management arrangements will often emerge from a combination of traditional and academic systems of knowledge acquisition. Defining ownership and rights to co-created knowledge and hybrid innovations is especially important in these situations, and requires forethought, an investment in appropriate processes of communication and negotiation, and perhaps legal advice at initial planning stages.

Certainly one cannot conclude that all biodiversity science should be community-controlled, community-based or participatory. Likewise, nor can or should all biological and cultural resources be co-managed. Knowledge acquisition about biodiversity needs to take place in a range of different forms and at multiple spatial and temporal scales. A spectrum of activities and expertise is required and some of these are more amenable and appropriate than others for contributions of Indigenous and local knowledge holders and practitioners. However, this decision of “fit” (i.e., who is an expert and which expertise is needed for which activity) has most often been made by western-trained non-Indigenous specialists and decision-makers, without the input or even awareness of most Indigenous or local actors. What is needed across the spectrum, by *all* those involved in biodiversity science and policy-making, is a commitment at individual and institutional levels (including supporting and enabling appropriate means) to open communication so that the appropriate forms, times and spaces for contributions of Indigenous and local peoples is more likely identified and implemented.

Within the context of academic research, for example, Indigenous involvement ought to be considered carefully at the conceptual and proposal development stage, ensuring adequate lead time and budget categories are built in to accommodate appropriate levels of participation. Substantial lessons have accumulated from multi-disciplinary and community-based participatory research experiences over the last couple of decades and these can inform biodiversity research program design in beneficial ways. Even for biodiversity research that relies on techniques or technologies that make community involvement impossible or irrelevant, the understandings or applications resulting from the research may be of interest and use to Indigenous communities and organisations. In such cases, translation and communication of findings in locally useful and meaningful forms are key elements in democratizing the research enterprise.

In this regard, a functional role for IMoSEB could involve building a portfolio of resource people and materials and then using these to share resources (e.g., practical examples, lessons, structures and processes, templates) and facilitate connections between biodiversity research proponents and appropriate Indigenous experts as “advisors” on research design and implementation, ultimately leading to “good practice” standards and tools to assess options and enable more appropriate Indigenous and local involvement. The idea of “good practice” standards would need to include explicit guidance on use of traditional knowledge already found in the published literature but collected without any specific agreement with Indigenous peoples, as well as on traditional knowledge held in databases that are not under the direct or indirect control of Indigenous and local communities, but managed by research institutions, national archives, non-government organisations, commercial organizations and international bodies. As Tobin (n.d.,) points out, traditional knowledge gathered without free and prior informed consent but now

considered as part of the public domain “poses serious problems for those wishing to protect and control the access to and use of traditional knowledge for spiritual, cultural, economic and other purposes. Such problems are exacerbated as biodiversity conservation enters the era of the knowledge economy.”

Contemporary approaches and tools that facilitate links with scientific expertise and transfer of technology, are necessarily going to be those that support traditional resource rights and mechanisms of intellectual property protection, such as ensuring: free and prior informed consent of knowledge holders and source communities; that knowledge linked to biodiversity is traceable to its origin, and that original knowledge holders and source communities retain rights and due credit to their knowledge, practices and innovations. Each of these is a small step along the power continuum, toward respectful and meaningful partnerships in research, management and decision-making, and toward serious scientific and policy solutions to maintaining the diversity of life on earth.

4. RECOMMENDATIONS

Recommendations on institutional design elements and functions that would best serve Indigenous organizational needs and priorities in the creation of an International Mechanism Of Scientific Expertise on Biodiversity (IMoSEB) are summarized below.

1. IMoSEB should include experts and compilations of resources related to **curricula and educational strategies** aimed at scientists and the wider public (especially youth and young adults) to raise awareness and build understanding of biodiversity losses, and links between biological and cultural diversity. Wider use of the terms “biocultural” and “cultural heritage” should be promoted in discussions of biodiversity.
2. IMoSEB should promote the importance of **training** more Indigenous scientists and biodiversity managers.
3. IMoSEB should facilitate the development and promotion of a targeted strategy for **knowledge mobilization**, or **communication** and **translation** of existing science into useful and meaningful forms for civil society, Indigenous community uses, and decision-makers, policy-makers and governments involved in biodiversity conservation and management decisions.
4. IMoSEB should promote the need for, and support to the degree possible, **Indigenous community capacity-building** and **information sharing** as a responsibility linked with biodiversity research, conservation and management. It should be recognized that the intent to build bridges between western scientific and traditional knowledge systems is not enough because the cultural chasms are multi-dimensional so an appropriate “scale of investment” is needed.
5. IMoSEB should promote and facilitate **active partnership arrangements** in research, management, decision-making through information sharing and vetting of proposals by Indigenous experts when possible.
6. IMoSEB should support in principle, and facilitate to the degree possible, **devolution of decision-making** on local biodiversity (linked with capacity-building) closer to where biodiversity exists, *i.e.*, more control and responsibilities to local community.
7. IMoSEB should in good faith endeavour to have **Indigenous voices** represented directly and indirectly within the IMoSEB framework
 - with full and effective participation
 - using consensus-based selection processes for participation in national and international fora that have Indigenous representation at all levels (local, regional, national, international)
8. IMoSEB should support in principle, widely promote, and facilitate to the degree possible, **co-management arrangements** based on a shared rights and responsibilities framework.

9. IMoSEB should require (and encourage through education) scientists to **follow community protocols, policies and codes of conduct** where these have been developed.
10. IMoSEB should require (and encourage through education) scientists to enter into equitable partnerships and **follow external codes of conduct and ethical guidelines** that have been developed in collaboration with and are acceptable to Indigenous and local peoples, especially in cases where community protocols and policies have not been developed.
11. IMoSEB should support and encourage the **adoption of disclosures of origin** or other measures that can reduce the burden on Indigenous and local communities to document their knowledge.
12. IMoSEB should consider carefully, raise awareness, and develop “good practice” guidelines to address the direct and indirect **implications for traditional knowledge placed in the public domain**, and the **role of scientists** (intentionally or not) in facilitating misappropriation leading to injustices and biocultural harms.
13. IMoSEB needs to maintain an active awareness of discussions and decisions within **other international fora on traditional knowledge**, especially CBD Article 8j, so as to benefit from other fora and not over burden Indigenous representatives.
14. IMoSEB should promote awareness and understanding that **forestalling biodiversity loss requires reciprocal knowledge-sharing** (not just one-way knowledge use).
15. IMoSEB should promote awareness and understanding that **knowledge-sharing issues** (e.g., involving cultural appropriation) need to be taken seriously and solutions need to be based on a fundamental understanding of and **respect for the customary laws and cultural integrity** of Indigenous and local communities, as well as the **principle of free, prior informed consent**.
16. IMoSEB should **explicitly encourage the recognition of customary law** as a basis for the use of Indigenous community knowledge and resources, and the basis for equitable sharing of benefits arising.
17. The structure of IMoSEB should ensure **social scientific and cultural experts** (within academe and Indigenous and local communities) are included alongside natural scientific, economic and other expertise. A particular effort should be made to include **interdisciplinary researchers** working at the biocultural interface, such as ethnobiologists.

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