

# Nature-Culture Indicators and Knowledge Systems Resource Directory

## [Memorial University Indigenous Research Resources and Guides](#)

### **Synopsis:**

Memorial is committed to strengthening Indigenous research, including establishing methods to ensure appropriate consultation and engagement with Indigenous communities, NGOs and government leaders prior to and during the initial stages of research on both community-identified and outside researcher-led initiatives.

Whether Indigenous research is conducted by settler researchers or by Indigenous researchers, it is a focal point for expression, concern, attention and most importantly, action, for truth and reconciliation. Memorial recognizes the critical role of educators, researchers, and university administrators in the work of truth, reconciliation and a renewed relationship with Indigenous peoples, including with our own Indigenous faculty, staff and students. We recognize that research processes and results bear significantly on the lives of Indigenous students, families, communities and governments.

The resources on this webpage focus on research with, by, for, and on Indigenous peoples that emphasizes engagement based on understanding and respect. At the same time, we work to move beyond individual respect and understanding towards structural, ideological, institutional, and methodological change.

**Keywords:** Indigenous Research Agreement, Policy on Research Impacting Indigenous Groups, Primer on Indigenous Peoples and protocols in Newfoundland and Labrador

**Resource Type:** Website

**Focus:** Indigenous research guidelines, protocols, and example templates

**Region:** North America, Canada, Newfoundland and Labrador

**Language:** English

**Year:** 2020

**Citation:**

Resource entry updated: 2020-09-15

## [Food Sovereignty and Self-Governance: Inuit Role in Managing Arctic Marine Resources](#)

### **Synopsis:**

For thousands of years, Inuit have been part of the Arctic ecosystem. Inuit have thrived and built their culture rooted in values that shape the relationships they have held with everything within this ecosystem. Those values—including respect, collaboration, and sharing—all aid in supporting healthy and harmonious relationships and communities. A core element of Inuit culture that incorporates these values is hunting, gathering, and preparing foods. Discussions about food security require an understanding of the far-reaching implications of how issues of food security interact with culture, history, management systems, and world views. The interconnections between all peoples, wildlife, and the environment within the Arctic ecosystem directly influences food security, and food sovereignty is distinctly tied to food security.  
*continued*

**Keywords:** Indigenous food sovereignty; Self Governance; Inuit

**Resource Type:** Report

**Focus:** Community-based management; Self determination

**Region:** Arctic, Alaska

**Language:** English

**Year:** 2020

**Citation:** Inuit Circumpolar Council Alaska. 2020. Food Sovereignty and Self-Governance: Inuit Role in Managing Arctic Marine Resources. Anchorage, AK

Resource entry updated: 2020-09-14

### [Talanoa as empathic apprenticeship](#)

#### **Synopsis:**

Talanoa has been defined as ‘talking about nothing in particular’, ‘chat’ or ‘gossip’. It is within the cultural milieu of talanoa that knowledge and emotions are shared and new knowledge is generated. Talanoa has recently been taken up by development researchers and others as a culturally appropriate research method in Pacific contexts. However, talanoa is often treated as synonymous with ‘informal open-ended interviews’ and tends to gloss over the deep empathic understanding required in such exchanges. Highlighting the connection between talanoa and empathy is vital in ensuring that development practitioners and researchers are implicitly aware of the political dimensions, cultural appropriacy and socio-ecological impact of their research methods. This connection is also critical in illuminating how talanoa as a method may decolonise research in the Pacific, inform the decolonisation of research in other cultural contexts, and contribute to ethical and empowering development policy and practice. We will argue for the merits of what we refer to here as ‘empathic apprenticeship’: an intentional, embodied, emotional, and intersubjective methodology and process between the researcher and the participant. An empathic apprenticeship has the potential to enhance shared understandings between all human beings and is essential if talanoa is intended as a decolonising research methodology

**Keywords:** decolonising, empathic apprenticeship, empathy, Indigenous, methodology, Pacific, talanoa

**Resource Type:** Journal Article

**Focus:** Research Guidelines; Indigenous Research Frameworks; Indigenous methodologies

**Region:** Oceania, Fiji

**Language:** English

**Year:** 2014

**Citation:** Farrelly, T., & Nabobo-Baba, U. (2014). Talanoa as empathic apprenticeship. *Asia Pacific Viewpoint*, 55(3), 319-330.

Resource entry updated: 2020-09-14

### [Mātauranga Framework](#)

#### **Synopsis:**

We commissioned our Mātauranga Framework three years ago to help our decision-makers to understand, test and probe mātauranga when it is presented in evidence. Mātauranga is broadly defined as a body of knowledge, experience, values and philosophy of Māori (Mead 2016, Winiata 2001). The primary goals of our Mātauranga Framework are to: enable well-informed decision-making, ensure the EPA understands the issues and implications of mātauranga for its decision-making processes, and increase the understanding of mātauranga across the EPA. The mātauranga programme’s methodology will remain underpinned by the ongoing guidance of Ngā Kaihautū Tikanga Taiao, Ngā Parirau o te Mātauranga, and Matakīrea. This will continue to ensure integrity from a tikanga Māori perspective. While the Mātauranga Framework is a new initiative for us here at the EPA, as a routine part of our work, Kaupapa Kura Taiao (KKT) – our Māori Policy and Operations Group – provides guidance to iwi and applicants during the engagement process. Alongside its business groups, KKT also raises awareness with iwi of the role of the EPA and on how to engage and participate in the decision-making processes of the EPA. Our National Māori Network, Te Herenga, is a forum for kaitiaki and environmental resource managers to come together and discuss important environmental issues. A waka hourua, or double-hulled canoe, symbolises our approach to mātauranga. The two hulls represent two knowledge systems – mātauranga and science – moving together in the same direction. The interwoven sails represent the information, evidence, advice, and risk assessment that inform our decisions.

**Keywords:** Aotearoa New Zealand Environmental Protection Authority

**Resource Type:** Website, Video, and Reports

**Focus:** Indigenous and local knowledge; National decision-making; Multiple evidence decision-making; Research guidelines

**Region:** Oceania, Aotearoa New Zealand

**Language:** English

**Year:** 2020

**Citation:**

Resource entry updated: 2020-09-03

[Community Biocultural Protocols: Building Mechanisms for Access and Benefit Sharing among the Communities of the Potato Park based on Customary Quechua Norms](#)

**Synopsis:**

In this case study, Asociación ANDES (Peru), the International Institute for Environment and Development (IIED), and the Potato Park present the results of the project "Protecting Community Rights over Traditional Knowledge: Implications of Customary Laws and Practices." This project included the development and negotiation of the Inter-community Agreement for Equitable Access and Benefit Sharing, which proposed an innovative approach to benefit sharing based on the use of indigenous customary laws, norms and practices. The concept of Biocultural Systems (BCS)<sup>1</sup>, which understands processes, resources, knowledge and all beings as reciprocal parts of an indivisible environment, was a guiding theory in this initiative. Accordingly, the inter-community agreement took the form of a Biocultural Protocol.

**Keywords:**

**Resource Type:** Report

**Focus:** Biocultural protocols, Research guidelines

**Region:** Andes, Peru

**Language:** English

**Year:** 2011

**Citation:** IIED. 2011. "Community Biocultural Protocols Building Mechanisms for Access and Benefit Sharing among the Communities of the Potato Park based on Customary Quechua Norms".

Resource entry updated: 2020-09-03

[Biocultural Community Protocols](#)

**Synopsis:**

Biocultural community protocols (BCPs) articulate community-determined values, procedures and priorities. They set out rights and responsibilities under customary, state and international law as the basis for engaging with external actors such as governments, companies, academics and NGOs. They can be used as catalysts for constructive and proactive responses to threats and opportunities posed by land and resource development, conservation, research, and other legal and policy frameworks.

**Keywords:** Biocultural Community Protocols

**Resource Type:** Website, Reports, Research guidelines, guidebooks

**Focus:** Biocultural Community Protocols, Community Engagement

**Region:** Global, Africa

**Language:** English/Spanish

**Year:**

**Citation:**

Resource entry updated: 2020-09-03

[Moloka'i Climate Change Collaboration Lessons Learned](#)

**Synopsis:**

*Moloka'i Lessons Learned* published by Ka Honua Momona is a very thorough and thoughtful community engagement protocol intended to help scientists and resource managers work with communities throughout Hawai'i and the Pacific. It serves as a reminder that strengthening and creating partnerships is about building trust, honoring cultural protocols, and listening to traditional ecological knowledge before engagement.

**Keywords:** Ka Honua Momona, Pacific Islands Climate Change Cooperative

**Resource Type:** Report

**Focus:** Research guidelines, Community protocols, Climate change planning

**Region:** Oceania, Hawai'i

**Language:** English

**Year:** 2015

**Citation:** Ka Honua Momona. 2015. "Moloka'i Climate Change Collaboration Lessons Learned". <http://piccc.net/piccc/wp-content/uploads/2015/05/MCCC-Lessons-Learned.pdf>

Resource entry updated: 2020-09-03

[Capturing and Sharing Knowledge for Community-Based Marine Conservation: The Pacific Way](#)

**Synopsis:**

For this pilot project, we interviewed 20 veteran and emerging community-based marine conservation leaders who shared personal insights and revealed hard-won knowledge about how to build conservation partnerships that deliver lasting results. From these interviews, we extracted powerful, interconnected insights and lessons that captured knowledge so intuitive it is rarely acknowledged or codified. This valuable tacit knowledge is difficult to articulate and capture, yet essential to share with a new generation of conservation professionals if we hope to advance and accelerate conservation across the region. This pilot project will fully achieve its goals if it also inspires others to champion this essential work to capture institutional knowledge and commit to actively share such knowledge within and across their teams and networks. Integrating the powerful habit of reflection into a variety of conservation settings will accelerate learning and elicit the often unspoken wisdom and contributions of the diverse people, organizations, and cultures that make lasting conservation possible.

**Keywords:** The Nature Conservancy

**Resource Type:** Report

**Focus:** Community-based management; Community engagement; Indigenous and local knowledge

**Region:** Oceania

**Language:** English

**Year:** 2017

**Citation:** The Nature Conservancy, Hawai'i Marine Program. 2017. "Capturing and Sharing Knowledge for Community-Based Marine Conservation: The Pacific Way".

Resource entry updated: 2020-09-03

[How Traditional Tribal Perspectives Influence Ecosystem Restoration](#)

**Synopsis:**

The hundreds of Indigenous tribes in the United States harbor diverse perspectives about the natural world, yet they share many views that are important for ecosystem restoration efforts. This paper features examples of how such views have guided ecosystem restoration through partnerships between tribal communities and the U.S. Forest Service in the western United States. Traditional perspectives have influenced restoration by deepening the understanding of reference conditions, expanding consideration of system dynamics, and guiding treatment based upon ethical principles and beliefs. More holistic perspectives may enhance restoration success by encouraging positive psychological and social effects that help sustain community efforts. Guided by traditional perspectives, restoration activities can reveal evidence of past human engagement with the land, which further illustrates the need and opportunity for restoration. Traditional perspectives can encourage more integrative, ethical, and self-reinforcing restoration that will benefit present-day tribal and non-tribal communities.

**Keywords:** Ecological restoration—Ethics—Traditional ecological knowledge—Native Americans—Cultural values

**Resource Type:** Journal Article

**Focus:** Ecosystem Restoration, Indigenous and local knowledge

**Region:** North America

**Language:** English

**Year:** 2020

**Citation:** Long, J. W., Lake, F. K., Goode, R. W., & Burnette, B. M. (2020). How Traditional Tribal Perspectives Influence Ecosystem Restoration. *Ecopsychology*.

Resource entry updated: 2020-06-16

[Wisdom Traditions, Science and Care for the Earth: Pathways to Responsible Action](#)

**Synopsis:**

Special Issue Overview: This is a special issue of the journal *Ecopsychology*. Its purpose is to help awaken, re-awaken, and reinforce the recognition of many people throughout the world about the relevance and power of wisdom traditions, including those of Indigenous peoples. Those traditions are congruent with the best of current science and can help guide humans throughout the world to care for and with the Earth in healing ways. This combination of Indigenous and other ancient ways of knowing with insights from the sciences offers an urgently needed way of seeing, being, and doing that forms pathways to responsible action to help heal us all—individuals, communities, living systems, and the Earth that supports all of life.

**Keywords:**

**Resource Type:** Journal Article

**Focus:** Indigenous and local knowledge

**Region:** Global

**Language:** English

**Year:** 2020

**Citation:** Charles, C., & Cajete, G. A. (2020). *Wisdom Traditions, Science and Care for the Earth: Pathways to Responsible Action*. *Ecopsychology*.

Resource entry updated: 2020-06-16

[Water-Womb-Land Cosmologic: Protocols for Traditional Ecological Knowledge](#)

**Synopsis:**

As the granddaughter of Kickapoo, Comanche, and Macehual peoples who migrated throughout the present-day United States and Mexico, I am most concerned with what happens as our traditional ecological knowledge changes when it is taken out of the spaces and relationships over time that we have developed with our lands, our waters, our medicines. I raise questions regarding cultural appropriation and the consequences that emerge when Indigenous knowledge becomes generalizable knowledge. Some of the key questions explored in this article include the following: What relationships surround the knowledge of the Original Peoples? Why is it that when traditional knowledge is taken out of its original relations newcomers learn the plant knowledge and then ask, "What money can I make from this knowledge?" How can we factor in the realities of colonization that result in the original peoples of a place becoming disconnected from traditional knowledge? To situate this discussion, I explore water knowledge from my perspective as a traditional birth attendant and traditional herbalist and an Indigenous scholar who teaches courses on Indigenous medicine. I discuss how the one signifier of water can have multiple existences, meanings, and forms. In contrast to deep knowledge that has been carried across time by Indigenous peoples, I call into question knowledge that is based on profit rather than on seeking a deep relationship with the environment that allows balanced relationships with the natural world—and the knowledge that those relationships create—to continue. Discussion also focuses on some key values and recommended protocols for traditional knowledge exchange, including (a) Acknowledgement, (b) Accountability, (c) Accessibility and Affordability, (d) Relatedness, and (e) Reciprocity.

**Keywords:** Traditional ecological knowledge—Indigenous knowledge—Indigenous medicine.

**Resource Type:** Journal Article

**Focus:** Traditional Ecological Knowledge, Cosmologies

**Region:** North America

**Language:** English

**Year:** 2020

**Citation:** Gonzales, P. (2020). *Water-Womb-Land Cosmologic: Protocols for Traditional Ecological Knowledge*. *Ecopsychology*.

Resource entry updated: 2020-06-16

[Harvesting Good Medicine: Internalizing and Crystalizing Core Cultural Values in Young Children](#)

**Synopsis:**

Indigenous Alaskans face many obstacles as they attempt to navigate what it means to be a member of a tribal group. Pressures to assimilate into the global society, loss of access to traditional lands, and dwindling subsistence resources due to climate change are aggravating factors in the cultural identity development of Indigenous Alaskans. Experiences on the land such as fishing, picking berries, and harvesting edible and medicinal plants with family members and other culture-bearers are known to play a mitigating role in resisting assimilative pressures, yet little is known about how such experiences contribute to a child's growing sense of self and belonging. In this research study, the authors sought to untangle the nuanced experiences of young children as they engaged in the cultural activity of harvesting a medicinal plant in Southeast Alaska. Through the use of wearable cameras, the authors captured video footage from the perspectives of 5- to 6-year-old kindergarten children from a small Alaska Native village in Southeast Alaska as they learned lessons on and from the land, from adult culture-bearers, and from peers. As the authors analyzed the videos, themes emerged that pointed to small interactions with adults, peers, and the environment that positioned the children to internalize and crystalize core cultural values and thereby strengthen their own cultural identity development.

**Keywords:** Cultural values—Identity development—Sensory tours—Indigenous Alaskan children

**Resource Type:** Journal Article

**Focus:** Cultural Identity, Youth, Cultural Values

**Region:** North America (Alaska)

**Language:** English

**Year:** 2020

**Citation:** Lunda, A., & Green, C. (2020). Harvesting good medicine: Internalizing and crystalizing core cultural values in young children. *Ecopsychology*, 12(2), 91-100.

Resource entry updated: 2020-06-16

[Indigenous Nature Connection: A 3-Week Intervention Increased Ecological Attachment](#)

**Synopsis:**

Humanity as a species has spent most of its existence moving with instead of against nature as found among Indigenous or First Nation communities traditionally. Yet most members of modern societies feel disconnected from nature, which is attributed to a lack of connection and respect toward the more than human. We developed assessment tools for ecological attachment from an Indigenous perspective, validating measures (n = 695) of ecological empathy (feeling concern for more-than-human entities), ecological mindfulness (mindful attitudes and behaviors toward living things), and green action (conservation behaviors). Then we conducted a 3-week behavioral intervention with university students (n = 47) with two conditions expected to increase ecological mindfulness: (1) Indigenous ecological attachment (e.g., acknowledge the trees you pass today) by which ecological empathy was expected to increase; (2) conservation behaviors (e.g., turning off lights) by which green action was expected to increase. In session one, participants completed key measures, read texts related to their condition (facts, a poem, and an essay), and selected condition-relevant actions to draw from and perform in the following 3 weeks (one selected per day). In session two, measures were retaken. In comparison with a control group, MANOVA revealed that hypotheses were supported: Only the ecological attachment group increased on ecological empathy, only the conservation group significantly increased on green actions, and both intervention groups increased on ecological mindfulness.

**Keywords:** Indigenous worldview—Behavior change—Ecopsychology—Biophilia— Connection to nature

**Resource Type:** Journal Article

**Focus:** Nature-Culture; Assessment; Ecological Attachment

**Region:** Global

**Language:** English

**Year:** 2020

**Citation:** Kurth, A. M., Narvaez, D., Kohn, R., & Bae, A. (2020). Indigenous Nature Connection: A 3-Week Intervention Increased Ecological Attachment. *Ecopsychology*, 12(2), 101-117.

Resource entry updated: 2020-06-16

### [Environmental Views of the Eastern Band of Cherokee Indians](#)

#### **Synopsis:**

This exploratory study sought to better understand the environmental views of the Eastern Band of Cherokee Indians (EBCI) through an intergenerational approach. The primary research question guiding this study was, What are the environmental views of the EBCI? The secondary research question was, Is there a generational difference in the environmental views of the EBCI? The study employed a qualitative approach using participatory methods with 14 participants ages 16–85. Six themes emerged, including environmental philosophies, nature's value, human-nature relationship, influences, environmental concerns, and cultural loss. Findings indicated family and culture as significant influences on environmental views and a generational difference in the environmental philosophies of participants. These findings have important implications for environmental education in the EBCI community. Recommendations for environmental education practice include integrating multiple generations into programs where possible, incorporating critical thinking activities about traditional environmental philosophies, and utilizing place-based educational strategies to reinforce students' connection to their community and culture. Future, similar research is recommended to further understand the environmental views of the EBCI.

**Keywords:** Environmental education— Cherokee—American Indian— Intergenerational study—Environmental views.

**Resource Type:** Journal Article

**Focus:** Indigenous worldviews

**Region:** North America (Cherokee Nation)

**Language:** English

**Year:** 2020

**Citation:** Hines, E., Daniel, B., & Bobilya, A. J. (2020). Environmental Views of the Eastern Band of Cherokee Indians. *Ecopsychology*, 12(2), 118-127.

Resource entry updated: 2020-06-16

### [Trees in Early Irish Law and Lore: Respect for Other-Than-Human Life in Europe's History](#)

#### **Synopsis:**

In contrast to modern Western society's treatment of plants as nonsentient beings to be used or killed at will for our own benefit, the complex legal system used in Ireland from prehistory up until the 17th century delineated penalties for mistreating trees that were not dissimilar to the penalties for mistreating other humans. The early Irish relationship with trees as described in Brehon Law and extant lore was not only utilitarian but also deeply spiritual and tied to the peoples' identity. Brehon Law provides an example from European history that illustrates traditional ecological knowledge (TEK) and animistic relationships with the more-than-human world of nature. This paper explores some ecopsychological and environmental benefits of applying its principles today.

**Keywords:** Worldviews— Spirituality—Druid—Animism—TEK—Rights of nature

**Resource Type:** Journal Article

**Focus:** Connection to Nature

**Region:** Europe (Ireland)

**Language:** English

**Year:** 2020

**Citation:** Fields, T. R. (2020). Trees in Early Irish Law and Lore: Respect for Other-Than-Human Life in Europe's History. *Ecopsychology*, 12(2), 130-137.

Resource entry updated: 2020-06-16

[Indigenous Knowledge and Techno-Scientific Modernity: “Hierarchical Integration” Reconsidered](#)

**Synopsis:**

With growing awareness of the urgent need for action on environmental problems, increasing attention is being given to how wisdom traditions and Indigenous cultures might usefully inform and engage with Western scientific knowledge. However, a significant barrier to this for many Western scholars—including environmental scholars—remains the problem of scientism: the assumption that Western science offers the definitive account of nature and reality. This paper seeks to reexamine one approach to tackling the problem, developed by Abraham Maslow and Theodore Roszak in the 1960s and 1970s. To address the problem of scientism, these authors developed the idea of “hierarchical integration”: a project that seeks to harmoniously and psychologically integrate modern scientific knowledge with other knowledge styles. In its mature form, it suggests that while Western scientific styles of knowledge undoubtedly provide invaluable information about the natural world, modern science requires integration within a much grander conception of knowledge and reality that also encompasses a magical apprehension of nature: that experienced reciprocity and felt ethical relationship with the animate Earth to which Indigenous and wisdom traditions have long borne witness. It is suggested that among many Indigenous people and cultures such experienced relations and sense of ethical reciprocity with the Earth have tended not to be so ruthlessly severed or diminished as they have been among many people in Western modernity. Hierarchical integration offers insights into the problem of scientism, for example by proposing that when scientific objectivity monopolizes people’s conceptions of knowledge at the expense of other experiential modes of knowing, then science becomes a cognitive pathology: a neurotic flaw that not only vitiates the humane potentials of Western science but may also be profoundly implicated in ecocide and the rape of the Earth.

**Keywords:** Indigenous— Scientism—Objectification—Earth rape—Maslow—Roszak

**Resource Type:** Journal Article

**Focus:** Multiple Knowledge Systems

**Region:** Global

**Language:** English

**Year:** 2020

**Citation:** Coope, J. (2020). Indigenous Knowledge and Techno-Scientific Modernity: “Hierarchical Integration” Reconsidered. *Ecopsychology*, 12(2), 151-157.

Resource entry updated: 2020-06-16

[Food Sovereignty and the Rights of Indigenous Peoples \(International Indian Treaty Council 2020\)](#)

**Synopsis:**

In this policy brief by the International Indian Treaty Council (IITC, 2020), the authors share policies surrounding the definition of food sovereignty and human rights to food, in addition to relevant articles under the UN Declaration of the Rights of Indigenous Peoples (UNDRIP). They also explore obstacles and solutions posed by building alliances.

**Keywords:** Food Sovereignty

**Resource Type:** Policy Brief

**Focus:** Indigenous Rights, ILK, Policy and Management

**Region:** Global

**Language:** English

**Year:** 2020

**Citation:**

Resource entry updated: 2020-06-15



[La soberanía alimentaria y los derechos de los Pueblos Indígenas](#)

**Synopsis:**

In this policy brief by the International Indian Treaty Council (IITC, 2020), the authors share policies surrounding the definition of food sovereignty and human rights to food, in addition to relevant articles under the UN Declaration of the Rights of Indigenous Peoples (UNDRIP). They also explore obstacles and solutions posed by building alliances.

**Keywords:** Food Sovereignty

**Resource Type:** Policy Brief

**Focus:** Indigenous Rights, ILK, Policy and Management

**Region:** Global

**Language:** Spanish

**Year:** 2020

**Citation:**

Resource entry updated: 2020-06-15

[Assessing the sustainability and equity of Alaska salmon fisheries through a well-being framework](#)

**Synopsis:**

Salmon are intrinsic to health and well-being in Alaska, and sit at the center of myriad social, cultural, and spiritual practices, norms, and values. These practices and values are essential to living and being well in many communities in Alaska, but often remain invisible and unaccounted for in management contexts. This paper stems from the collective efforts of a cross-disciplinary, cross-cultural project team brought together as part of the State of Alaska's Salmon and People (SASAP) knowledge synthesis project. In this paper, we assess the sustainability and equity of Alaska salmon systems through a well-being framework. Key objectives include (1) defining and conceptualizing well-being in the context of Alaska salmon systems; (2) developing and assessing well-being indicators for Alaska salmon systems; and (3) evaluating how well-being concepts are currently incorporated into Alaska salmon management and suggesting improvements. We draw on specific examples to evaluate the application of well-being indicators as a tool to more effectively measure and evaluate social considerations, and discuss how to better integrate well-being concepts into governance and management to improve data collection and decision making. As part of this effort, we discuss trends and inequities in Alaska fisheries and communities that impact well-being, and tensions between equality and equity in the context of Alaska salmon management.

**Keywords:** Alaska Native; equity; fishing communities; governance; indicators; salmon; well-being

**Resource Type:** Journal Article

**Focus:** Well-being Framework, Indigenous and local knowledge, Sustainable Use

**Region:** Alaska

**Language:** English

**Year:** 2020

**Citation:** Donkersloot, R., J. C. Black, C. Carothers, D. Ringer, W. Justin, P. M. Clay, M. R. Poe, E. R. Gavenus, W. Voinot-Baron, C. Stevens, M. Williams, J. Raymond-Yakoubian, F. Christiansen, S. J. Breslow, S. J. Langdon, J. M. Coleman, and S. J. Clark. 2020. Assessing the sustainability and equity of Alaska salmon fisheries through a well-being framework. *Ecology and Society* 25(2):18. <https://doi.org/10.5751/ES-11549-250218>

Resource entry updated: 2020-06-10

[State of Alaska's Salmon and People: Well-being and Salmon Systems](#)

**Synopsis:**

Alaska salmon fisheries and fishing communities are marked by rich and diverse connections to place, work, and environment. Increasingly, they are also marked by inequities and loss in fishery access and participation. Criminalization and closures of subsistence fisheries are just two of the important *indicators* of social conditions for sustainable and successful salmon management in Alaska. This project aims to better understand and measure well-being to better inform management and ensure a more equitable and sustainable salmon future for Alaska.

[International organizations](#), [nations](#), and [specific regions and communities](#) increasingly recognize well-being as an integral goal of sustainable development. [Scientists](#) identify well-being as central to effective management of fisheries and marine ecosystems.

This project builds on these efforts and provides a path forward in defining and incorporating well-being measures into salmon governance and decision-making arenas. We developed objective, subjective, and relational indicators to better identify what promotes and what threatens well-being in Alaska's diverse salmon systems.

We especially considered well-being concepts inclusive of Indigenous people's priorities and perspectives.

**Keywords:** Domains of well-being, Indicators of well-being, Social and cultural contributions, Available Datasets

**Resource Type:** website

**Focus:** Indigenous Peoples and local communities, Connections to Place, Sustainable Use

**Region:** North America, Alaska

**Language:** English

**Year:** 2018

**Citation:**

Resource entry updated: 2020-06-03

[Working with indigenous, local and scientific knowledge in assessments of nature and nature's linkages with people](#)

**Synopsis:**

Working with indigenous and local knowledge (ILK) is vital for inclusive assessments of nature and nature's linkages with people. Indigenous peoples' concepts about what constitutes sustainability, for example, differ markedly from dominant sustainability discourses. The Intergovernmental Platform on Biodiversity and Ecosystems Services (IPBES) is promoting dialogue across different knowledge systems globally. In 2017, member states of IPBES adopted an ILK Approach including: procedures for assessments of nature and nature's linkages with people; a participatory mechanism; and institutional arrangements for including indigenous peoples and local communities. We present this Approach and analyse how it supports ILK in IPBES assessments through: respecting rights; supporting care and mutuality; strengthening communities and their knowledge systems; and supporting knowledge exchange. Customary institutions that ensure the integrity of ILK, effective empowering dialogues, and shared governance are among critical capacities that enable inclusion of diverse conceptualizations of sustainability in assessments.

**Keywords:** ILK, IPBES

**Resource Type:** Journal Article

**Focus:** Indigenous and local knowledge, Assessments, Nature's linkages with people

**Region:** Global

**Language:** English

**Year:** 2020

**Citation:** Hill, R., Adem, Ç., Alangui, W. V., Molnár, Z., Aumeeruddy-Thomas, Y., Bridgewater, P., ... & Carino, J. (2020). Working with indigenous, local and scientific knowledge in assessments of nature and nature's linkages with people. *Current Opinion in Environmental Sustainability*, 43, 8-20.

Resource entry updated: 2020-05-22

### [Game masters and Amazonian Indigenous views on sustainability](#)

#### **Synopsis:**

Throughout the Amazon, notions of ownership and mastership shape the use of natural resources among many Indigenous communities. These ideas are reflected in the figure of *game masters* (i.e. spiritual beings who own the animals), which are widespread among Indigenous peoples across the Amazon Basin. In this paper, we explore the diverse biocultural manifestations of this socio-cosmology, focusing on the game masters' dynamic roles, histories and functions. Our review highlights the breadth and depth of ideas, practices, and rituals used to regulate humans' relations with these non-human agencies. It illustrates how the relations established between Indigenous communities and animals reflect both reciprocity and other asymmetrical types of dependency. This complex and sophisticated socio-cosmology underpins Indigenous understandings of sustainability in the world's largest tropical rainforest.

#### **Keywords:**

**Resource Type:** Journal Article

**Focus:** Biocultural stewardship, Indigenous Peoples and Local Communities, Sustainable Use

**Region:** Amazon

**Language:** English

**Year:** 2020

**Citation:** Fernández-Llamazares, Á., & Virtanen, P. K. (2020). Game masters and Amazonian Indigenous views on sustainability. *Current Opinion in Environmental Sustainability*, 43, 21-27.

Resource entry updated: 2020-05-22

### [Indigenous environmental justice and sustainability](#)

#### **Synopsis:**

A distinct formulation of Indigenous environmental justice (IEJ) is required in order to address the challenges of the ecological crisis as well the various forms of violence and injustices experienced specifically by Indigenous peoples. A distinct IEJ formulation must ground its foundations in Indigenous philosophies, ontologies, and epistemologies in order to reflect Indigenous conceptions of what constitutes justice. This approach calls into question the legitimacy and applicability of global and nationstate political and legal mechanisms, as these same states and international governing bodies continue to fail Indigenous peoples around the world. Not only do current global, national and local systems of governance and law fail Indigenous peoples, they fail all life. Indigenous peoples over the decades have presented a distinct diagnosis of the planetary ecological crisis evidenced in the observations shared as part of Indigenous environmental declarations.

#### **Keywords:**

**Resource Type:** Journal Article

**Focus:** Indigenous Peoples and local communities, Environmental Justice, Sustainability

**Region:** Global

**Language:** English

**Year:** 2020

**Citation:** McGregor, D., Whitaker, S., & Sritharan, M. (2020). Indigenous environmental justice and sustainability. *Current Opinion in Environmental Sustainability*, 43, 35-40.

Resource entry updated: 2020-05-22

[Nothing goes to waste: sustainable practices of re-use among indigenous groups in the Russian North](#)

**Synopsis:**

In the last few decades, the literature on waste has soared and taken two main directions. Considering the assumption that waste is a natural category, which we need to 'dispose of', the scholarship on waste management and its sustainability offers mainly problem-solving propositions (e.g., the 3Rs proposal—re-cycling, re-using, and reducing—or 'circular economy'). The social scientific waste studies literature takes a more critical stance from its outset and advances a relational account of waste. We aim to bring those two main research streams into dialogue through a presentation of two case studies among indigenous communities in the Russian North. Not only we disclose the hidden biases of the notion of circular economy and other 'innovative' problem-solving practices in the waste management literature, but we also propose to pay more attention to non-hegemonic waste practices amongst communities, which are often overlooked in both the waste management and the social studies of waste literature.

**Keywords:**

**Resource Type:** Journal Article

**Focus:** Indigenous Peoples and local communities, Circular Economies

**Region:** Russian North

**Language:** English

**Year:** 2020

**Citation:** Siragusa, L., & Arzyutov, D. (2020). Nothing goes to waste: sustainable practices of re-use among indigenous groups in the Russian North. *Current Opinion in Environmental Sustainability*, 43, 41-48.

Resource entry updated: 2020-05-22

[Arctic youth transcending notions of 'culture' and 'nature': emancipative discourses of place for cultural sustainability](#)

**Synopsis:**

This article presents research on contradictory representations of the Arctic and its inhabitants from the point of view of sustainable development. Indigenous peoples are repeatedly presented as connected to nature but outside politics, while business and state stakeholders portray the Arctic as uninhabited and utilizable for extractivism. These depictions diminish the agency of indigenous Sámi in political decision-making, agency that is integral to achieving a sustainable future both for Arctic lands and cultures. Contrary to what older generations fear, research from this decade shows that youth — who are increasingly moving to urban centers — are not necessarily leaving Sámi culture and lands. They are finding new modes of agency by transcending the discursive boundaries of periphery and center, nature and culture.

**Keywords:**

**Resource Type:** Journal Article

**Focus:** Youth, Nature and Culture, Sustainability, Sámi

**Region:** Arctic

**Language:** English

**Year:** 2020

**Citation:** Toivanen, R., & Fabritius, N. (2020). Arctic youth transcending notions of 'culture' and 'nature': emancipative discourses of place for cultural sustainability. *Current Opinion in Environmental Sustainability*, 43, 58-64.

Resource entry updated: 2020-05-22

[Introduction: toward more inclusive definitions of sustainability](#)

**Synopsis:**

This article identifies core dimensions in the notion of "sustainability" as it is conceptualized among Indigenous peoples. These are context-based relationality, community-based governance, education, language, quality of life and health, and communal recognition of certain nonhumans as life-givers. Taking into account different Indigenous cultural and socio-philosophical experiences and their process of sociality with different life forms, it has become clear that these are little spelt out in the previous sustainability definitions. Thus, understanding how local interconnections are sustained and reproduced, both for humans and nonhumans, should inform policy mechanisms as well as new forms of evidence. We want to point out that the UN Sustainable Development Goals (SDGs) cannot and should not be taken as universal due to conceptual and moral differences among different communities and peoples.

**Keywords:**

**Resource Type:** Journal Article

**Focus:** Indigenous Peoples and local communities, Sustainable Use, SDGs

**Region:** Global

**Language:** English

**Year:** 2020

**Citation:** Virtanen, P. K., Siragusa, L., & Guttorm, H. (2020). Introduction: toward more inclusive definitions of sustainability. *Current Opinion in Environmental Sustainability*, 43, 77-82.

Resource entry updated: 2020-05-22

[Wildness - Enrique Salmon on "Kincentric" Ecology](#)

**Synopsis:**

Enrique Salmon discusses indigenous perceptions of the human-nature relationship through the notion of "kincentric" ecology and the challenges that come along with labeling something as "wild".

**Keywords:** Kincentric Ecology; Human-nature relationship; Interconnectedness; Rarcmuri; Sierra Madres; Tarahumara

**Resource Type:** Video

**Focus:** Indigenous and local knowledge; Environmental Kinship, Relational Values

**Region:** Central America (Chihuahua, Mexico)

**Language:** English

**Year:** 2017

**Citation:**

Resource entry updated: 2020-05-08

[Oren Lyons on the Indigenous View of the World](#)

**Synopsis:**

Interview conducted and recorded by Tree Media 2006 - "Oren is a faithkeeper of the Turtle Clan, Onondaga Council of Chiefs, Haudenosaunee (Six Nations Iroquois Confederacy). He has been active in international Indigenous rights and sovereignty issues for over four decades at the United Nations and other international forums. He is a State University of New York (SUNY) distinguished services professor emeritus of the University at Buffalo. He serves on the board of Bioneers an environmental champion of the earth. Oren is chairman of the board of directors of Plantagon International AB, the leader in urban agriculture, Plantagon is designed to meet challenges of compounding human population, finite resources and global warming."

**Keywords:** Web of life; Relationships with Elements/Forces of Life

**Resource Type:** Video Interview

**Focus:** Indigenous and local knowledge; Indigenous Worldviews

**Region:** North America

**Language:** English

**Year:** 2006

**Citation:**

Resource entry updated: 2020-05-08

[Łeghágots'enetę \(learning together\): the importance of indigenous perspectives in the identification of biological variation](#)

**Synopsis:**

Using multiple knowledge sources to interpret patterns of biodiversity can generate the comprehensive species characterizations that are required for effective conservation strategies. Caribou (*Rangifer tarandus*) display substantial intraspecific variation across their distribution and in the Sahtú Region of the Northwest Territories, Canada, three caribou types, each with a different conservation status, co-occur. Caribou are essential to the economies, culture, and livelihoods of northern indigenous peoples. Indigenous communities across the north are insisting that caribou research be community-driven and collaborative. In response to questions that arose through dialogue with five Sahtú Dene and Métis communities, we jointly developed a research approach to understand caribou differentiation and population structure. Our goal was to examine caribou variation through analysis of population genetics and an exploration of the relationships Dene and Métis people establish with animals within bioculturally diverse systems. To cultivate a research environment that supported łeghágots'enetę "learning together" we collaborated with ʔehdzo Got'ıneę (Renewable Resources Councils), elders, and an advisory group. Dene knowledge and categorization systems include a comprehensive understanding of the origin, behaviors, dynamic interactions, and spatial structure of caribou. Dene people classify ʔɔdzi "boreal woodland caribou" based on unique behaviors, habitat preferences, and morphology that differ from ʔekwę "barren-ground" or shúhta ʔepę "mountain" caribou. Similarly, genetic analysis of material (microsatellites and mitochondrial DNA) from caribou fecal pellets, collected in collaboration with community members during the winter, provided additional evidence for population differentiation that corresponded to the caribou types recognized by Dene people and produced insights into the evolutionary histories that contribute to the various forms. We developed culturally respectful and relevant descriptions of caribou variation through partnerships that respect the lives and experiences of people that depend on the land. By prioritizing mutual learning, researchers can broaden their understanding of biodiversity and establish a common language for collaboration.

**Keywords:** aboriginal; biocultural diversity; biodiversity; caribou; collaborative research; ecology; First Nation; genetic variation; indigenous communities; population genetics; population structure; *Rangifer tarandus*; resource management; social-ecological systems; traditional knowledge

**Resource Type:** Journal Article

**Focus:** Multiple Knowledge Sources; Indigenous and Local Knowledge; Biodiversity Conservation; Caribou

**Region:** North America (Northwest Territories, Canada)

**Language:** English

**Year:** 2016

**Citation:** Polfus, J. L., M. Manseau, D. Simmons, M. Neyelle, W. Bayha, F. Andrew, L. Andrew, C. F. C. Klütsch, K. Rice, and P. Wilson. 2016. Łeghágots'enetę (learning together): the importance of indigenous perspectives in the identification of biological variation. *Ecology and Society* 21(2):18. <http://dx.doi.org/10.5751/ES-08284-210218>

Resource entry updated: 2020-04-29

[Resilience Assessment Workshops: A Biocultural Approach to Conservation Management of a Rural Landscape in Taiwan](#)

**Synopsis:**

Local and indigenous communities play a crucial role in stewardship of biodiversity worldwide. Assessment of resilience in socio-ecological production landscapes and seascapes (SEPLS) is an essential prerequisite for sustainable human–nature interactions in the area. This work examines application of resilience assessment workshops (RAWs) as a biocultural approach to conservation management in Xinshe SEPLS, Hualien County, Taiwan. RAWs were conducted in 2017–2018 in two indigenous communities—Amis Fuxing Dipit Tribe and Kavalan Xinshe Paterongan Tribe—as a part of an ongoing multi-stakeholder platform for the “Forest–River–Village–Sea Ecoagriculture Initiative” (the Initiative). Objectives of the study include (1) performing a baseline landscape resilience assessment in two communities and identifying their common and varying concerns and priorities, and (2) eliciting a community-driven vision for enhancement of the landscape resilience based on adjustments to the action plan of the Initiative. Assessment methodology employs 20 indicators of resilience in SEPLS jointly developed by the United Nations University Institute for the Advanced Study of Sustainability (UNU-IAS) and Biodiversity International; an “Explain–Score–Discuss–Suggest” model is applied. Results show that the communities’ primary issues of concern and adjustments to the action plan are related to biodiversity-based livelihoods, transfer of traditional knowledge, and sustainable use of common resources. The study concludes that this approach has a high potential to help facilitate nature-based solutions for human well-being and biodiversity benefits in Xinshe SEPLS.

**Keywords:** resilience assessment workshops; socio-ecological production landscapes and seascapes (SEPLS); biocultural approach; participatory monitoring and evaluation; nature-based solutions

**Resource Type:** Journal Article

**Focus:** Resilience Assessments; Indicators

**Region:** Asia (Taiwan)

**Language:** English

**Year:** 2020

**Citation:** Lee, K. C., Karimova, P. G., Yan, S. Y., & Li, Y. S. (2020). Resilience Assessment Workshops: A Biocultural Approach to Conservation Management of a Rural Landscape in Taiwan. *Sustainability*, 12(1), 408.

Resource entry updated: 2020-04-24

[Aboriginal Astronomical Traditions from Ooldea, South Australia, Part 2: Animals in the Ooldean Sky](#)

**Synopsis:**

Australian Indigenous astronomical traditions hint at a relationship between animals in the skyworld and the behaviour patterns of their terrestrial counterparts. In our continued study of Aboriginal astronomical traditions from the Great Victoria Desert, South Australia, we investigate the relationship between animal behaviour and stellar positions. We develop a methodology to test the hypothesis that the behaviour of these animals is predicted by the positions of their celestial counterparts at particular times of the day. Of the twelve animals identified in the Ooldean sky, the nine stellar (i.e. non-planet or non-galactic) associations were analysed and each demonstrated a close connection between animal behaviour and stellar positions. We suggest that this may be a recurring theme in Aboriginal astronomical traditions, requiring further development of the methodology.

**Keywords:** Ethnoastronomy, cultural astronomy, ethnoecology, Aboriginal Australians, Indigenous Knowledge, and animal behaviour.

**Resource Type:** Journal Article

**Focus:** Indigenous and local knowledge

**Region:** Australia

**Language:** English

**Year:** 2016

**Citation:** Leaman, T. M., Hamacher, D. W., & Carter, M. T. (2016). Aboriginal Astronomical traditions from Ooldea, South Australia, Part 2: Animals in the Ooldean Sky. arXiv preprint arXiv:1601.01065.

Resource entry updated: 2020-04-16

[Ecological and social wisdom in camel praise poetry sung by Afar nomads of Ethiopia](#)

**Synopsis:**

Understanding environmental philosophies and wisdom of tribal communities provides insights into sustainable ways of living and conservation. Many tribal communities rely on oral traditions for storage and communication of ecological, cultural, and religious wisdom. An evaluation of the Ga<sup>ˉ</sup>li Sa<sup>ˉ</sup>ré, or the camel praise poetry, practiced in the form of sung poetry by the Afar nomads of the Horn of Africa, revealed that as well as being praise of the camel, the Ga<sup>ˉ</sup>li Sa<sup>ˉ</sup>ré poems are oral eco-poetry and reflect biophilia. Issues such as biodiversity, environmental crises, livelihoods, clan politics, and landscapes are addressed in the poems, while conveying themes of abundance, drought, changing landscape, and livestock raids. In these oral poems, the animate and inanimate environment, including rangeland plants, mountains, rivers, lakes, animals, the weather, and spirits, are used in metaphoric, symbolic, and realistic expressions. Embedded in these poems are the ecological and social philosophy and wisdom of Afar nomads as well as their concerns about contemporary environmental problems. Oral traditions can be used to understand ecological wisdom and perceptions of tribal communities and provide insights into and lessons in sustainable living.

**Keywords:** Ethnobiology, Environmental philosophy, Eco-poetry, Biophilia, Pastoralism, Afar nomads

**Resource Type:** Journal Article

**Focus:** Indigenous and local knowledge, Cultural forms of expression, Poems, Oral histories

**Region:** Africa, Ethiopia

**Language:** English

**Year:** 2016

**Citation:** Balehegn, M. (2016). Ecological and social wisdom in camel praise poetry sung by Afar nomads of Ethiopia. *Journal of Ethnobiology*, 36(2), 457-472.

Resource entry updated: 2020-04-16



[Bottom up and top down: Analysis of participatory processes for sustainability indicator identification as a pathway to community empowerment and sustainable environmental management](#)

**Synopsis:**

The modern environmental management literature stresses the need for community involvement to identify indicators to monitor progress towards sustainable development and environmental management goals. The purpose of this paper is to assess the impact of participatory processes on sustainability indicator identification and environmental management in three disparate case studies. The first is a process of developing partnerships between First Nations communities, environmental groups, and forestry companies to resolve conflicts over forest management in Western Canada. The second describes a situation in Botswana where local pastoral communities worked with development researchers to reduce desertification. The third case study details an on-going government led process of developing sustainability indicators in Guernsey, UK, that was designed to monitor the environmental, social, and economic impacts of changes in the economy. The comparative assessment between case studies allows us to draw three primary conclusions. (1) The identification and collection of sustainability indicators not only provide valuable databases for making management decisions, but the process of engaging people to select indicators also provides an opportunity for community empowerment that conventional development approaches have failed to provide. (2) Multi-stakeholder processes must formally feed into decision-making forums or they risk being viewed as irrelevant by policy-makers and stakeholders. (3) Since ecological boundaries rarely meet up with political jurisdictions, it is necessary to be flexible when choosing the scale at which monitoring and decision-making occurs. This requires an awareness of major environmental pathways that run through landscapes to understand how seemingly remote areas may be connected in ways that are not immediately apparent.

**Keywords:** Sustainability indicators; Participatory processes; Case study methodology; British Columbia, Canada; Botswana; Guernsey, United Kingdom

**Resource Type:** Journal Article

**Focus:** Sustainability Indicators, Community Empowerment, Participatory Processes

**Region:** British Columbia, Canada; Botswana; Guernsey, United Kingdom

**Language:** English

**Year:** 2006

**Citation:** Fraser, E. D., Dougill, A. J., Mabee, W. E., Reed, M., & McAlpine, P. (2006). Bottom up and top down: Analysis of participatory processes for sustainability indicator identification as a pathway to community empowerment and sustainable environmental management. *Journal of environmental management*, 78(2), 114-127.

Resource entry updated: 2020-04-16

[Ecosystem Services and Human Well-Being: a Participatory Study in a Mountain Community in Portugal](#)

**Synopsis:**

Ecosystem services are essential for human well-being, but the links between ecosystem services and human well-being are complex, diverse, context-dependent, and complicated by the need to consider different spatial and temporal scales to assess them properly. We present the results of a study in the rural community of Sistelo in northern Portugal that formed part of the Portugal Millennium Ecosystem Assessment. The main purpose of our study was to assess the linkages between human well-being and ecosystem services at the local level, as perceived by the community. We used a range of tools that included participatory rural appraisal and rapid rural appraisal as well as other field methods such as direct observation, familiarization and participation in activities, semistructured interviews, trend lines, wellbeing ranking, and other ranking and scoring exercises. Sistelo has a unique landscape of agricultural terraces that are now being abandoned because of the depopulation of the region, a common trend in mountainous rural areas of Europe. From the community perspective, some components of well-being such as material well-being have been improving, whereas some ecosystem services, e.g., food production, have been declining. Although a few of the local criteria for well-being are closely related to local ecosystem services, most of them are not. People recognize many of the services provided by ecosystems, in particular, provisioning, cultural, and regulating services, although they feel that provisioning services are the most important for well-being. It is apparent that, for the Sistelo community, there is an increasing disconnect between local well-being and at least some local ecosystem services. This disconnect is associated with greater freedom of choice at the local level, which gives the local inhabitants the power to find substitutes for ecosystem services. The consequences of land abandonment for human well-being and ecosystem services at different temporal and spatial scales are discussed.

**Keywords:** ecosystem services; human well-being; participatory rural appraisal; rapid rural appraisal; participatory study; biodiversity; rural community; land abandonment; mountain landscape; Millennium Ecosystem Assessment

**Resource Type:** Journal Article

**Focus:** Ecosystem Services and Well-being; Community Perceptions; Participatory Appraisal

**Region:** Portugal

**Language:** English

**Year:** 2005

**Citation:** Pereira, E., Queiroz, C., Pereira, H. M., & Vicente, L. (2005). Ecosystem services and human well-being: a participatory study in a mountain community in Portugal. *Ecology and Society*, 10(2).

Resource entry updated: 2020-04-16

[Indigenous food sovereignty: Reclaiming food as sacred medicine in Aotearoa New Zealand and Peru](#)

**Synopsis:**

For Indigenous peoples, land is both an agricultural and sacred space where both human and nonhuman relations work together as stewards. This study pioneers a comparative study of the traditional ecological knowledge systems (TEK) of Māori and Quechua peoples. Drawing from talking circles with Māori and Quechua people, and narrative and metaphors from these traditions, this research shows that TEK is at the heart of Quechua and Māori peoples' food values. Further, we highlight the vital role that TEK plays in framing practices and processes that drive the restoration of Indigenous peoples' food systems, cultural knowledge and environmental health today. This study demonstrates that food can play a fundamental role in asserting collective self-determination, for moving beyond colonial approaches to food, and ultimately for pursuing environmental justice.

**Keywords:** Food sovereignty, traditional ecological knowledge, sustainable food systems, maramataka, Māori, Quechua

**Resource Type:** Journal Article

**Focus:** Indigenous Food Sovereignty; Sacred Medicine

**Region:** Aotearoa New Zealand; Peru

**Language:** English

**Year:** 2019

**Citation:** Huambachano, M. A. (2019). Indigenous food sovereignty: Reclaiming food as sacred medicine in Aotearoa New Zealand and Peru. *New Zealand Journal of Ecology*, 43(3).

Resource entry updated: 2020-04-16

[Enacting food sovereignty in Aotearoa New Zealand and Peru: revitalizing Indigenous knowledge, food practices and ecological philosophies](#)

**Synopsis:**

This article reports on a cross-cultural study of two Indigenous<sup>1</sup> knowledge and food security systems: Quechua<sup>2</sup> people of Peru and Māori<sup>3</sup> of Aotearoa – New Zealand, and implications for food systems sustainability and traditional knowledge. This study takes a novel approach by using a traditional ecological knowledge (TEK) lens to examine respective “good living principles” of Allin Kawsay/ Buen Vivir in Peru and of Mauri Ora in Aotearoa in safeguarding food security. In this study, I introduce the “Khipu Model” as a source of knowledge production and sovereignty guiding the development of an Indigenous research-based framework. Drawing on over 45 interviews, with elders, community leaders, and people engaged in sustainable food production in Peru and Aotearoa. I show that an Indigenous “food security policy framework” underpinned by a set of cultural and environmental indicators of wellbeing resonates with conceptualizations of food sovereignty, whereas the dominant food security approaches do not. I argue that such a framework enacts practices of food sovereignty and represents a tool of Indigenous resurgence and social change in food politics for the revitalization of Indigenous food sovereignty as an alternative sustainable food system.

**Keywords:** Sustainable food systems; food sovereignty; food security; Indigenous peoples; Mauri Ora; good living/Buen Vivir; TEK; Khipu Model

**Resource Type:** Journal Article

**Focus:** Food Sovereignty; Indigenous and local knowledge

**Region:** Aotearoa New Zealand; Peru

**Language:** English

**Year:** 2018

**Citation:** Huambachano, M. (2018). Enacting food sovereignty in Aotearoa New Zealand and Peru: revitalizing Indigenous knowledge, food practices and ecological philosophies. *Agroecology and Sustainable Food Systems*, 42(9), 1003-1028.

Resource entry updated: 2020-04-16

[Capabilities under telecoupling: human well-being between cash crops and protected areas in North-Eastern Madagascar](#)

**Synopsis:**

Global change processes are increasing their pace and reach, leading to telecoupled situations, where distant factors come to outpace local determinants of land use change. Often, these dynamics drive agricultural intensification processes, with as yet unclear implications for the well-being of human populations living in the areas affected. This study explores how two key telecoupling dynamics affect local well-being in the biodiversity hotspot of Madagascar. It focuses on forest frontier landscapes, which are undergoing processes of agricultural intensification as a consequence of distant factors. Concretely, we look at how the recent establishment of two, largely externally funded, terrestrial protected areas, Masoala National Park and Makira Natural Park, and the ongoing price boom for two export cash crops, vanilla and clove, have influenced the well-being of local populations in the country's northeast. We present data from eight focus group discussions conducted in four villages located on the periphery of the two protected areas. Drawing on the "capabilities approach," we identify the key components of the local understanding of well-being, lay out the interconnections between these components, and explore how the two telecoupling processes affect well-being dynamics. Our findings reveal that well-being components present bundle characteristics, where increases or decreases in one component lead to parallel increases, or decreases in a set of them. We further ascertain that telecoupling processes might lead to trade-offs between well-being components. These findings highlight the need for a holistic understanding of human well-being when planning protected areas, and when designing governance mechanisms to steer local landscapes under intense cash crop price fluctuations toward sustainable outcomes.

**Keywords:** human well-being, agricultural intensification, shifting cultivation, conservation, agricultural commodities trade, capabilities approach

**Resource Type:** Journal Article

**Focus:** Well-being; Cash Crops; Protected Areas

**Region:** Africa (North-Eastern Madagascar)

**Language:** English

**Year:** 2020

**Citation:** Llopis, J. C., Diebold, C. L., Schneider, F., Harimalala, P. C., Patrick, L., Messerli, P., & Zaehring, J. G. (2020). Capabilities under telecoupling: human well-being between cash crops and protected areas in north-eastern Madagascar. *Frontiers in Sustainable Food Systems*, 3, 126.

Resource entry updated: 2020-04-16

[A Tuvaluan concept of well-being: Reflection on national planning - Te Kakeega II](#)

**Synopsis:**

Well-being is a global term associated with development and public policy making. In Tuvalu, the term well-being is widely used in policies and reports and it is often said that well-being is at the heart of national planning. However, there has been no research to see what well-being means to Tuvaluans living in Tuvalu. Furthermore, a review of national planning found that while the term well-being was used, the actual strategies, goals, and indicators outlined focused mainly on economic measures while 'social' issues (such as family and community vitality, traditional values and poverty) did not feature highly. In the researcher's view, economic indicators are only one aspect of well-being and these do not fit the collective nature of Tuvalu's predominantly family-based and semi-subsistence society. As a result, there is danger of a mismatch between planning and the realities of Tuvalu people's daily lives. To address this gap, this study explored Tuvaluan peoples' perceptions of well-being and whether and how these views were reflected in the national development plan - The Te Kakeega II. *Continued...*

**Keywords:**

**Resource Type:** Master's Thesis

**Focus:** Community perspectives on well-being; National planning; Public policy

**Region:** Oceania (Tuvalu)

**Language:** English

**Year:** 2015

**Citation:** Aselu, B. (2015). A Tuvaluan concept of well-being: reflection on national planning-Te Kakeega II. (Master's thesis, Auckland University of Technology).

Resource entry updated: 2020-04-16

### [The opportunity for a wellbeing focus in the Pacific](#)

**Synopsis:**

Internationally there has been increased focus on non-GDP indicators of progress, including wellbeing and happiness, both variously defined and measured. The OECD's [How's life](#) initiative, for example, uses a multidimensional model of wellbeing including both objective and subjective indicators – enabling interactive [comparisons](#) of OECD nations and regions across these domains. As I've written about earlier, [New Zealand](#) notably has brought considerable whole-of-government focus to wellbeing, including its measurement with an adaptation of the OECD model, the [Living Standards Framework](#). 'What gets measured, gets managed' is a common mantra within the wellbeing policy discourse in New Zealand and elsewhere.  
*Continued...*

**Keywords:****Resource Type:** Online Article**Focus:** Pacific Island Nations; Well-being frameworks and definitions**Region:** Oceania (Tuvalu; Vanuatu; Aotearoa New Zealand)**Language:** English**Year:** 2019**Citation:** Kiddle, Luke. (2019) "The opportunity for a wellbeing focus in the Pacific". (Online Article) Posted online: August 21, 2019.

Resource entry updated: 2020-04-16

### [Two-eyed seeing: a framework for understanding indigenous and non-indigenous approaches to indigenous health research](#)

**Synopsis:**

This article presents two-eyed seeing as a theoretical framework that embraces the contributions of both Indigenous and Western "ways of knowing" (worldviews). It presents key characteristics and principles of these different perspectives and suggests ways in which they might be used together to answer our most pressing questions about the health of Indigenous people and communities. Presenting a critique of positivism, which has historically undermined and/or dismissed Indigenous ways of knowing as "unscientific," it discusses the origins of both Western and Indigenous approaches to understanding health; the importance of giving equal consideration to diverse Indigenous and non-Indigenous worldviews such that one worldview does not dominate or undermine the contributions of others; and how balanced consideration of contributions from diverse worldviews, embraced within a two-eyed seeing framework, can reshape the nature of the questions we ask in the realm of Indigenous health research.

**Keywords:** Indigenous peoples, Aboriginal peoples, health, health research, theory, worldviews, two-eyed seeing**Resource Type:** Journal Article**Focus:** Worldviews; Multiple knowledge systems; Indigenous and local knowledge**Region:** Worldwide**Language:** English**Year:** 2012**Citation:** Martin, D. H. (2012). Two-eyed seeing: a framework for understanding indigenous and non-indigenous approaches to indigenous health research. *Canadian Journal of Nursing Research Archive*, 44(2).

Resource entry updated: 2020-04-16

[The Government-to-Government Relationship in a Changing Climate: A review of federal consultation policies](#)

**Synopsis:**

Climate change has the potential to impact a wide range of landscapes and resources that are vital to indigenous populations throughout the United States. American Indians, Alaska Natives and Native Hawaiians have contributed little to the causes of climate change, and yet they face disproportionate risks. These indigenous groups have unique rights, cultures, and economies that are particularly vulnerable to climate change impacts (Lynn 2011). Accordingly, federal management policies and programs should provide for meaningful tribal involvement in the formation of climate change policies and plans. An effective government-to-government relationship is essential to ensuring that tribes have the capacity to address the impacts of climate change on tribal lands and resources.

This report examines more than twenty federal agency consultation policies with a goal of identifying strategies to increase the effectiveness of the federal-tribal relationship in addressing climate change. Specifically, this report examines the scope of federal consultation policies in the context of climate change and highlights specific policies that include mechanisms that may result in more direct and meaningful consultation on climate change issues. The conclusion of this report provides a summary of key considerations and recommendations for strengthening the federal-tribal relationship in understanding and addressing the impacts from climate change.

While many policies instruct agencies how to carry out consultation, tribes and agencies often have different understandings of what constitutes meaningful consultation, and in some cases, agency staff lack understanding of consultation obligations. This report seeks to address this knowledge gap by providing examples of federal policies that are likely to result in meaningful consultation regarding natural resource and climate change policies.

**Keywords:** Climate change, Federal consultation policies, Policy, Federal Tribal

**Resource Type:** Report

**Focus:** Indicators, governance

**Region:** North America, United States

**Language:** English

**Year:** 2012

**Citation:** "A Tribal Planning Framework – Climate Change Adaptation Strategies by Sector." PNW Tribal Climate Change Project , 2013. [https://cpb-us-e1.wpmucdn.com/blogs.uoregon.edu/dist/c/389/files/2010/11/Tribal\\_CC\\_framework\\_April\\_2013-25wov2q.pdf](https://cpb-us-e1.wpmucdn.com/blogs.uoregon.edu/dist/c/389/files/2010/11/Tribal_CC_framework_April_2013-25wov2q.pdf).

Resource entry updated: 2020-02-25

### [Social Vulnerability and Climate Change: Synthesis of Literature](#)

#### **Synopsis:**

The effects of climate change are expected to be more severe for some segments of society than others because of geographic location, the degree of association with climate-sensitive environments, and unique cultural, economic, or political characteristics of particular landscapes and human populations. Social vulnerability and equity in the context of climate change are important because some populations may have less capacity to prepare for, respond to, and recover from climate-related hazards and effects. Such populations may be disproportionately affected by climate change. This synthesis of literature illustrates information about the socioeconomic, political, health, and cultural effects of climate change on socially vulnerable populations in the United States, with some additional examples in Canada. Through this synthesis, social vulnerability, equity, and climate justice are defined and described, and key issues, themes, and considerations that pertain to the effects of climate change on socially vulnerable populations are identified. The synthesis reviews what available science says about social vulnerability and climate change, and documents the emergence of issues not currently addressed in academic literature. In so doing, the synthesis identifies knowledge gaps and questions for future research.

**Keywords:** Climate Change, Social Vulnerability, Native American Indians, Rural communities, Urban communities, Socioeconomic, Cultural effects

**Resource Type:** Book

**Focus:** Indicators

**Region:** North America, United States

**Language:** English

**Year:** 2011

**Citation:** Lynn, Kathy, Katharine MacKendrick, and Ellen M. Donoghue. *Social Vulnerability and Climate Change: Synthesis of Literature*. Portland, OR: U.S. Dept. of Agriculture, Forest Service, Pacific Northwest Research Station, 2011.

Resource entry updated: 2020-02-25

### [Legal Considerations for Climate Change Impacts on Tribes' Off-Reservation Resources](#)

#### **Synopsis:**

Climate change will continue to negatively impact off-reservation resources and tribal members' access to these resources, including numerous animal and plant species and their related habitats that are relied upon for subsistence harvesting, cultural practices, and ceremonial purposes. This paper seeks to explore existing legal avenues available to tribes to protect their resources in order to prevent such an "ecological removal." By examining legal strategies that have been used to replace both on-reservation resources and treaty-protected off-reservation resources, we gain insight into avenues for protection that may be cultivated to protect additional off-reservation resources, including traditional subsistence resources that are vulnerable to climate change. This paper documents the impact of climate change on tribal nations and subsistence rights and describes the legal framework for off-reservation resource protection by exploring sources of substantive and procedural law available to tribes in the United States to protect resources. The paper also reviews avenues for protection of off-reservation resources.

**Keywords:** Reservation resources, Decision making, Land and resources, Traditional knowledge, Tribal nations, Climate change

**Resource Type:** Journal Article

**Focus:** Monitoring , Indicators

**Region:** North America, United States

**Language:** English

**Year:** 2012

**Citation:** Jacobs, Teresa G., Santi Alston, and Kathy Lynn. "Legal Considerations for Climate Change Impacts on Tribes' Off-Reservation Resources."

Resource entry updated: 2020-02-25

### [Review of 2014 Federal Agency Adaptation Plans](#)

#### **Synopsis:**

Climate adaptation is an increasing priority within the federal government. As part of the President's Climate Action Plan, federal agencies are required to develop agency-level climate adaptation plans (CEQ 2014). Federal agencies must integrate their emerging obligations to address climate impacts with existing responsibilities. Amongst these responsibilities are the federal government's trust responsibility towards tribes and the government's obligation to consult with tribes. Federal agencies are obligated to protect tribal resources and tribal rights to self-governance (NCAI 2014). As part of this trust responsibility, federal agencies must engage in ongoing consultation with tribes on issues that will impact tribal rights and resources, and to ensure that tribal access to on and off-reservation resources are protected in the face of climate change (EO 13175, Whyte 2013). Federal agency adaptation plans have the potential to impact tribes in a variety of ways, whether through changes in policies pertaining to tribes, or by altering management of resources that are of importance to tribes. This report examines how federal agency climate adaptation plans are addressing tribal issues and concerns.

**Keywords:** Federal agency, Climate adaptation, Climate change, Summary, Ratings by Agency

**Resource Type:** Report

**Focus:** Governance, Indicators

**Region:** North America, United States

**Language:** English

**Year:** 2015

**Citation:** "Review of 2014 Federal Agency Adaptation Plans." Pacific Northwest Tribal Climate Change Project, June 2015. [https://cpb-us-e1.wpmucdn.com/blogs.uoregon.edu/dist/c/389/files/2010/11/Summary\\_Fed\\_adaptation\\_plans\\_\\_December-2015-2i22vbe.pdf](https://cpb-us-e1.wpmucdn.com/blogs.uoregon.edu/dist/c/389/files/2010/11/Summary_Fed_adaptation_plans__December-2015-2i22vbe.pdf).

Resource entry updated: 2020-02-25

### [Tribes/First Nations Climate Summit Proceedings - December 2017](#)

#### **Synopsis:**

On December 13-14, 2017, over 150 members of the region's Tribes and First Nations gathered in Northern Washington for a unique and important event. They came together to assess progress that has been made understanding and preparing for the many ways in which our rapidly changing environment affects traditional ways of life.

This 2-day event focused on four main topics -- traditional knowledges, cultural and subsistence resources, planning to support community resiliency, and policy issues. On traditional knowledges, the discussion covered many aspects of how indigenous knowledges are shaping climate change collaborations, and ways to ensure appropriate protocols are upheld and knowledges are protected. Several case studies and guides were examined to explore the range of methodological approaches for gathering, protecting, and applying traditional knowledges in ways that protect and advance priorities of indigenous communities. Next, the forum examined a number of cultural and subsistence vulnerability studies that provide insights on what the future might hold for a variety of plants, animals, places, and cultures that are important to indigenous communities. Discussion also included additional changes people are observing across the landscape, and tools for documenting change.

**Keywords:** Traditional knowledges, Cultural resources, Subsistence resources, Community resiliency, Policy issues, Session Summary, Climate summit

**Resource Type:** Discussion Paper

**Focus:** Review, Indigenous and Local Communities

**Region:** North America, United States

**Language:** English

**Year:** 2018

**Citation:** "Tribes/First Nations Climate Summit Proceedings - December 2017." Tribes and First Nations Climate Summit, 2018. [https://cpb-us-e1.wpmucdn.com/blogs.uoregon.edu/dist/c/389/files/2010/11/T-FN-Summit\\_Proceedings-Final-29zu0wz.pdf](https://cpb-us-e1.wpmucdn.com/blogs.uoregon.edu/dist/c/389/files/2010/11/T-FN-Summit_Proceedings-Final-29zu0wz.pdf).

Resource entry updated: 2020-02-25



[Climate change and indigenous peoples: a synthesis of current impacts and experiences](#)

**Synopsis:**

A growing body of literature examines the vulnerability, risk, resilience, and adaptation of indigenous peoples to climate change. This synthesis of literature brings together research pertaining to the impacts of climate change on sovereignty, culture, health, and economies that are currently being experienced by Alaska Native and American Indian tribes and other indigenous communities in the United States. The knowledge and science of how climate change impacts are affecting indigenous peoples contributes to the development of policies, plans, and programs for adapting to climate change and reducing greenhouse gas emissions. This report defines and describes the key frameworks that inform indigenous understandings of climate change impacts and pathways for adaptation and mitigation, namely, tribal sovereignty and self-determination, culture and cultural identity, and indigenous community health indicators. It also provides a comprehensive synthesis of climate knowledge, science, and strategies that indigenous communities are exploring, as well as an understanding of the gaps in research on these issues. This literature synthesis is intended to make a contribution to future efforts such as the 4th National Climate Assessment, while serving as a resource for future research, tribal and agency climate initiatives, and policy development.

**Keywords:** Climate change, Indigenous, Tribal, Adaptation, Traditional knowledge

**Resource Type:** Report

**Focus:** Framework, Indigenous knowledge systems, Indigenous ecological knowledge

**Region:** North America, United States

**Language:** English

**Year:** 2016

**Citation:** Norton-Smith, Kathryn. Climate Change and Indigenous Peoples: a Synthesis of Current Impacts and Experiences. Portland, OR: United States Department of Agriculture, Forest Service, Pacific Northwest Research Station, 2016.

Resource entry updated: 2020-02-25

[Indigenous Masculinities in a Changing Climate: Vulnerability and Resilience in the United States](#)

**Synopsis:**

Gender shapes Indigenous vulnerability and resilience due to the coupled social and ecological challenges of climate change in Indigenous communities in the United States (Maynard, 1998; Grossman and Parker, 2012; Bennett et al., 2014; Maldonado et al., 2014; Whyte, 2014). Despite its relevance, little research has analyzed the ways in which gender shapes climate change experiences. Even less research has focused on the impacts of climate change on Indigenous masculinity. With this backdrop, we foreground Indigenous men and masculinities with respect to climate change vulnerability and resilience. We open this chapter by briefly describing pre-contact Indigenous conceptions of gender in the US, followed by a discussion of how settlement has affected gender roles, relations and gendered traditional knowledge in Indigenous communities. We then describe some of the ways in which Indigeneity and masculinity are intersecting (or may intersect) with climate change in four key arenas: health, migration and displacement, economic and professional development, and culture. We follow this with a discussion of Indigenous men's roles in political resistance and climate change resilience. We conclude by summarizing the key implications for Indigenous climate change initiatives and for the ongoing reconstruction and reassertion of Indigenous gender identities.

**Keywords:** Climate change, Indigenous peoples, Feminism, Gender, Vulnerability, Climate justice

**Resource Type:** Journal Article

**Focus:** Indigenous and Local Communities, Indicators

**Region:** North America, United States

**Language:** English

**Year:** 2016

**Citation:** Vinyeta, Kirsten and Whyte, Kyle Powys and Lynn, Kathy, Indigenous Masculinities in a Changing Climate: Vulnerability and Resilience in the United States (June 24, 2016). Men, Masculinities and Disaster. 2016. Edited by Elaine Enarson, Bob Pease. Routledge: Chapter 12. Available at SSRN: <https://ssrn.com/abstract=2800469>

Resource entry updated: 2020-02-25

[Tribal Climate Change Principles: Responding To Federal Policies And Actions To Address Climate Change](#)

**Synopsis:**

Indigenous Peoples in the U.S., including 567 federally-recognized Tribes, are facing immediate and significant impacts from climate change (Bennett et al. 2014). A growing body of literature illustrates the unique issues facing Tribes from climate change, including the recently developed Primer on Climate Change and Indigenous Peoples, Guidelines for Considering Traditional Knowledges (TKs) in Climate Change Initiatives, and the special issue of the peer-reviewed journal Climatic Change, "Climate Change and Indigenous Peoples in the United States: Impacts, Experiences and Actions." Furthermore, the federal government is beginning to acknowledge the disproportionate threats of climate change to Indigenous Peoples through administrative and congressional reports such as the Third National Climate Assessment and the 2014 President's State, Local, and Tribal Leaders Task Force on Climate Preparedness and Resilience (Task Force). To respond to the impacts of climate change, Indigenous Peoples must have access to the financial and technical resources that are required to assess the impacts of climate change on their cultures, air, land and water, economies, community health, and ways of life, and address those impacts through adaptation and mitigation. In turn, federal action must be taken to support the efforts of Indigenous Peoples to adapt to climate change impacts and to reduce their carbon footprints through a range of mitigation approaches, including renewable energy development and energy efficiency.

**Keywords:** Task Force, Traditional knowledges, Climate change, Tribal representatives, Climate Preparedness

**Resource Type:** Discussion Paper

**Focus:** Sustainability plan

**Region:** North America, United States

**Language:** English

**Year:** 2015

**Citation:** Gruenig, Bob, Kathy Lynn, Garrit Voggesser, and Kyle Powys Whyte. "Tribal Climate Change Principles: Responding To Federal Policies And Actions To Address Climate Change ," September 2015. [https://cpb-us-e1.wpmucdn.com/blogs.uoregon.edu/dist/c/389/files/2010/11/Tribal-Climate-Change-Principles\\_2015-148jghk.pdf](https://cpb-us-e1.wpmucdn.com/blogs.uoregon.edu/dist/c/389/files/2010/11/Tribal-Climate-Change-Principles_2015-148jghk.pdf).

Resource entry updated: 2020-02-25

[Climate Change Through an Intersectional Lens: Gendered Vulnerability and Resilience in Indigenous Communities in the United States](#)

**Synopsis:**

The scientific and policy literature on climate change increasingly recognizes the vulnerabilities of indigenous communities and their capacities for resilience. The role of gender in defining how indigenous peoples experience climate change in the United States is a research area that deserves more attention. Advancing climate change threatens the continuance of many indigenous cultural systems that are based on reciprocal relationships with local plants, animals, and ecosystems. These reciprocal relationships, and the responsibilities associated with them, are gendered in many indigenous communities. American Indians, Alaska Natives, and Native Hawaiians experience colonization based on intersecting layers of oppression in which race and gender are major determinants. The coupling of climate change with settler colonialism is the source of unique vulnerabilities. At the same time, gendered knowledge and gender-based activism and initiatives may foster climate change resilience. In this literature synthesis, we cross-reference international literature on gender and climate change, literature on indigenous peoples and climate change, and literature describing gender roles in Native America, in order to build an understanding of how gendered indignity may influence climate change vulnerability and resilience in indigenous communities in the United States.

**Keywords:** Climate change, Indigenous peoples, Gender

**Resource Type:** Report

**Focus:** Indicators

**Region:** North America, United States

**Language:** English

**Year:** 2015

**Citation:** Vinyeta, Kirsten, Kyle Whyte, and Kathy Lynn. "Climate change through an intersectional lens: gendered vulnerability and resilience in indigenous communities in the United States." (2016).

Resource entry updated: 2020-02-25

[Lessons Learned from Application of the "Indicators of Resilience in Socio-ecological Production Landscapes and Seascapes \(SEPLS\)" Under the Satoyama Initiative](#)

**Synopsis:**

Socio-ecological resilience is vital for the long-term sustainability of communities in production landscapes and seascapes, but community members often find it difficult to understand and assess their own resilience in the face of changes that affect them over time due to economic and natural drivers, demographic changes, and market forces among others, due to the complexity of the concept of resilience and the many factors influencing the landscape or seascape. This chapter provides an overview of a project and its resilience assessment process using an indicator-based approach, which has been implemented under the International Partnership for the Satoyama Initiative (IPSI). In this project, a set of 20 indicators were identified to capture different aspects of resilience in SEPLS, and examples are included from various contexts around the world, with the purpose of identifying lessons learned and good practices for resilience assessment. These indicators have now been used by communities in many countries, often with the guidance of project implementers, with the goal of assessing, considering, and monitoring their landscape or seascape's circumstances, identifying important issues, and ultimately improving their resilience. While this particular approach is limited in that it cannot be used for comparison of different landscapes and seascapes, as it relies on community members' individual perceptions, it is found useful to understand multiple aspects of resilience and changes over time within a landscape or seascape

**Keywords:** Satoyama Initiative, Socio-ecological production landscapes and seascapes, SEPLS, Resilience, Assessment

**Resource Type:** Book Chapter

**Focus:** Indicators

**Region:** North America, United States

**Language:** English

**Year:** 2020

**Citation:** Dunbar W. et al. (2020) Lessons Learned from Application of the "Indicators of Resilience in Socio-ecological Production Landscapes and Seascapes (SEPLS)" Under the Satoyama Initiative. In: Saito O., Subramanian S., Hashimoto S., Takeuchi K. (eds) Managing Socio-ecological Production Landscapes and Seascapes for Sustainable Communities in Asia. Science for Sustainable Societies. Springer, Singapore

Resource entry updated: 2020-02-25

[A Guide For Tribal Leaders On U.S. Climate Change Programs](#)

**Synopsis:**

There are a growing number of government and nongovernment agencies and programs addressing climate change for communities and landscapes across the United States. It is critical that there is information available on the types of programs, funding and assistance available to American Indian Tribes and Alaska Native communities seeking to address climate change. This guide summarizes key U.S. government programs addressing climate change, opportunities for tribal engagement and contacts for each agency. In addition to its immediate value to tribes and their partners, this information will provide important groundwork for research on understanding and improving the tribal consultation processes in the context of climate change.

**Keywords:** Tribal Organizations, U.S. Government, Climate Change, USDA Forest Service, University Of Oregon, Tribal Climate Change Project

**Resource Type:** Report

**Focus:** Guidebook

**Region:** North America, United States

**Language:** English

**Year:** 2012

**Citation:** "A Guide For Tribal\_ Leaders On U.S. Climate Change Programs." Tribal Climate Change Project, 2012. [https://cpb-us-e1.wpmucdn.com/blogs.uoregon.edu/dist/c/389/files/2010/11/tribal\\_leaders\\_CC\\_guide\\_1-4-2012.pdf](https://cpb-us-e1.wpmucdn.com/blogs.uoregon.edu/dist/c/389/files/2010/11/tribal_leaders_CC_guide_1-4-2012.pdf).

Resource entry updated: 2020-02-24

[A Tribal Planning Framework – Climate Change Adaptation Strategies by Sector](#)

**Synopsis:**

American Indians and Alaska Native Tribes face significant threats to their cultural resources and traditional ways of life from climate change. Pro-active strategies in planning for the potential impacts from climate change can assist indigenous communities in being resilient in the face of change. This framework is intended to serve as a resource for American Indian and Alaska Native tribes developing tribal climate change adaptation plans or incorporating climate change adaptation strategies into existing tribal plans and initiatives, including strategic plans or natural resource management plans. This framework can be used in concert with other planning resources, such as the Institute for Tribal Environmental Professionals' Tribal Climate Change

The Pacific Northwest Tribal Climate Change Project initially developed a framework for the Coquille Indian Tribe of Oregon to serve as a reference for the Tribe as they updated their Tribal Strategic Plan. The framework was subsequently broadened and adjusted to serve as a resource for tribes.

**Keywords:** PNW Tribal Climate Change Project, USEPA, Climate change

**Resource Type:** Report

**Focus:** Framework, Indigenous ecological knowledge

**Region:** North America, United States

**Language:** English

**Year:** 2013

**Citation:** "A Tribal Planning Framework – Climate Change Adaptation Strategies by Sector." PNW Tribal Climate Change Project, 2013. [https://cpb-us-e1.wpmucdn.com/blogs.uoregon.edu/dist/c/389/files/2010/11/Tribal\\_CC\\_framework\\_April\\_2013-25wov2q.pdf](https://cpb-us-e1.wpmucdn.com/blogs.uoregon.edu/dist/c/389/files/2010/11/Tribal_CC_framework_April_2013-25wov2q.pdf).

Resource entry updated: 2020-02-24

[Exploring the Role of Traditional Ecological Knowledge in Climate Change Initiatives](#)

**Synopsis:**

Indigenous populations are projected to face disproportionate impacts as a result of climate change in comparison to nonindigenous populations. For this reason, many American Indian and Alaska Native tribes are identifying and implementing culturally appropriate strategies to assess climate impacts and adapt to projected changes. Traditional ecological knowledge (TEK), as the indigenous knowledge system is called, has the potential to play a central role in both indigenous and nonindigenous climate change initiatives. The detection of environmental changes, the development of strategies to adapt to these changes, and the implementation of sustainable land-management principles are all important climate action items that can be informed by TEK. Although there is a significant body of literature on traditional knowledge, this synthesis examines literature that specifically explores the relationship between TEK and climate change. The synthesis describes the potential role of TEK in climate change assessment and adaptation efforts. It also identifies some of the challenges and benefits associated with merging TEK with Western science, and reviews the way in which federal policies and administrative practices facilitate or challenge the incorporation of TEK in climate change initiatives. The synthesis highlights examples of how tribes and others are including TEK into climate research, education, and resource planning and explores strategies to incorporate TEK into climate change policy, assessments, and adaptation efforts at national, regional, and local levels.

**Keywords:** Climate change, traditional ecological knowledge, TEK, American Indians, Alaska Natives

**Resource Type:** Report

**Focus:** Monitoring, Indigenous knowledge systems

**Region:** North America, United States

**Language:** English

**Year:** 2013

**Citation:** Vinyeta, Kirsten, and Kathy Lynn. Exploring the Role of Traditional Ecological Knowledge in Climate Change Initiatives. Portland, OR: U.S. Dept. of Agriculture, Forest Service, Pacific Northwest Research Station, 2013.

Resource entry updated: 2020-02-21

[Fostering Tribal Engagement in Climate Science Centers and Landscape Conservation Cooperatives](#)

**Synopsis:**

This discussion paper describes the policy language related to tribal engagement in Climate Science Centers (CSC) and Landscape Conservation Cooperatives (LCC), examines the Government-to-Government relationship in context of CSCs and LCCs, and discusses the benefits to Tribes and the federal government in having strong tribal engagement in these initiatives. It is intended to foster dialogue about the need for and opportunities to meaningfully engage Tribes in the implementation of these initiatives.

**Keywords:** CSC, LCC, Federal government, Tribal engagement, Climate Change, Government-to-Government Relationship, Tribal voices

**Resource Type:** Discussion Paper

**Focus:** Governance, Indicators

**Region:** North America, United States

**Language:** English

**Year:** 2012

**Citation:** "Fostering Tribal Engagement in Climate Science Centers and Landscape Conservation Cooperatives." Pacific Northwest Tribal Climate Change Project , 2012. [https://cpb-us-e1.wpmucdn.com/blogs.uoregon.edu/dist/c/389/files/2010/11/Tribal\\_engagement\\_10-15-2012-1izz31b.pdf](https://cpb-us-e1.wpmucdn.com/blogs.uoregon.edu/dist/c/389/files/2010/11/Tribal_engagement_10-15-2012-1izz31b.pdf).

Resource entry updated: 2020-02-21

[Climate Change Impacts in the United States CHAPTER 12 INDIGENOUS PEOPLES, LAND, AND RESOURCES](#)

**Synopsis:**

1. Observed and future impacts from climate change threaten Native Peoples' access to traditional foods such as fish, game, and wild and cultivated crops, which have provided sustenance as well as cultural, economic, medicinal, and community health for generations. 2. A significant decrease in water quality and quantity due to a variety of factors, including climate change, is affecting drinking water, food, and cultures. Native communities' vulnerabilities and limited capacity to adapt to water-related challenges are exacerbated by historical and contemporary government policies and poor socioeconomic conditions. 3. Declining sea ice in Alaska is causing significant impacts to Native communities, including increasingly risky travel and hunting conditions, damage and loss to settlements, food insecurity, and socioeconomic and health impacts from loss of cultures, traditional knowledge, and homelands. 4. Alaska Native communities are increasingly exposed to health and livelihood hazards from increasing temperatures and thawing permafrost, which are damaging critical infrastructure, adding to other stressors on traditional lifestyles. 5. Climate change related impacts are forcing relocation of tribal and indigenous communities, especially in coastal locations. These relocations, and the lack of governance mechanisms or funding to support them, are causing loss of community and culture, health impacts, and economic decline, further exacerbating tribal impoverishment.

**Keywords:** Climate change, Native People, Native communities, Declining sea ice, Traditional Knowledge, traditional foods, Relocation

**Resource Type:** Report

**Focus:** Indicators, Monitoring

**Region:** North America, United States

**Language:** English

**Year:** 2014

**Citation:** Bennett, T. M. B., N. G. Maynard, P. Cochran, R. Gough, K. Lynn, J. Maldonado, G. Voggesser, S. Wotkyns, and K. Cozzetto, 2014: Ch. 12: Indigenous Peoples, Lands, and Resources. Climate Change Impacts in the United States: The Third National Climate Assessment, J. M. Melillo, Terese (T.C.) Richmond, and G. W. Yohe, Eds., U.S. Global Change Research Program, 297-317. doi:10.7930/J09G5JR1.

Resource entry updated: 2020-02-07

### [Climate Change and Indigenous Peoples in the United States](#)

**Synopsis:**

With a long history and deep connection to the Earth's resources, indigenous peoples have an intimate understanding and ability to observe the impacts linked to climate change. Traditional ecological knowledge and tribal experience play a key role in developing future scientific solutions for adaptation to the impacts. The book explores climate-related issues for indigenous communities in the United States, including loss of traditional knowledge, forests and ecosystems, food security and traditional foods, as well as water, Arctic sea ice loss, permafrost thaw, and relocation. The book also highlights how tribal communities and programs are responding to the changing environments. Fifty authors from tribal communities, academia, government agencies, and NGOs contributed to the book.

**Keywords:** Changing Streamflow, Climate Adaptation, Climate Change and Indigenous Peoples of the USA, Climate Change and Tribal Communities, Climate Change in Alaska, Traditional Knowledge in Climate Change Adaptation, Tribal Traditional, Water Resources and American Indians

**Resource Type:** Book Chapter

**Focus:** Cultural-environmental assessment, Indigenous perspectives

**Region:** North America, United States

**Language:** English

**Year:** 2013

**Citation:** Karletta Chief, Ann Marie Chischilly, Patricia Cochran, Mike Durglo, Preston Hardison, Joe Hostler, Kathy Lynn, Gary Morishima, Don Motanic, Jim St. Arnold, Carson Viles, Garrit Voggesser, Kyle Powys Whyte, Dan Wildcat and Sue Wotkyns Journal: SSRN Electronic Journal , 2015 DOI: 10.2139/ssrn.2555299

Resource entry updated: 2020-02-07

### [Asserting Native Resilience Pacific Rim Indigenous Nations Face the Climate Crisis](#)

**Synopsis:**

Indigenous nations are on the front line of the climate crisis. With cultures and economies among the most vulnerable to climate-related catastrophes, Native peoples are developing twenty-first century responses to climate change that serve as a model for Natives and non-Native communities alike.

Native American tribes in the Pacific Northwest and Indigenous peoples around the Pacific Rim have already been deeply affected by droughts, flooding, reduced glaciers and snowmelts, seasonal shifts in winds and storms, and the northward movement of species on the land and in the ocean. Using tools of resilience, Native peoples are creating defenses to strengthen their communities, mitigate losses, and adapt where possible.

*Asserting Native Resilience* presents a rich variety of perspectives on Indigenous responses to the climate crisis, reflecting the voices of more than twenty contributors, including tribal leaders, scientists, scholars, and activists from the Pacific Northwest, British Columbia, Alaska, and Aotearoa / New Zealand, and beyond. Also included is a resource directory of Indigenous governments, NGOs, and communities and a community organizing booklet for use by Northwest tribes.

**Keywords:** Northwest Tribes, Indigenous Responses, Climate Crisis, Climate Change

**Resource Type:** Book

**Focus:** Indigenous perspectives, Climate Change

**Region:** Worldwide

**Language:** English

**Year:** 2012

**Citation:** Grossman Zoltán, and Alan Parker. *Asserting Native Resilience: Pacific Rim Indigenous Nations Face the Climate Crisis*. Corvallis, OR: Oregon State University Press, 2012.

Resource entry updated: 2020-02-07

### [Land Use, Climate Change Adaptation, and Indigenous Peoples](#)

**Synopsis:**

For indigenous peoples, resilience is rooted in traditional knowledge, as their capacity to adapt to environmental change is based first and foremost on in-depth understanding of the land. As climate change increasingly impacts indigenous landscapes, communities are responding and adapting in unique ways.

In a recent statement to the Conference of Parties to the UN Framework Convention on Climate Change, the International Indigenous Peoples Forum on Climate Change (IIPFCC) stated:

"...[W]e reiterate the need for recognition of our traditional knowledge, which we have sustainably used and practiced for generations; and the need to integrate such knowledge in global, national and sub-national efforts. This knowledge is our vital contribution to climate change adaptation and mitigation."

**Keywords:** IIPFCC, WALFA, Indigenous communities, Indigenous peoples, Land-use systems, Climate Change

**Resource Type:** Online Platform

**Focus:** Framework, Indigenous knowledge systems

**Region:** Worldwide

**Language:** English

**Year:** 2012

**Citation:** Braun, David Max. "Land Use, Climate Change Adaptation, and Indigenous Peoples." National Geographic Society Newsroom, December 15, 2017. <https://blog.nationalgeographic.org/2012/10/17/land-use-climate-change-adaptation-and-indigenous-peoples/>.

Resource entry updated: 2020-02-07

### [INUIT Application of Indigenous Knowledge in the Arctic Council](#)

**Synopsis:**

There is an increasing need to better understand changes occurring within the Arctic and a growing appreciation of how Indigenous Knowledge (IK) may illuminate understanding of these changes. This knowledge source will add to the quality of research/reports being conducted/created under the auspice of the Arctic council (AC), when utilized effectively. Various challenges are faced on how to include IK in a meaningful way within the AC working groups. One such challenge is confusion of how to define and utilize IK, and how to employ both IK and science together. This paper will attempt to articulate and address these concerns, while outlining a process to ensure the application of IK within AC work.

**Keywords:** Indigenous Knowledge, Arctic council, INUIT, IK

**Resource Type:** Report

**Focus:** Framework, Case study, Research Guidelines, Indigenous Knowledge

**Region:** North America, Arctic

**Language:** English

**Year:** 2016

**Citation:** "Application of Indigenous Knowledge in the Arctic Council ." Application of Indigenous Knowledge in the Arctic Council . Inuit Circumpolar Council , 2016. <https://iccalaska.org/wp-icc/wp-content/uploads/2016/03/Application-of-IK-in-the-Arctic-Council.pdf>.

Resource entry updated: 2020-01-08

[Haida Marine Planning: First Nations as a Partner in Marine Conservation](#)

**Synopsis:**

The Haida Nation is involved in an integrated marine planning initiative in northern British Columbia, Canada. The Haida continue to occupy traditional territory in and around Haida Gwaii, or the Queen Charlotte Islands, and are engaged in a larger planning process for the Pacific North Coast Integrated Management Area (PNCIMA). This initiative is in the early planning stage, focused on capacity building and creating enabling conditions for co-governance. Court decisions, government policies, and a modern treaty process are driving short- and long-term efforts to resolve issues of Aboriginal ownership and resource access, both on land and in the ocean. As a result, the PNCIMA process is being led by two levels of government, First Nations and federal, reflecting changing perceptions of Aboriginal title and rights in British Columbia. The Haida have been resource owners and managers on Haida Gwaii for millennia, and continue to apply traditional knowledge and experience to marine-use planning and fisheries management. The Haida approach is place based and guided by fundamental Haida ethics and values such as respect, balance, and reciprocity. We describe these values and discuss the emerging role of First Nations in integrated oceans management in the context of the six themes: lessons from land-use planning; the PNCIMA governance structure; the relationship of values to planning outcomes; developing an ecosystem-based management framework; applications of traditional knowledge, based on a study of Haida marine traditional knowledge currently in progress; and linking marine planning at various scales. On Haida Gwaii, collaborative marine planning is expected to result in improved protection of Haida Gwaii waters for future generations, greater Haida participation in management decisions, and increasing emphasis on sustainability of both local fisheries and communities.

**Keywords:** Aboriginal rights, fisheries management, indigenous peoples, integrated coastal management, marine planning, oceans governance, PNCIMA, EBM framework

**Resource Type:** Journal Article

**Focus:** Integrated management, co-governance

**Region:** North America, Canada

**Language:** English

**Year:** 2010

**Citation:** Jones, Russ, Catherine Rigg, and Lynn Lee. "Haida Marine Planning: First Nations as a Partner in Marine Conservation." *Ecology and Society* 15, no. 1 (2010). <https://doi.org/10.5751/es-03225-150112>.

Resource entry updated: 2020-01-07

[Haida Nation & Province of British Columbia: Haida Gwaii Marine Plan 2015](#)

**Synopsis:**

The purposes of the Haida Gwaii Marine Plan are to: i. Provide a framework for joint or shared management of marine and coastal areas in and around Haida Gwaii through an ecosystem-based approach to management and marine resource decision-making; ii. Provide policy, detailed planning, and management direction regarding marine uses, activities and values throughout the plan area that are within the jurisdictional authority of BC and/or the CHN; iii. Identify acceptable marine uses that support sustainable communities while protecting and, where necessary, restoring marine ecosystems; iv. Support marine economic development and provide direction for encouraging and managing future growth; v. Provide guidance for tenuring and marine resource use decisions by BC and CHN in Haida Gwaii waters; vi. Provide valuable information that will make important contributions to future processes between CHN, BC and/or Canada, such as identifying areas for consideration in the development of a marine protected area network; and vii. Identify changes to existing CHN-BC protected areas including zoning, allowable uses and enhancements to marine protection.

**Keywords:** Haida Gwaii, Marine Plan, framework, Haida Nation, Province of BC, PMZs, CHN

**Resource Type:** Report

**Focus:** Sustainability plan, management

**Region:** North America, Canada

**Language:** English

**Year:** 2015

**Citation:** "Haida Gwaii Marine Plan." Haida Gwaii Marine Plan. Marine Planning Partnership Initiative, 2015. <http://mapocean.org/wp-content/uploads/2015/09/HGMP-WEB-2015-07-08.pdf>.

Resource entry updated: 2020-01-07



[First Nations Values in Protected Area Governance: Tla-o-qui-aht Tribal Parks and Pacific Rim National Park Reserve](#)

**Synopsis:**

Over the past few decades there has been increasing attention paid to 'shared' forms of governance and to the creation of new protected areas (PAs) that are designed to address 'non-biological' goals and values. The rationale for these initiatives has, in part, been based on the belief that well-designed systems of protected area governance will help to deliver desired outcomes and meet linked sociocultural, economic and environmental objectives. Addressing these questions has become increasingly important in British Columbia, where a number of First Nations are asserting increasing control over existing state-run protected areas, as well as establishing new protected areas and designing governance systems for them that deliver outcomes consonant with cultural beliefs, values and goals. This paper reports on an in-depth case study of the Tla-o-qui-aht Tribal Parks and the Pacific Rim National Park Reserve, with a focus on comparing how these physically adjacent protected areas with different objectives each attempt to meaningfully engage the Tla-o-qui-aht First Nation in PA governance.

**Keywords:** Community conserved areas, First Nations, Governance, Values, British Columbia, Tla-o-qui-aht Tribal Parks

**Resource Type:** Report

**Focus:** Indicators, Case study

**Region:** North America, Canada

**Language:** English

**Year:** 2012

**Citation:** Murray, Grant, and Leslie King. "First Nations Values in Protected Area Governance: Tla-o-qui-aht Tribal Parks and Pacific Rim National Park Reserve." *Human Ecology* 40, no. 3 (2012): 385–95. <https://doi.org/10.1007/s10745-012-9495-2>.

Resource entry updated: 2020-01-07

[Biocultural conservation of marine ecosystems examples from new zealand and canada](#)

**Synopsis:**

Place-specific knowledge systems, combined with hands-on resource use and a long-term commitment to sustaining resources and ecosystems, are vitally important in restoring the planet to health. This approach is already an integral part of the resource use and management systems of many Indigenous and tribal peoples worldwide, whose knowledge and practices reflect a long history of co-evolving and interdependent social-ecological systems. Negotiated settlements of Indigenous rights issues in New Zealand and Canada have resulted in new opportunities for the expression and application of Indigenous management approaches, including in coastal fisheries. Using examples from both nations, including the Maketu taiāpure in New Zealand and Gwaii Haanas in Canada, we find that the recognition of Indigenous interests in fisheries management is creating a distinctive 'third space' of biocultural conservation that differs quite radically from the polarizing all-or-nothing regime of commercial fisheries vs marine reserves. These approaches to marine conservation simultaneously support cultural renewal and biocultural diversity; bridging the gap between scientific biodiversity conservation on the one hand, and local and Indigenous values of biodiversity for livelihoods on the other. Enabling Indigenous communities to apply their knowledge and practices in stewarding culturally important fisheries is a real alternative to the creation of artificial islands of conservation through human-free protected areas. Locally driven approaches may be the best hope for long-term conservation in a complex world.

**Keywords:** Biocultural conservation, Social-ecological systems, Indigenous, Fisheries, Biodiversity, Co-management, New Zealand and Canada

**Resource Type:** Journal Article

**Focus:** Case study, natural resource management

**Region:** North America, Canada; Oceania, Aotearoa (New Zealand)

**Language:** English

**Year:** 2012

**Citation:** Stephenson, Janet, Fikret Berkes, Nancy J Turner, and Jonathan Dick. "Biocultural Conservation of Marine Ecosystems Examples: from New Zealand and Canada." *Indian Journal of Traditional Knowledge* 13, no. 2 (2012): 257–65. [http://nopr.niscair.res.in/bitstream/123456789/27907/1/IJTK\\_13\(2\)\\_257-265.pdf](http://nopr.niscair.res.in/bitstream/123456789/27907/1/IJTK_13(2)_257-265.pdf).

Resource entry updated: 2020-01-07

["Abandoning or Reimagining a Cultural Heartland? Understanding and Responding to Rewilding Conflicts in Wales - the case of the Cambrian Wildwood. "](#)

**Synopsis:**

This paper is about rewilding and the tensions it involves. Rewilding is a relatively novel approach to nature conservation, which seeks to be proactive and ambitious in the face of continuing environmental decline. Whilst definitions of rewilding place a strong emphasis on non-human agency, it is an inescapably human aspiration resulting in a range of social conflicts. The paper focuses on the case study of the Cambrian Wildwood project in MidWales (UK), evaluating the ways in which debate and strategic action to advance rewilding is proceeding, assessing the extent to which compromise and learning has occurred amongst advocates. As such, we provide an important addition to the field, by detailing how conflicts play out over time and how actors' positioning and approach shifts, and why. In this case, tempers have flared around the threat that rewilding is seen to pose to resident farming communities. Tensions discussed include the differing social constructions of landscape and nature involved; the distribution of impacts on different stakeholders; and the relative power of different actors to make decisions and gain representation. Responding to these, the paper outlines how rewilding advocates have sought to advance a more peopled and culturally responsive vision, which seeks to champion sustainable livelihood strategies. The changes in 2 approach detailed demonstrate a reflexive stance from rewilders, which suggests that learning and adaptation can occur. Nonetheless, caution is expressed regarding the extent to which rewilding can truly advance inclusive opportunities for rural change, given a continued return amongst stakeholders to exclusionary narratives of belonging and authenticity, suggesting substantive difficulty in moving beyond longstanding concerns over identity and the reimagination of place. Rewilding, it would seem, is about who we think we are and how we coconstitute our sense of self. We, therefore, close by arguing that tactics and politicking can only have so much bearing, tensions over rewilding are unavoidably emotional.

**Keywords:** Conservation conflict, landscape restoration, identity, Cambrian Wildwood project

**Resource Type:** Journal Article

**Focus:** Case study

**Region:** Europe, United Kingdom

**Language:** English

**Year:** 2018

**Citation:** Wynne-Jones, Sophie, Graham Strouts, and George Holmes. "Abandoning or Reimagining a Cultural Heartland? Understanding and Responding to Rewilding Conflicts in Wales - the Case of the Cambrian Wildwood." *Environmental Values* 27, no. 4 (January 2018): 377–403. <https://doi.org/10.3197/096327118x15251686827723>.

Resource entry updated: 2020-01-07

[Guidelines for cross-cultural Participatory Action Research partnerships: A case study of a customary seabird harvest in New Zealand](#)

**Synopsis:**

Adaptive co-management and Participatory Action Research (PAR) promotes social ecological resilience by simultaneously protecting wildlife and its habitat and promoting capacity and motivation for sustainable harvest management by communities. We report here on a case study of learning through a partnership (1994–2009) between science and Traditional Ecological Knowledge (TEK) to determine the sustainability of titi (sooty shearwater, *Puffinus griseus*) harvests by Rakiura Maori in southern New Zealand. Testimony of Maori elders and titi harvesters (birders), members of the Rakiura Titi Islands Administering Body, researchers and participants in workshops and meetings were recorded throughout the 14-year research project to identify critical determinants of success of the partnership. A large majority of participants supported the research, mainly because it expanded their knowledge by investigating the reasons for declining bird numbers and the means of ensuring the continuation of their muttonbirding heritage. Initial concerns about the research included fear that prohibition or quota would be imposed through political pressure from external groups; the intrusion of strangers on the islands; the misconception that the research was being promulgated by government regulatory agencies; and scepticism about research findings. Research also precipitated conflict and division within the Rakiura community, and some birders feared that science might displace matauranga Maori (TEK) of the Rakiura people for guiding harvest management. Core conditions for community engagement included trust between parties, effective communication of the science, equitable decision-making responsibility, and building scientific capability and monetary support to enable meaningful participation. The most fundamental requirement is mutual respect for each party's knowledge. Attention to this inclusive, equitable, slow and prolonged process makes it more likely that the community will uptake results to improve sustainability of harvesting. The research has heightened awareness within the harvesting community of conservation issues facing the titi and of potential options to mitigate them. Eradication or control of weka (*Gallirallus australis*), and reducing titi harvest levels from around a quarter of the manu (family birding territories), are the main practical ways of increasing sustainability, but the magnitude and direction of climate change impacts on the shearwater population remains uncertain.

**Keywords:** Traditional ecological knowledge, Matauranga, Rakiura Maori, Muttonbirding, Sooty shearwaters, *Puffinus griseus*

**Resource Type:** Journal Article

**Focus:** Case study, indigenous knowledge systems

**Region:** Oceania, Aotearoa (New Zealand)

**Language:** English

**Year:** 2009

**Citation:** Moller, Henrik, Philip Oblyver, Corey Bragg, Jamie Newman, Rosemary Clucas, David Fletcher, Jane Kitson, Sam Mckechnie, Darren Scott, and Rakiura Titi Islands Administering. "Guidelines for Cross-Cultural Participatory Action Research Partnerships: A Case Study of a Customary Seabird Harvest in New Zealand." *New Zealand Journal of Zoology* 36, no. 3 (2009): 211–41. <https://doi.org/10.1080/03014220909510152>.

Resource entry updated: 2020-01-07

[A Global Social-Ecological Systems Monitoring Framework for Coastal Fisheries Management](#)

**Synopsis:**

These are critical questions for natural resource management, but to date, the evidence for addressing these questions across many forms of management, including protected areas, is weak (Miteva et al. 2012). This is particularly true in regards to the social impacts of natural resource management (Bottrill et al. 2014, Pullin et al. 2013). Despite the immense amount of resources allocated by the conservation practitioners to ecological and social monitoring, often the right things are not being monitored in the right way to robustly assess the impact of conservation and management investments. To assess the impacts of coastal conservation and management activities around the world, the Wildlife Conservation Society (WCS) has developed a global monitoring framework to identify and monitor a key set of social and ecological indicators. These indicators were defined to track progress towards two strategic goals over the next 10 years: 1. What are the social and ecological impacts of conservation and management actions? 2. What social, ecological and governance contexts create successful outcomes? The overall goal is to monitor, evaluate and learn from successful conservation and management interventions, and to assess the social and ecological impacts of on-the-ground investments and develop a 'typology' of locally-defined successful interventions. As a first step to achieving this, we have worked with conservation programs and partners in the Western Indian Ocean, Melanesia, Indonesia and the Caribbean and leading academic researchers to develop a key set of social and ecological monitoring indicators. To do this, we have drawn on Elinor Ostrom's socioecological systems framework (Ostrom 2007, 2009) to structure and guide our choice of indicators. This manual is organised as follows: (1) we introduce the social-ecological systems framework (Ostrom 2007, 2009) that we use or organize our indicators; (2) we describe each of the social and ecological indicators in detail, including what they represent and how they are operationalized; (3) we provide further detail on the social science theory underpinning some of our indicators and how the indicators can be used to form composite indexes; and (4) we provide some information on impact evaluation in the context of global monitoring.

**Keywords:** Small-scale coastal fisheries, Social Science Theory, Composite Social Indicators, Governance System, Resource System, Resource Units, Related Ecosystems, Global Monitoring, Fisheries

**Resource Type:** Book

**Focus:** Framework, Monitoring, Social-ecological system indicators

**Region:** Western Indian Ocean, Melanesia, Indonesia, Caribbean

**Language:** English

**Year:** 2017

**Citation:** Gurney, Georgina, and Emily S Darling. A Global Social-Ecological Systems Monitoring Framework for Coastal Fisheries Management: A Practical Monitoring Handbook. Wildlife Conservation Society, 2017.  
[https://c532f75abb9c1c021b8ce46e473f8aadb72cf2a8ea564b4e6a76.ssl.cf5.rackcdn.com/2018/04/23/1s85i5sj9x\\_WCS\\_Coastal\\_Fisheries\\_Report\\_LO.pdf](https://c532f75abb9c1c021b8ce46e473f8aadb72cf2a8ea564b4e6a76.ssl.cf5.rackcdn.com/2018/04/23/1s85i5sj9x_WCS_Coastal_Fisheries_Report_LO.pdf).

Resource entry updated: 2020-01-07

[Biocultural indicators to support locally led environmental management and monitoring](#)

**Synopsis:**

Environmental management (EM) requires indicators to inform objectives and monitor the impacts or efficacy of management practices. One common approach uses “functional ecological” indicators, which are typically species whose presence or abundance are tied to functional ecological processes, such as nutrient productivity and availability, trophic interactions, and habitat connectivity. In contrast, and used for millennia by Indigenous peoples, biocultural indicators are rooted in local values and place-based relationships between nature and people. In many landscapes today where Indigenous peoples are reasserting sovereignty and governance authority over natural resources, the functional ecological approach to indicator development does not capture fundamental values and ties to the natural world that have supported social-ecological systems over the long term. Accordingly, we argue that the development and use of biocultural indicators to shape, monitor, and evaluate the success of EM projects will be critical to achieving ecological and social sustainability today. We have provided a framework composed of criteria to be considered when selecting and applying meaningful and efficacious biocultural indicators among the diverse array of potential species and values. We used a case study from a region now referred to as coastal British Columbia, Canada, to show how the suggested application of functional ecological indicators by the provincial government created barriers to the development of meaningful cogovernance. We then explained how the Kitasoo/Xai'xais First Nation designed and implemented a bioculturally relevant suite of indicators in their own EM and monitoring processes. Drawing on our experiences there and both the biocultural and functional ecological literature, we proposed six generalizable criteria (culturally salient, inclusive, sensitive to impacts, supportive of place-based relationships, perceptible, and linked to human well-being) that can guide resource stewards and agencies in selecting locally relevant indicators to implement biocultural EM and monitor the performance of outcomes.

**Keywords:** Biocultural approaches, Environmental management, Indicators, Indigenous, Locally led, Monitoring

**Resource Type:** Journal Article

**Focus:** Indicators

**Region:** North America, Canada

**Language:** English

**Year:** 2019

**Citation:** Deroy, Bryant C., Chris T. Darimont, and Christina N. Service. “Biocultural Indicators to Support Locally Led Environmental Management and Monitoring.” *Ecology and Society* 24, no. 4 (2019). <https://doi.org/10.5751/es-11120-240421>.

Resource entry updated: 2020-01-07

[Inuit Arctic Policy - Inuit Circumpolar Council](#)

**Synopsis:**

To establish a comprehensive Inuit Arctic Policy in Inuit circumpolar regions in regard to matters of economic, social, cultural, environmental as well as political concerns. To achieve a broad consensus on the priorities, policies, and principles to be advanced in Inuit circumpolar regions, taking into account the significance of the Arctic and its resources to both present and future generations of northern peoples. To encourage co-ordination of policy-making and decision-making in the international community, particularly in and among those states with Arctic jurisdictions and interests. To ensure the survival of Inuit as a distinct people, and to integrate Inuit cultural values and concerns in all aspects of Arctic Policy, as appropriate. To emphasize the importance of an economic base in the North, and the continuing right of Inuit to participate in the management and development of the Arctic and its resources. To give due priority to improving the quality of life in Inuit communities and the right of Inuit to exercise adequate control over actions and activities significantly affecting their northern regions. To protect the delicate Arctic environment, including marine and other resources upon which Inuit depend. To devise principles for an Inuit Arctic Policy which not only ensures recognition and respect for Inuit rights and interests, but also protects the human and other fundamental rights and freedoms of all northern peoples. To favour those policies and principles which foster peaceful diplomacy and the use of appropriate and safe technologies in circumpolar regions. To promote international understanding and co-operation in Arctic matters through collaborative, co-operative research; informational, cultural, and educational exchanges; and international agreements. To proclaim November 7th, the birth day of the ICC visionary and founder, Eben Hopson Sr., as "Inuit Day", and all Inuit governments, agencies and communities should also be urged to proclaim annually this day as "Inuit Day" with appropriate ceremonies and celebrations.

**Keywords:** Inuit, Igaliko Village, Arctic, Indigenous Peoples, Arctic Policy, Policies, ICC

**Resource Type:** Report

**Focus:** Indicators, Framework

**Region:** North America, Arctic

**Language:** English

**Year:** 2016

**Citation:** "Inuit Arctic Policy ." Inuit Arctic Policy . Inuit Circumpolar Council, 2016. [https://iccalaska.org/wp-icc/wp-content/uploads/2016/01/Inuit-Arctic-Policy-June02\\_FINAL.pdf](https://iccalaska.org/wp-icc/wp-content/uploads/2016/01/Inuit-Arctic-Policy-June02_FINAL.pdf).

Resource entry updated: 2020-01-07

[Coastal Monitoring Indigenous Knowledge Holders Meeting Report](#)

**Synopsis:**

The Coastal Expert Monitoring Group (CEMG) is organized under a Conservation of Arctic Flora and Fauna's (CAFF) Circumpolar Based Monitoring Program. The primary goal of the CEMG is to develop a long term, integrated, multi-disciplinary, circumpolar Arctic Coastal Biodiversity Monitoring Plan that relies on science and Indigenous Knowledge, and has direct and relevant application for communities, industry, government decision makers, and other clients of the knowledge generated. Given approval of the Coastal Plan, CEMG will work to develop an implementation plan that will identify a timeline, costs, organizational structure and partners. It is fundamental to the Coastal Plan that implementation partners will include Arctic Indigenous peoples and information/concepts from Indigenous Knowledge. There are many questions that Indigenous Knowledge holders must address and many decisions that our coastal communities face. In working with scientists and international programs, some of the questions and decisions include how to share our information, how information from IK should be categorized when used with science, how to safeguard information documented from IK holders, and how to ensure that IK holders are involved in analysis and interpretation of their information. With this understanding Canada hosted a one-day meeting, facilitated by ICC that brought together IK holders to become familiar with CAFF, CBMP and to prepare for the Coastal Expert Group Monitoring workshop. Through the one-day workshop, participants held open discussions on the threats to biodiversity within their given regions, changes occurring; ways that IK directs daily monitoring activities; challenges and potential solutions for the inclusion of IK within CEMG; monitoring priorities and IK approaches to monitoring; what programs may be occurring within their respective regions that are based on IK and/or science and the potential benefits to taking part in CEMG.

**Keywords:** CEMG workshop, Arctic communities, FEC, CAFF, CBMP, Alaska, Inuit Circumpolar Council, ICC, Indigenous Knowledge holders

**Resource Type:** Report

**Focus:** Monitoring , Indicators, Indigenous knowledge

**Region:** North America, Arctic

**Language:** English

**Year:** 2016

**Citation:** "COASTAL MONITORING INDIGENOUS KNOWLEDGE HOLDERS MEETING REPORT." COASTAL MONITORING INDIGENOUS KNOWLEDGE HOLDERS MEETING REPORT. Inuit Circumpolar Council, February 29, 2016. [https://iccalaska.org/wp-icc/wp-content/uploads/2018/01/IK-holder-workshop-report\\_102116.pdf](https://iccalaska.org/wp-icc/wp-content/uploads/2018/01/IK-holder-workshop-report_102116.pdf).

Resource entry updated: 2020-01-07

[Community-Based Monitoring and Indigenous Knowledge in a Changing Arctic: A Review for the Sustaining Arctic Observing Networks](#)

**Synopsis:**

This review of community-based monitoring (CBM) in a changing Arctic is based on a multi-year initiative launched in 2012 as a task under the "Sustaining Arctic Observing Networks" (SAON), a network of Arctic observing networks. The goal of the task was to better understand the current state of CBM in the Arctic, with a particular interest in monitoring and observing based on Indigenous Knowledge (IK), and to make recommendations to SAON and the Arctic observing community more broadly about how to support engagement and development of CBM. The task began with the creation of a searchable, online inventory of CBM and IK programs, projects, and initiatives: the Atlas of Community-Based Monitoring and Indigenous Knowledge in a Changing Arctic ([www.arcticcbm.org](http://www.arcticcbm.org)). The Exchange for Local Observations and Knowledge of the Arctic (ELOKA) developed this web-based atlas infrastructure on the Nunaliit Atlas Development Framework (<http://nunaliit.org>). The Atlas geolocates these various initiatives, visualizes the networks of communities that are involved, and shares metadata provided or verified by program staff. Identification and recruitment of CBM and IK initiatives to join the Atlas involved a number of strategies. We intentionally did not pre-define CBM, but adopted an inclusive approach that encompassed programs with different levels of community involvement as well as IK projects with relevance to long-term observing. We conducted initial outreach to a number of Indigenous organizations and government and academic researchers engaged in monitoring and observing activities. At the pan-Arctic level, Arctic Council Permanent Participants (PPs), and the SAON and Conservation of Arctic Flora and Fauna (CAFF) boards were briefed and asked to refer programs. Once programs were identified, program staff were asked to fill out a questionnaire to provide metadata about their initiative. In some cases, phone interviews were conducted and program staff were asked to approve a pre-filled questionnaire. Completed questionnaires were reviewed and entered into the Atlas by a trained member of the research team to ensure consistency of entries. As of September 2015, the Atlas included 81 program entries.<sup>1</sup> The second component of the SAON task was to analyze these entries alongside information gathered from participation of several of this review's authors in a series of workshops on CBM and IK held in 2013 and 2014<sup>2</sup>; this analysis informed the development of the review. The goal of the review is to provide a snapshot of the methods, approaches, and practices of CBM and IK initiatives, and to present recommendations for next steps in supporting the continued development of CBM as an important approach to Arctic observing. The intended audience of this review includes CBM and IK program practitioners and interested community members, scientists and researchers interested in different approaches to Arctic observing, individuals engaged in developing approaches and networks for data sharing and coordination, and municipal, state/territorial, and national government agencies interested in community-based approaches to monitoring. The review contains the following sections: General overview of programs in the Atlas; Specific issue areas; Good practices; and Next Steps.

**Keywords:** Arctic CBM, Arctic Council, workshop, Arctic Indigenous Peoples, IK

**Resource Type:** Report

**Focus:** Community based monitoring , Indicators, Indigenous knowledge

**Region:** North America, Arctic

**Language:** English

**Year:** 2016

**Citation:** Noor Johnson, Carolina Behe, Finn Danielsen, Eva-Maria Krümmel, Scot Nickels, Peter L. Pulsifer, Community-Based Monitoring and Indigenous Knowledge in a Changing Arctic: A Review for the Sustaining Arctic Observing Networks. Iccalaska, 2016, Community-Based Monitoring and Indigenous Knowledge in a Changing Arctic: A Review for the Sustaining Arctic Observing Networks, [https://iccalaska.org/wp-icc/wp-content/uploads/2016/05/Community-Based-Monitoring-and-Indigenous-Knowledge-in-a-Changing-Arctic\\_web.pdf](https://iccalaska.org/wp-icc/wp-content/uploads/2016/05/Community-Based-Monitoring-and-Indigenous-Knowledge-in-a-Changing-Arctic_web.pdf).

Resource entry updated: 2020-01-07



## [Vanuatu 2030 | The People's Plan](#)

### **Synopsis:**

The Department of Strategic Policy, Planning and Aid Coordination (DSPPAC) in coordination with the Vanuatu National Statistics Office (VNSO) and other key government agencies are responsible for monitoring and evaluation of Vanuatu 2030 the National Sustainable Development Plan (NSDP) for 2016 – 2030. The necessary information for conducting NSDP Monitoring and Evaluation (M&E) and completing the Annual Development Report (ADR), including alignment with the Sustainable Development Goals (SDGs), is located in the M&E tables forming the backbone for this framework and which can be found in Annex 2. Additional information regarding SDG alignment with the NSDP M&E Framework is found Section 4.1.1.1. The information included in the tables is illustrated in Figure 1 The NSDP M&E Framework is designed to complement Vanuatu 2030: The People's Plan as well as the Final Technical Report on the National Sustainable Development Plan 2016 to 2030. The framework is results based, and is intended to serve as a guide for implementing, monitoring and reporting on the NSDP. A more detailed explanation of the critical elements of the NSDP M&E Framework are located in Section 3.1 of this document. Each goal is made up of a series of policy objectives. The three NSDP pillars are comprised of a total of 98 policy objectives spread over 15 goals. There is a maximum of three indicators and targets for each of the 98 policy objectives. In actuality there is a total of 77 indicators and 83 targets in the Social Pillar, 62 indicators and 64 targets in the Environment Pillar and 57 indicators and 58 targets in the Economy Pillar One Society 6 Goals 36 Policy Objectives 77 Indicators 83 Targets Pillar Two Environment 5 Goals 29 Policy Objectives 62 Indicators 64 Targets Pillar Three Economy 4 Goals 33 Policy Objectives 57 Indicators 58 Targets NSDP M&E Framework July 2017 Department of Strategic Policy, Planning and Aid Coordination 5 Pillar. The number of targets is slightly higher than the number of indicators. This is due to some indicators having more than one applicable target. The NSDP contains a total of 196 indicators and 205 targets across the 98 Policy Objectives. The first level of analysis of the NSDP M&E framework focuses on the Policy Objectives through evaluation of the status of each of the targets. Progress is measured towards the target, while the baseline serves as a reference point for the status of each indicator at the start of the plan. The second level of analysis of the NSDP M&E framework focuses on the Goals and the progress to meeting each Goal as evaluated by progress for the related policy objectives. Reporting provides information for both levels of analysis. NSDP reporting is designed to provide a report that can give a brief overview of the status of each of the 15 Goals through an evaluation of the status of the related policy objectives. Unlike the previous national development strategy, the Priorities and Action Agenda (PAA), monitoring of the NSDP does not focus on evaluating policy content or policy implementation. Instead the monitoring focus is on targets, and reaching targets for the Policy Objectives and how this impacts progress towards the Goals. If targets are not being reached then the M&E evaluation component identifies why this has happened. If targets are being met then the evaluation component provides the justification as to how and why the targets are being successfully reached. Even with the evaluation component included, the primary focus of NSDP M&E framework is the targets and indicators data contained within the NSDP tables. The evaluation component is used to clarify the results and status of the targets and indicators through the information collected annually using the M&E matrixes, an example of which can be found in Annex 1

**Keywords:** Climate Change, framework, NSDP, Evaluation, Strategy

**Resource Type:** Report

**Focus:** Monitoring, Policy

**Region:** Oceania Melanesia; Vanuatu

**Language:** English

**Year:** 2017

**Citation:** National Sustainable Development Plan 2016-2030: Monitoring and Evaluation Framework. Port Vila, Republic of Vanuatu: Department of Strategic Policy, Planning and Aid Coordination, 2018.

[Grizzly Bear Monitoring by the Heiltsuk People as a Crucible for First Nation Conservation Practice](#)

**Synopsis:**

Guided by deeply held cultural values, First Nations in Canada are rapidly regaining legal authority to manage natural resources. We present a research collaboration among academics, tribal government, provincial and federal government, resource managers, conservation practitioners, and community leaders supporting First Nation resource authority and stewardship. First, we present results from a molecular genetics study of grizzly bears inhabiting an important conservation area within the territory of the Heiltsuk First Nation in coastal British Columbia. Noninvasive hair sampling occurred between 2006 and 2009 in the Koeeye watershed, a stronghold for grizzly bears, salmon, and Heiltsuk people. Molecular demographic analyses revealed a regionally significant population of bears, which congregate at the Koeeye each salmon-spawning season. There was a minimum of 57 individual bears detected during the study period. Results also pointed to a larger than expected source geography for salmon-feeding bears in the study area (> 1000 km<sup>2</sup>), as well as early evidence of a declining trend in the bear population potentially explained by declining salmon numbers. Second, we demonstrate and discuss the power of integrating scientific research with a culturally appropriate research agenda developed by indigenous people. Guided explicitly by principles from Gwi'ilas or customary law, this research methodology is coupled with Heiltsuk culture, enabling results of applied conservation science to involve and resonate with tribal leadership in ways that have eluded previous scientific endeavors. In this context, we discuss the effectiveness of research partnerships that, from the outset, create both scientific programs and integrated communities of action that can implement change. We argue that indigenous resource management requires collaborative approaches like ours, in which science-based management is embedded within a socially and culturally appropriate context. We emerge not only with a set of guiding principles for resource management by the Heiltsuk, but a broadly applicable strategy that fosters intimacy with traditional lands and resources and provides a powerful engine for conservation.

**Keywords:** Bear population monitoring, Heiltsuk First Nation, grizzly bear, noninvasive mark-recapture, traditional stewardship

**Resource Type:** Journal Article

**Focus:** Monitoring, natural resource management

**Region:** North America, Canada

**Language:** English

**Year:** 2014

**Citation:** Housty, William G., Anna Noson, Gerald W. Scoville, John Boulanger, Richard M. Jeo, Chris T. Darimont, and Christopher E. Filardi. "Grizzly Bear Monitoring by the Heiltsuk People as a Crucible for First Nation Conservation Practice." *Ecology and Society* 19, no. 2 (2014). <https://doi.org/10.5751/es-06668-190270>.

Resource entry updated: 2019-12-18

[Ancient fish weir technology for modern stewardship: lessons from community-based salmon monitoring](#)

**Synopsis:**

Introduction: The UN Declaration on the Rights of Indigenous Peoples states that indigenous people have a fundamental right to contribute to the management of the resources that support their livelihoods. Salmon are vital to the economy and culture of First Nations in coastal British Columbia, Canada. In this region, traditional systems of management including weirs – fences built across rivers to selectively harvest salmon – supported sustainable fisheries for millennia. In the late-19th century traditional fishing practices were banned as colonial governments consolidated control over salmon. Outcomes: In collaboration with the Heiltsuk First Nation we revived the practice of weir building in the Koeeye River. Over the first four years of the project we tagged 1,226 sockeye, and counted 8,036 fish during fall stream walks. We used a mark-recapture model which accounted for both pre-spawn mortality due to variation in temperature, and tag loss, to produce the first mark-resight estimates of sockeye abundance in the watershed (4,600 – 15,000 escapement). Discussion: High river temperatures are associated with increased en route mortality in migrating adult sockeye. We estimated pre-spawn mortality ranged from 8 – 72% across the four years of study, highlighting the degree to which climate conditions may dictate future viability in sockeye salmon populations. These results demonstrate the power of fusing traditional knowledge and management systems with contemporary scientific approaches in developing local monitoring.

**Keywords:** local management, traditional ecological knowledge, First Nations, salmon, food fisheries, mark-recapture, Heiltsuk First Nation

**Resource Type:** Journal Article

**Focus:** Monitoring, Mark-resight model

**Region:** North America, Canada

**Language:** English

**Year:** 2017

**Citation:** Atlas, William I., William G. Housty, Audrey Béliveau, Bryant Deroy, Grant Callegari, Mike Reid, and Jonathan W. Moore. "Ancient Fish Weir Technology for Modern Stewardship: Lessons from Community-Based Salmon Monitoring." *Ecosystem Health and Sustainability* 3, no. 6 (March 2017): 1341284. <https://doi.org/10.1080/20964129.2017.1341284>.

Resource entry updated: 2019-12-18

[On q̓íts Sásm̓łáts ḥ̓s̓łats \(For Our Children's Tomorrows\) Heiltsuk Land Use Plan](#)

**Synopsis:**

Since time immemorial, we, the Heiltsuk people have managed all of our territory with respect and reverence for the life it sustains, using knowledge of marine and land resources passed down for generations. We have maintained a healthy and functioning environment while meeting our social and economic needs over hundreds of generations. Our vision for this area remains unchanged. We will continue to balance our needs while sustaining the land and resources that support us. We will continue to manage all Heiltsuk seas, lands and resources according to customary laws, traditional knowledge and n̓́.ym̓́. (oral tradition) handed down by our ancestors, with consideration of the most current available scientific information.

**Keywords:** Heiltsuk, Ḡv̓í'íl.ás , Living Document, Policy, land use, British Columbia, Heiltsuk Tribal Council

**Resource Type:** Book

**Focus:** Land indicators

**Region:** North America, Canada

**Language:** English, Heiltsuk

**Year:** 2018

**Citation:** Heiltsuk Land Use Plan - First Nations (version Heiltsuk Land Use Plan - First Nations). Waglisla, BC: Heiltsuk Tribal Council , 2018. <http://www.firstnations.de/media/04-1-land-use-plan.pdf>.

Resource entry updated: 2019-12-18

[Qualitative Participatory Mapping of Seal and Walrus Harvest and Habitat Areas: Documenting Indigenous Knowledge, Preserving Local Values, and Discouraging Map Misuse](#)

**Synopsis:**

In the Bering Strait region of Alaska decreasing sea ice and increasing development are driving environmental and policy changes that significantly impact federally recognized tribes, which depend on marine resources for cultural, economic, and nutritional reasons. Kawerak, Inc., an Alaska Native non-profit tribal consortium, conducted participatory ice seal and walrus harvest and habitat mapping in collaboration with nine of the region's federally recognized tribes. Participants were concerned that maps could misrepresent marine mammal mobility, limit future harvest area flexibility, increase outside regulation of harvest activities, generate conflict between communities, and attract commercial activity. This paper addresses these concerns through a technique called qualitative participatory mapping, which preserves local voices and priorities. This technique helped communicate and convey respect for traditional knowledge while lowering the probability of map misuse or misinterpretation. This work evaluated project results in terms of Elwood's dimensions of empowerment, which indicated the largest gain in capacity building, and more moderate gains for procedural and distributional empowerment.

**Keywords:** Alaska Native, Bering Strait, climate change, community-based natural resource management, Indigenous, marine mammals, participatory mapping, qualitative methods, traditional knowledge

**Resource Type:** Journal article

**Focus:** Community-based resource management

**Region:** North America, United States

**Language:** English

**Year:** 2015

**Citation:** Gadamus, Lily et al. "Qualitative Participatory Mapping of Seal and Walrus Harvest and Habitat Areas: Documenting Indigenous Knowledge, Preserving Local Values, and Discouraging Map Misuse." *International Journal of Applied Geospatial Research* 6, no. 1 (2015): 76-93.

Resource entry updated: 2019-12-11

[Continuity and change within the social-ecological and political landscape of the Maasai Mara, Kenya](#)

**Synopsis:**

Traditional livestock management has historically been blamed for the mismanagement of rangelands, but there is a growing recognition of the importance of extensive herding strategies and the local knowledge embedded in these practices. Here, we apply the lens of continuity and change to understand how local herders interpret environmental change. By exploring traditional rangeland indicators as used by Maasai herders, we highlight some of the forces of change that appear to constrain the application of local knowledge of rangeland health. Fieldwork was conducted from January to August 2013 in the Mara Division, Narok County, Kenya, employing semi-structured interviews, transect walks, focus groups, participatory mapping and participant observation. Findings suggest that continuity exists in many of the traditional methods of observing land and livestock. However, various obstructions are surfacing in a political landscape in which local knowledge holders are not always able to put their knowledge and observations into practice. These obstructions of knowledge, practices and skills occurred through three broad forces involving acculturation, prohibition and applicability. As possible consequences of a system in transition, these forces illustrate the unbalanced nature of overlap between heterogeneous users, conflicting interests and power differentials. In order to facilitate continued importance and growth of local knowledge, we conclude that resource and protected area managers must recognize local knowledge holders and ensure such knowledge is considered as more than anecdotal or strategic. By encouraging hybrid knowledge co-production in management decisions, the decision-making frame can be broadened to include herders for more inclusive decision-making.

**Keywords:** Continuity and change, traditional ecological knowledge, local knowledge, pastoralism, knowledge co-production, East Africa

**Resource Type:** Journal article

**Focus:** Case study, local knowledge

**Region:** Maasai Mara, Kenya

**Language:** English

**Year:** 2016

**Citation:** Jandreau, C. & Berkes, F. "Continuity and change within the social- ecological and political landscape of the Maasai Mara, Kenya." *Pastoralism: Research, Policy and Practice* 6 (2016). doi: 10.1186/s13570-016-0048-y

Resource entry updated: 2019-08-13

[The role of culture and traditional knowledge in climate change adaptation: Insights from East Kimberley, Australia](#)

**Synopsis:**

Indigenous peoples offer alternative knowledge about climate variability and change based on their own locally developed knowledges and practices of resource use. In this article we discuss the role of traditional ecological knowledge in monitoring and adapting to changing environmental conditions. Our case study documents a project to record the seasonal knowledge of the Miriwoong people in northern Australia. The study demonstrates how indigenous groups' accumulate detailed baseline information about their environment to guide their resource use and management, and develop worldviews and cultural values associated with this knowledge. We highlight how traditional ecological knowledge plays a critical role in mediating indigenous individuals and communities' understandings of environmental changes in the East Kimberley region of north-west Australia, and how these beliefs may influence future decision-making about how to go about adapting to climate change at a local level.

**Keywords:** Adaptation, Indigenous peoples, culture, traditional ecological knowledge, worldviews, Australia

**Resource Type:** Journal article

**Focus:** Case study, traditional ecological knowledge

**Region:** East Kimberley, Australia

**Language:** English

**Year:** 2013

**Citation:** Leonard, S. et al. "The role of culture and traditional knowledge in climate change adaptation: Insights from East Kimberley, Australia." *Global Environmental Change* 23 (2013) 623-632.

Resource entry updated: 2019-08-13

[Local-level criteria and indicators: an Aboriginal perspective on sustainable forest management](#)

**Synopsis:**

As tools for improving the sustainability of forest management, criteria and indicator (C&I) frameworks have grown in popularity over the last decade. Such frameworks have been largely derived from top-down approaches to determining critical measures of forest management success. While useful, they fail to capture many C&I of critical importance to local populations, who experience forest management strategies first hand and who have their own definitions of sustainability. Using archival materials, our research begins to identify one First Nation's forest values and compares these local-level C&I with three well-known C&I frameworks for sustainable forestry. We demonstrate that local-level definitions can provide additional C&I, as well as additional levels of detail to C&I that they share with the national and international frameworks. Both are crucial to developing strategies for sustainable management that meet local as well as broader needs and desires.

**Keywords:** Sustainable forestry, criteria and indicator frameworks, First Nation, local populations

**Resource Type:** Journal article

**Focus:** Criteria and indicator frameworks, sustainable forestry

**Region:** Tl'azt'en Nation, located in central interior British Columbia

**Language:** English

**Year:** 2005

**Citation:** Sherry, E. et al. "Local-level criteria and indicators: an Aboriginal perspective on sustainable forest management." *Forestry* 78 (2005): 513-539.

Resource entry updated: 2019-08-13

[Informal Rangeland Monitoring and Its Importance to Conservation in a U.S. Ranching Community](#)

**Synopsis:**

Effective natural resource management relies on accurate and timely information on the natural environment, which may be obtained by formal ("scientific") or informal ("local" or "traditional") methods. Formal monitoring methods are well documented and widely accepted among the rangeland science community, yet adoption by U.S. ranchers is inconsistent. In contrast, informal monitoring appears to be widely used by ranchers, but its practice and importance have rarely been documented or assessed. By interviewing ranchers and government agency personnel, we evaluated informal monitoring in and around the Altar Valley, Arizona, United States. Informal monitoring techniques included qualitative visual appraisals of forage quantity, indicator species and erosion, and incorporated local environmental history. The environmental knowledge embedded in informal monitoring was generally compatible with natural science. Informal monitoring was conducted continuously throughout the year and provided near real-time assessments that integrated observations of most land in individual pastures and ranches. In contrast, formal monitoring was generally performed only once per year, in a limited number of areas and with a delay of a few months between observation and completion of analysis. Thus informal monitoring had higher spatial coverage and temporal resolution and provided assessments faster than formal monitoring. Consequently, ranchers generally considered informal monitoring to be more relevant than formal monitoring to formulating yearly grazing plans and responding rapidly to unpredictable changes in the natural environment. Ranchers incorporated informal monitoring into assessments of rangeland trends and outcomes of conservation measures and thereby into choices of grazing system and planning of brush management and erosion control. Thus informal monitoring was foundational to long-term conservation, annual rangeland management planning, and adaptive natural resource management on subyearly timescales. If informal monitoring is of comparable utility in other rural communities, it would appear advantageous to document and evaluate informal approaches and to incorporate them into formal conservation planning.

**Keywords:** Adaptive management, enthoecology, knowledge integration, local knowledge, social-ecological system, traditional environmental knowledge

**Resource Type:** Journal article

**Focus:** Case study, rangeland monitoring

**Region:** Altar Valley, Arizona

**Language:** English

**Year:** 2015

**Citation:** Woods, S. R. & Ruyle, G. B. "Informal Rangeland Monitoring and Its Importance to Conservation in a U.S. Ranching Community." *Rangeland Ecology & Management* 68 (2015) 390-401.

Resource entry updated: 2019-08-13

[GNH and GNH Index: A Short Guide to Gross National Happiness Index](#)

**Synopsis:**

This guide introduces the 2010 Gross National Happiness (GNH) Index of Bhutan. It explains the origins of the concept of GNH, its grounding in Bhutanese culture and history, and describes how the concept is being operationalized in the form of the GNH Index in some novel and innovative ways. Any discussion of the GNH in Bhutan must begin from the understanding that it is distinct from the western literature on 'happiness' in two ways. First it is multidimensional – not focused only on subjective well-being to the exclusion of other dimensions – and second, it internalizes other-regarding motivations. While multidimensional measures of the quality of life and well-being are increasingly discussed, Bhutan is innovative in constructing a multidimensional measure which is itself relevant for policy and is also directly associated with a linked set of policy and programme screening tools. This chapter presents the GNH Index which provides an overview of national GNH across 9 domains, comprising of 33 clustered indicators, each one of which is composed of several variables. When unpacked, the 33 clustered indicators have 124 variables.

**Keywords:** Happiness indicators, psychological wellbeing, time use, community vitality, cultural diversity, ecological resilience, living standard, health, education, good governance

**Resource Type:** Recourse book

**Focus:** Guidebook, happiness indicators

**Region:** Kingdom of Bhutan, South Asia

**Language:** English

**Year:** 2012

**Citation:** Ura, K. et al. (2012). A Short Guide to Gross National Happiness Index: The Centre for Bhutan Studies.

Resource entry updated: 2019-08-13

[Reading the Rains: Local Knowledge and Rainfall Forecasting in Burkina Faso](#)

**Synopsis:**

This article describes how farmers of Burkina Faso predict seasonal rainfall and examines how their forecasts relate to those produced by meteorological science. Farmers' forecasting knowledge encompasses shared and selective repertoires. Most farmers formulate expectations from observation of natural phenomena. Cultural and ritual spiritualists also predict rainfall from divination, visions, and dreams. Rather than positing local and scientific knowledge as self-exclusive, our research shows that farmers operate in multiple cognitive frameworks. Moreover, they are interested in receiving scientific information because they perceive local forecasts as becoming less reliable as a result of increasing climate variability. Some aspects of local forecasting knowledge, such as those stressing the relationship between temperatures, wind, and rainfall, can help explain meteorology-based forecasts. But significant discordance remains between scientific and local forecasts. The former predict total rainfall quantity at a regional scale, whereas the latter stress rainfall duration and distribution and are more attuned to crop±weather interactions. Local systems of thought stress the relationship between knowledge and social responsibility. This emphasizes the need for scientists to integrate information dissemination projects with efforts to improve farmers' capacity to respond to forecasts and to cope with suboptimal climate impacts.

**Keywords:** Burkina Faso, climate variability, environmental indicators, farmer knowledge, indigenous meteorology, seasonal rainfall forecasts

**Resource Type:** Journal article

**Focus:** Framework, forecasting knowledge

**Region:** Burkina Faso, West Africa

**Language:** English

**Year:** 2002

**Citation:** Roncolli, C. et al. "Reading the Rains: Local Knowledge and Rainfall Forecasting in Burkina Faso." *Society & Natural Resources* 15 (2002): 409-427.

Resource entry updated: 2019-08-13



[Participatory selection process for indicators of rangeland condition in the Kalahari](#)

**Synopsis:**

To develop indicator-based management tools that can facilitate sustainable natural resource management by non-specialists, meaningful participation of stakeholders is essential. A participatory framework is proposed for the identification, evaluation and selection of rangeland condition indicators. This framework is applied to the assessment of rangeland degradation processes and sustainable natural resource management with pastoralists in the southern Kalahari, Botswana. Farmer knowledge focused on vegetation and livestock, with soil, wild animal and socio-economic indicators playing a lesser role. Most were indicators of current rangeland condition; however 'early warning' indicators were also identified by some key informants. This demonstrates that some local knowledge is process-based. Such knowledge could be used to improve indicator-based management tools and extension advice on the livelihood adaptations necessary to prevent or reduce ecological change, capable of threatening livelihood sustainability. There is evidence that social background influences indicator use. Communal farmers rely most heavily on vegetation and livestock indicators, whilst syndicate and land-owning pastoralists cite wild animal and soil-based indicators most frequently. These factors must be considered if indicator-based management tools are to meet the requirements of a diverse community.

**Keywords:** Kalahari, participation, indicators, rangeland condition, degradation, livestock management

**Resource Type:** Journal article

**Focus:** Framework, rangeland condition indicators

**Region:** Southern Kalahari, Botswana, South Africa

**Language:** English

**Year:** 2002

**Citation:** Reed, M. S. & Dougill, A. J. "Participatory selection process for indicators of rangeland condition in the Kalahari." *The Geographic Journal* 168 (2002): 224-234.

Resource entry updated: 2019-08-13

[Bottom-up thinking—Identifying socio-cultural values of ecosystem services in local blue-green infrastructure planning in Helsinki, Finland](#)

**Synopsis:**

Sustainable urban storm-water management is a key policy of the European Union. Increasing populations, densification and global climate change cause major challenges for the management of urban run-off waters. Small urban aquatic ecosystems (ponds, brooks, wetlands) are important, because they support human health and well-being through water regulation, mitigating urban run-off waters and providing recreational benefits. Ecosystem functions, which arise from interactions between biotic and abiotic processes and which benefit society, are called ecosystem services. The ecosystem service concept can be useful in estimating the impacts of land-use and resource management on ecosystem functions, and to support decision-making. However, many researchers claim that measuring or valuing ecosystem services in land-use planning may fail to recognize intangible or non-monetary values. We studied a local environmental conflict related to a storm-water management plan in Helsinki, Finland. By using integrated value mapping of ecosystem services, we assigned socio-cultural values of local blue-green infrastructure, and evaluated how these values could be taken into account at the early stage in green area planning. Stakeholders (locals, managers and politicians) expressed a total of 47 perceived values related to the urban brook and the public park. We divided these values into four types: (1) use and experience, (2) existence, (3) symbolic, and (4) bequest and moral. We show great differences between the meanings and values of locals, managers and politicians. Managers expressed negative values towards the park, while locals more commonly expressed symbolic values. Exhaustive value mapping could help to identify mutual values and understand disagreements between stakeholders. We introduced a model for a transdisciplinary adaptive planning by using integrated value mapping within ecosystem service concept. Often local protests towards development projects or the management of green areas are seen in a negative light by considering them as NIMBY. Instead of dismissing plurality of meanings and values that emerge from strong place identity, we call for the sustainable management of place-attached values as part of a techno-economic planning strategy of urban ecosystems.

**Keywords:** Ecosystem services, integrated value mapping, place identity, socio-ecological, urban streams, value plurality

**Resource Type:** Journal article

**Focus:** Case study, ecosystem services

**Region:** Helsinki, Finland

**Language:** English

**Year:** 2016

**Citation:** Kati, V. & Jari, N. "Bottom-up thinking—identifying socio-cultural values of ecosystem services in local blue-green infrastructure planning in Helsinki, Finland." *Land Use Policy* 50 (2016): 537-547.

Resource entry updated: 2019-08-13

[The spotted nightjar calls when dingo pups are born: Ecological and Social Indicators in Central Australia](#)

**Synopsis:**

Across cultures there are known signs that signal the availability of certain foods, predict the weather or warn people of impending events. In Central Australia the call of the spotted nightjar (*Eurostopodus argus*) signals the time when dingo pups are born. This article identifies indicator events known by speakers of the Arandic languages in Central Australia. Indicator events can be described as the presence or behavior of a particular species or phenomenon that signals some other species or phenomenon. Arandic people group these into five broad domains: indicators of food, water, weather, danger and news (e.g., an imminent visitor). A diverse range of ecological, meteorological and human (bodily) phenomena serve as indicators, with birds being the most prevalent. This study explores the basis of indicator events, finding both an ecological and cultural basis for any signs. It also draws attention to the significance of the indicator relationship in terms of how people make sense of co-occurring events around them. We also consider some implications for natural resource management and phenology.

**Keywords:** Ethnoornithology, indicator events, Australian Aborigines, indigenous ecological knowledge

**Resource Type:** Journal article

**Focus:** Case study, indicator events

**Region:** Central Australia

**Language:** English

**Year:** 2013

**Citation:** Turpin, M. et al. "The spotted nightjar calls when dingo pups are born: ecological and social indicators in Central Australia." *Journal of Ethnobiology* 33 (2013): 7-32.

Resource entry updated: 2019-08-13

[Making Sense of Local Climate Change in Rural Tanzania Through Knowledge Co-Production](#)

**Synopsis:**

Shaffer, L. J. "Making Sense of Local Climate Change in Rural Tanzania Through Knowledge Co-Production." *Journal of Ethnobiology* 34 (2014): 315-334.

**Keywords:** Environmental monitoring, participatory action research, adaptive learning, citizen science, livelihoods, knowledge co-production

**Resource Type:** Journal article

**Focus:** Participatory monitoring, traditional ecological knowledge

**Region:** Tanzania

**Language:** English

**Year:** 2014

**Citation:** Shifting climate parameters and their rippling effects through social-ecological systems have altered the abilities of rural households and communities around the world to make livelihood decisions based on traditional ecological knowledge (TEK). National and regional climate services are responding, but the information they provide may not meet local needs or concerns in an accessible format. Previous anthropological research suggests that integrating different knowledge systems to improve climate services, assist in local decision-making, and strengthen climate models remains problematic. To reduce or avoid some of these problems, a participatory, community-based environmental monitoring project was co-developed with residents of four rural Tanzanian communities. A field team brought in equipment and facilitated the training of local monitors, while communities chose the environmental sectors to monitor, collected and analyzed data, and evaluated the results in light of their local TEK. This interaction between scientists and participating community members highlights the value of knowledge co-production in making sense of environmental changes associated with climate that are observed and experienced at the local level. These activities also empowered communities to explore local climate adaptation and policy creation.

Resource entry updated: 2019-08-13

[Defining Indicators Which Make Sense to Local People: Intra-Cultural Variation in Perceptions of Natural Resources](#)

**Synopsis:**

Nazarea, V. et al. "Defining Indicators Which Make Sense to Local People: Intra-Cultural Variation in Perceptions of Natural Resources." Human Organization 57 (1998) 159-170.

**Keywords:** Sustainable development, ethnoecology, Thematic Apperception Test, intra-cultural variation, gender, ethnicity, Philippines

**Resource Type:** Journal article

**Focus:** Case study, indicators

**Region:** Bukidnon, Philippines

**Language:** English

**Year:** 1998

**Citation:** The development of culturally relevant indicators of sustainability and quality of life is a need frequently cited but rarely addressed in the social science literature. This article presents a method and a case study based on an applied ethnoecology approach and utilizing an adaptation of the Thematic Apperception Test. Pictures of scenes around the Manupali watershed in Bukidnon, Philippines, were used to elicit people's perceptions and assessments of different environmental features and agricultural practices. Informants' stories were scored based on dominant themes to identify indicators of sustainability and quality of life that are relevant for different ethnic, gender, and age groups. These contextually sensitive indicators, the authors conclude, differ significantly from externally defined indicators and vary systematically as a function of socioeconomic and sociodemographic parameters. Taking culturally relevant indicators into consideration can help shape development trajectories that local people can identify with and benefit from in the short- and long-term.

Resource entry updated: 2019-08-13

[Development and implementation of a high nature value \(HNV\) farming indicator for Denmark](#)

**Synopsis:**

During the latest decades, conservation awareness have increased and conservation of biodiversity is no longer an agenda restricted to pristine natural areas of high value but is being integrated in cultivated landscapes characterized by increasing fragmentation and anthropogenic pressures. Conservation of species has become relevant even in agricultural areas especially in countries heavily influenced by intensive farming and ubiquitous infrastructure. Based on the UN biodiversity convention all EU member- ship countries are obliged to develop a high nature value (HNV) farming indicator. The purpose of such an indicator is to provide a basis for informed decisions in prioritizing agricultural subsidies allocating these to high nature value areas. Here, the development of a national HNV farming indicator for Denmark is pre- sented and its application in the Danish government-controlled agricultural subsidy system is outlined. The Danish HNV farming indicator is based on landscape structural parameters, known occurrences of natural and semi-natural habitats, current land use and the distributions of rare and threatened species. It covers all agricultural areas as well as Natura 2000 areas and nationally protected sites in Denmark, ranking them on a 0–13 point scale from low to high nature value according to their estimated value for threatened and rare biodiversity. The Danish government recognizes areas reaching at least 5 points as HNV farming areas eligible to subsidy and from 2015 and onwards the HNV farming indicator will be implemented for allocating part of the agricultural subsidies under the Rural Development Program in Denmark. The indicator will be updated annually to include the growing knowledge of species occurrence and land use changes.

**Keywords:** Agricultural subsidies, biodiversity indicator, conservation, environmental proxies, Europe

**Resource Type:** Journal article

**Focus:** Indicators

**Region:** Denmark

**Language:** English

**Year:** 2015

**Citation:** Brunbjerg, A. K. "Development and implementation of a high nature value (HNV) farming indicator for Denmark." *Ecological Indicators* 61 (2016): 274-281.

Resource entry updated: 2019-08-13

[Indigenous knowledge for natural resource management: a comparative study of Ma'ori in New Zealand and Dusun in Brunei Darussalam](#)

**Synopsis:**

Indigenous people often exclusively depend on the natural resources available within the ecosystems where they live, and commonly manage their resources sustainably. They have developed, and continue to develop indigenous knowledge systems which encompass sustainable management of natural resources. This study compares indigenous knowl- edge of natural resource management developed by two different communities in two different environ- ments—Maori in the temperate environment in New Zealand and Dusun in the tropical environment in Brunei Darussalam, and comparatively evaluates the role of indigenous knowledge in sustainable resource management in three categories of knowledge such as spatial and seasonal distribution of natural resources, sustainable harvesting, and habitat management. The comparison reveals that despite the differences in environment and the great geographical distance between the two communities, there are remarkable similarities between the two knowledge systems in concepts, principles, strategies and technologies used in natural resource management.

**Keywords:** Indigenous knowledge, natural resource management, sustainability, sustainable harvesting, habitat management

**Resource Type:** Journal article

**Focus:** Case study, indigenous knowledge systems

**Region:** New Zealand and Brunei Darussalam

**Language:** English

**Year:** 2008

**Citation:** Ulluwishewa, R. et al. "Indigenous knowledge for natural resource management: a comparative study of Ma'ori in New Zealand and Dusun in Brunei Darussalam." *GeoJournal* 73 (2008): 271-284.

Resource entry updated: 2019-08-13

[Development of common indicators of sustainable forest management](#)

**Synopsis:**

The scope of sustainable forest management has been defined by a range of criteria and indicators, each applicable to certain local needs and situations. At the same time, public expectation of forest management have been evolving, and new indicators are constantly being proposed. It is possible to draw on the expertise represented by different criteria and indicator schemes to identify a set of indicators that are likely to be relevant to most situations. When this was done for British Columbia, Canada, it became apparent that there were many gaps in our understanding of indicators, and that there were also some areas that were poorly developed. Here we identify that socio-economic and cultural indicators of sustainable forest management are particularly weak and suggest the use of indices of social capital and the creation of a criterion dealing specifically with Aboriginal issues would help remedy these deficiencies.

**Keywords:** Sustainable forest management, social capital, criteria and indicators, Canada

**Resource Type:** Journal article

**Focus:** Review, indicators

**Region:** British Columbia, Canada

**Language:** English

**Year:** 2008

**Citation:** Gough, A. D. et al. "Development of common indicators of sustainable forest management." *Ecological Indicators* 8 (2008) 425-430.

Resource entry updated: 2019-08-13

[Co-constructing the sustainable city: how indicators help us "grow" more than just food in community gardens](#)

**Synopsis:**

Since Agenda 21, local governments have sought ways of engaging urban citizens in the creation of more sustainable cities. Community garden (CG) activities are frequently described as contributing positively to the development of socially and environmentally sustainable local communities, yet a suitable set of indicators for valuing these benefits are yet to be established. Indicators were formed through a participatory process allowing individuals to use and learn from them. This can usefully contribute to policy decisions and be meaningful to urban planners and local community gardeners. A set of social and ecological indicators that aligned with local government policy areas and accountability frameworks were developed. Indicators were derived with local government officers, CG members, and industry experts. The practical necessity of devising indicators that can realistically be monitored by CG participants and be of political and ideological use to local governments and wider community stakeholders, is demonstrated.

**Keywords:** 2011

**Resource Type:** Journal article

**Focus:** Framework, indicators in community gardens

**Region:**

**Language:** English

**Year:** 2011

**Citation:** Beilin, R. & Hunter, A. "Co-constructing the sustainable city: how indicators help us "grow" more than just food in community gardens." *Local Environment* 16 (2011): 523-538.

Resource entry updated: 2019-08-13

[Local Knowledge in the Assessment of Resource Sustainability: Case Studies in Himachal Pradesh, India, and British Columbia, Canada](#)

**Synopsis:**

The knowledge of local resource users and managers about the biophysical, socioeconomic, and cultural-historical elements of their immediate environment plays a significant role in determining the long-term sustainability of those resources. This paper reports on the results of two case studies from high mountain areas, one in the Upper Beas River watershed of the Indian Himalaya, and the other in the Arrow Lakes area of the Canadian Cordillera. Specifically, this paper describes sustainability indicators which were enumerated by local people in two differing cultural-historical, but environmentally similar, contexts. These indicators may be reflective of local, indigenous knowledge about the environment and therefore may be of significance in impact assessment and monitoring environmental change.

Results from the Upper Beas watershed reveal a highly discriminated set of indicators which may be grouped as: forest cover indicators; forest-linked indicators; forest management indicators; agricultural livelihood indicators; and socioeconomic indicators. Local people demonstrated a very precise knowledge of the state of the biophysical resources of their village use areas. Specific indicators identified include: forest cover area (decreasing), forest species diversity (some species such as deodar decreasing), forest tree density (decreasing), consistency of water flow (decreasing) and frequency of avalanches and slides (increasing). These are all indicators which can be measured and verified independently of local knowledge. All suggest declining sustainability. Residents in the Arrow Lakes area demonstrated much less precise knowledge of biophysical indicators of sustainability. They enumerated a set of indicators which emphasized institutional arrangements for forest and resource management. For example, few respondents identified the extent of forest cover as important whereas the majority identified forest/land use rules in place as being important indicators of sustainability. In both case studies, people mentioned a number of socioeconomic factors as being important indicators of sustainability.

**Keywords:** Case studies, resource use and management, biophysical elements, socioeconomic elements, cultural-historical elements, sustainability indicators, indigenous knowledge

**Resource Type:** Journal article

**Focus:** Case studies, sustainability indicators

**Region:** Himachal Pradesh, India, and British Columbia, Canada

**Language:** English

**Year:** 1998

**Citation:** Duffield, C. et al. "Local knowledge in the assessment of resource sustainability: case studies in Himachal Pradesh, India, and British Columbia, Canada." Mountain Research and Development 18 (1998): 35-49.

Resource entry updated: 2019-08-13



[Efficacy of Integrating Herder Knowledge and Ecological Methods for Monitoring Rangeland Degradation in Northern Kenya](#)

**Synopsis:**

The world-wide debate on land degradation in arid lands, usually linked to local land use practices, does not reflect methodological advancements in terms of assessments and monitoring that integrate local communities' knowledge with ecological methods. In this paper, we evaluated the efficacy of three different methods related to herder assessments and monitoring of land degradation; herder knowledge and ecological methods of assessing impacts of livestock grazing along gradients of land use from settlement and joint monitoring of selected marked transects to understand long-term vegetation changes in southwestern Marsabit northern Kenya. The performance of each method was carefully evaluated and interpreted in terms of the indicators used by herders and ecologists. Herder interpretations were then related to ecologists' empirical analysis of land degradation. The Rendille nomads have a complex understanding of land degradation which combines environmental and livestock productivity indicators, compared to conventional scientific approaches that use plant-based indicators alone. According to the herders, the grazing preference of various livestock species (e.g., grazers versus browsers) influences perceptions of land degradation, suggesting degradation is a relative term. The herders distinguished short-term changes in vegetation cover from long-term changes associated with over-exploitation. They attributed current environmental degradation around pastoral camps, which shift land use between the alternating wet and dry seasons, to year-round grazing. We deduced from long-term observation that herders interpret vegetation changes in terms of rainfall variability, utilitarian values and intensification of land use. Long-term empirical data (23 years) from repeated sampling corroborated herder interpretations. Land degradation was mostly expressed in terms of declines in woody plant species, while spatial and temporal dynamics of herbaceous species reflected the effects of seasonality. The efficacy of the three methods were inferred using explanatory strengths of ecological theory; insightfulness of the methods for describing land degradation and the likelihood of using the methods for promoting local community participation in the implementation of the UN Convention on Combating Desertification (CCD) and the Convention on Biological Diversity (CBD).

**Keywords:** Ecological indicators, herder knowledge, land degradation, monitoring, Northern Kenya, Rendille

**Resource Type:** Journal article

**Focus:** Methodology review, land degradation monitoring

**Region:** Northern Kenya

**Language:** English

**Year:** 2009

**Citation:** Roba, H. G. & Oba, G. "Efficacy of Integrating Herder Knowledge and Ecological Methods for Monitoring Rangeland Degradation in Northern Kenya." *Human Ecology* 37 (2009): 589-612.

Resource entry updated: 2019-08-13

[Indigenous Peoples and Indicators of Well-being: Australian Perspectives on United Nations Global Frameworks](#)

**Synopsis:**

One of the major tasks of the United Nations Permanent Forum on Indigenous Issues (UNPFII) following its establishment in 2000 has been to establish statistical profiles of the world's Indigenous peoples. As part of this broad task, it has recommended that the Millennium Development Goals and other global reporting frameworks should be assessed with a view to incorporating greater recognition of Indigenous concerns, interests, and interpretations of development and well-being. This article reviews the conceptual basis for this recommendation and compares the activities of the UNPFII towards the development of appropriate indicators with the practices of the Australian government in measuring disadvantage among Indigenous peoples in that country. Indigenous peoples' own perceptions and understandings of well-being are seen to extend beyond and sometimes conflict with conventional reporting frameworks with the latter constructed more around processes of governmentality than Indigenous priorities.

**Keywords:** United Nations, indigenous, Millennium Development Goals, well-being

**Resource Type:** Journal article

**Focus:** Review, frameworks

**Region:** Western Australia

**Language:** English

**Year:** 2007

**Citation:** Taylor, J. "Indigenous Peoples and Indicators of Well-being: Australian Perspectives on United Nations Global Frameworks." *Social Indicators Research* 87 (2007): 111-126.

Resource entry updated: 2019-08-13

[Hawai'i 2050 Sustainability Plan: Charting a course for Hawai'i's sustainable future](#)

**Synopsis:**

What do the people of Hawai'i want for the future of our islands in the 21st century? What is the community's will for the future of our economy, society and environment? What steps can we take now to achieve that preferred future for our children and their children?

In 2005, the Hawai'i State Legislature sought answers about the long-term future of our state. In the past, state leaders and decision makers have been ably guided in these matters by the Hawai'i State Plan. But with a new century comes a new generation, new opportunities and new challenges. A new plan is needed.

In response, the Legislature created the Hawai'i 2050 Sustainability Task Force, a group of 25 citizens with a diverse range of experience in planning, community, business, the environment and government. They were charged with developing the Hawai'i 2050 Sustainability Plan, the State's first long-range plan in 30 years. In creating the plan, the Task Force placed the wisdom of our communities first. The Task Force initiated and implemented one of the most comprehensive and inclusive planning processes in our state's history.

**Keywords:** Hawai'i, community-based planning, sustainability planning, Legislature, natural resource use, population, economic development, water, social issues

**Resource Type:** Report

**Focus:** Sustainability plan

**Region:** Hawai'i

**Language:** English

**Year:** 2008

**Citation:** State of Hawai'i. (2008). *Hawai'i 2050 Sustainability Plan*.

Resource entry updated: 2019-08-13

[Integrating indigenous livelihood and lifestyle objectives in managing a natural resource](#)

**Synopsis:**

Evaluating the success of natural resource management approaches requires methods to measure performance against biological, economic, social, and governance objectives. In fisheries, most research has focused on industrial sectors, with the contributions to global resource use by small-scale and indigenous hunters and fishers undervalued. Globally, the small-scale fisheries sector alone employs some 38 million people who share common challenges in balancing livelihood and lifestyle choices. We used as a case study a fishery with both traditional indigenous and commercial sectors to develop a framework to bridge the gap between quantitative bio-economic models and more qualitative social analyses. For many indigenous communities, communalism rather than capitalism underlies fishers' perspectives and aspirations, and we find there are complicated and often unanticipated trade-offs between economic and social objectives. Our results highlight that market-based management options might score highly in a capitalistic society, but have negative repercussions on community coherence and equity in societies with a strong communal ethic. There are complex trade-offs between economic indicators, such as profit, and social indicators, such as lifestyle preferences. Our approach makes explicit the "triple bottom line" sustainability objectives involving trade-offs between economic, social, and biological performance, and is thus directly applicable to most natural resource management decision-making situations.

**Keywords:** Panulirus ornatus, Torres Strait, management strategy, stewardship, indigenous fishing

**Resource Type:** Journal article

**Focus:** Case study, natural resource management

**Region:** The Torres Strait

**Language:** English

**Year:** 2013

**Citation:** Plaganyi, E. E. et al. "Integrating indigenous livelihood and lifestyle objectives in managing a natural resource." PNAS 110 (2013): 3639-3644.

Resource entry updated: 2019-08-13

[Biocultural Design: A New Conceptual Framework for Sustainable Development in Rural Indigenous and Local Communities](#)

**Synopsis:**

New approaches for sustainable development in rural indigenous and local communities have emerged that are rooted in their distinct cultural identities and claims for greater control over land, development and identity. One such approach is that of biocultural heritage, which emerged out of work to document biocultural diversity undertaken in part by members of the Commission on Environmental, Economic and Social Policy (CEESP) of the International Union for Conservation of Nature (IUCN). CEESP members have developed this work over the past twenty-five years, both through work with the Convention on Biological Diversity (CBD) and other policy forums, but also through the operationalization of rural development policies and programs.

One area that has not been fully examined, however, is the contribution of biocultural heritage to local processes of innovation that can explicitly meet communities' contemporary needs and objectives. This paper presents a new approach called 'biocultural design' and seeks to open a conversation about how endogenous innovation could support sustainable development in rural indigenous and local communities. By introducing design thinking to the field of biocultural heritage conservation, biocultural design offers a process for indigenous and local communities to pursue aspirations of self-determination and endogenous development through product/service innovation. It is an approach that may enhance communities' adaptive capacity in responding to dynamic and changing environments and IUCN's goal to deploy nature-based solutions to global challenges in the next quadrennial period.

**Keywords:** Biocultural design, biocultural diversity, biocultural heritage, capability approach, endogenous development, sustainable rural development

**Resource Type:** Journal article

**Focus:** Framework, sustainable development

**Region:** Worldwide

**Language:** English

**Year:** 2012

**Citation:** Davidson-Hunt, I. J. et al. "Biocultural Design: A New Conceptual Framework for Sustainable Development in Rural Indigenous and Local Communities." *S.A.P.I.E.N.S.* 5 (2012): 32-44.

Resource entry updated: 2019-08-13

[The science and politics of human well-being: a case study in cocreating indicators for Puget Sound restoration](#)

**Synopsis:**

Across scientific fields, there have been calls to improve the integration of scientific knowledge in policy making. Particularly since the publication of the Millennium Ecosystem Assessment, these calls increasingly refer to data on human well-being related to the natural environment. However, policy decisions involve selective uptake of information across communities with different preferences and decision-making processes. Additionally, researchers face the fact that there are important trade-offs in producing knowledge that is simultaneously credible, legitimate, socially relevant, and socially just. We present a study that developed human well-being indicators for Washington State's Puget Sound ecosystem recovery agency over 3 years. Stakeholders, decision makers, and social scientists were engaged in the identification, modification, and prioritization of well-being indicators that were adopted by the agency for tracking progress toward ecosystem recovery and strategic planning. After substantial literature review, interviews, workshops, and indicator ranking exercises, 15 indicators were broadly accepted and important to all audiences. Although the scientists, decision makers, and stakeholders used different criteria to identify and prioritize indicators, they all agreed that indicators associated with each of 6 broad domains (social, cultural, psychological, physical, economic, and governance) were critical to assess the holistic concept of well-being related to ecosystem restoration. Decision makers preferred indicators that mirrored stakeholder preferences, whereas social scientists preferred only a subset. The Puget Sound indicator development process provides an example for identifying, selecting, and monitoring diverse concepts of well-being related to environmental restoration in a way that promotes recognition, participation, and a fair distribution of environmental benefits across the region.

**Keywords:** decision-making criteria, indicators, integrating science and policy, justice

**Resource Type:** Journal article

**Focus:** Case study, well-being indicators

**Region:** Puget Sound

**Language:** English

**Year:** 2017

**Citation:** Biedenweg, K. et al. "The science and politics of human well-being: a case study in cocreating indicators for Puget Sound restoration." *Ecology and Society* 22 (2017). doi: 10.5751/ES-09424-220311.

Resource entry updated: 2019-08-13

[Dibaginjigaadeg Anishinaabe Ezhitwaad: A Tribal Climate Adaptation Menu](#)

**Synopsis:**

Climate change has impacted and will continue to impact indigenous peoples, their lifeways and culture, and the natural world upon which they rely, in unpredictable and potentially devastating ways. Many climate adaptation planning tools fail to address the unique needs, values and cultures of indigenous communities. This Tribal Climate Adaptation Menu, which was developed by a diverse group of collaborators representing tribal, academic, intertribal and government entities in Minnesota, Wisconsin and Michigan, provides a framework to integrate indigenous and traditional knowledge, culture, language and history into the climate adaptation planning process. Developed as part of the Climate Change Response Framework, the Tribal Climate Adaptation Menu is designed to work with the Northern Institute of Applied Climate Science (NIACS) Adaptation Workbook, and as a stand-alone resource. The Menu is an extensive collection of climate change adaptation actions for natural resource management, organized into tiers of general and more specific ideas. It also includes a companion Guiding Principles document, which describes detailed considerations for working with tribal communities. While this first version of the Menu was created based on Ojibwe and Menominee perspectives, languages, concepts and values, it was intentionally designed to be adaptable to other indigenous communities, allowing for the incorporation of their language, knowledge and culture. Primarily developed for the use of indigenous communities, tribal natural resource agencies and their non-indigenous partners, this Tribal Climate Adaptation Menu may be useful in bridging communication barriers for non-tribal persons or organizations interested in indigenous approaches to climate adaptation and the needs and values of tribal communities.

**Keywords:** Climate change, adaptation, Ojibwe, Menominee

**Resource Type:** Resource book

**Focus:** Guidebook, Indigenous perspectives, cultural-environmental assessment and management

**Region:** United States

**Language:** English

**Year:** 2019

**Citation:** Tribal Adaptation Menu Team. 2019. Dibaginjigaadeg Anishinaabe Ezhitwaad: A Tribal Climate Adaptation Menu. Great Lakes Indian Fish and Wildlife Commission, Odanah, Wisconsin. 54 p.

Resource entry updated: 2019-08-13

### [An Indigenous Approach to the Living Standards Framework](#)

**Synopsis:**

The move by the Treasury to explore ways to view national wellbeing as representing more than the traditional Gross Domestic Product (GDP)-based measures is a welcome shift. However, to understand the collective impact of policies on the intergenerational wellbeing of *all* New Zealanders, the Living Standards Framework (LSF) cannot be blind to the things that drive us as a society: it must reflect who we are, what we value and how we can grow a shared sense of prosperity.

A new way of thinking about wellbeing has potential to benefit all New Zealanders. This paper argues that wellbeing considered from an indigenous perspective moves the public policy discourse beyond Western constructs of wellbeing and enables an improved lived experience of wellbeing for everyone.

While this paper has a focus on wellbeing for Māori specifically, it articulates a way of looking at wellbeing that can be applied to the full range of populations within Aotearoa New Zealand, and to indigenous populations universally. It offers a way of accounting for various values and beliefs that drive people's experiences of wellbeing and of responding to the needs, aspirations and interests of collectives and the individuals within them. The approach supports a holistic view of wellbeing in which people can identify for themselves the outcomes they want to have balanced or prioritised. This approach positions the public sector to advance wellbeing in a different way and look to respond to the various needs, interests and aspirations of New Zealanders.

Although the LSF is intended as a decision-making tool to influence the stocks and flows of capitals that represent the potential drivers of future wellbeing, it is yet to fully develop a good description of the wider system that delivers wellbeing, and how wellbeing should be understood. This paper offers an extension to that description.

**Keywords:** Wellbeing, decision-making, indigenous, Maori

**Resource Type:** Discussion paper

**Focus:** Wellbeing framework, indigenous perspectives

**Region:** Oceania, Aotearoa (New Zealand)

**Language:** English

**Year:** 2019

**Citation:** An Indigenous Approach to the Living Standards Framework. The Treasury Discussion Paper 19/01 (January 2019). Te Puni Kōkiri (Ministry of Māori Development). The Treasury. ISBN 978-1-98-858002-9

Resource entry updated: 2019-08-13

### [He Waka Eke Noa - Towards a better future, together: New Zealand's progress towards the SDGs 2019](#)

**Synopsis:**

This report covers all 17 SDGs, with a focus on how the government will deliver outcomes most relevant to New Zealand. It outlines New Zealand's approach to the SDGs and reflects the government's commitment to productive, sustainable and inclusive economic development.

**Keywords:** SDGs, sustainable development, indicators, pacific, new zealand

**Resource Type:** Report

**Focus:** Sustainable Development Goals (SDGs) monitoring

**Region:** Oceania, Aotearoa (New Zealand)

**Language:** English

**Year:** 2019

**Citation:** Ministry of Foreign Affairs and Trade (New Zealand) (2019). He Waka Eke Noa - Towards a better future, together: New Zealand's progress towards the SDGs 2019. Retrieved from Analysis and Policy Observatory Website: <https://apo.org.au/node/244821>

Resource entry updated: 2019-07-19

[Vanuatu 2030: The People's Plan](#)

**Synopsis:**

Vanuatu 2030 charts the country's vision and overarching policy framework for achieving a Stable, Sustainable and Prosperous Vanuatu within the next fifteen years, and in doing so sets out the national priorities and context for the implementation of the new global Sustainable Development Goals over the same period. The national vision and the framework for action outlined in this plan have been informed by the priorities voiced by our people, their community and elected representatives, the private sector and civil society over the course of a three-year consultation programme undertaken across the whole country. Our united voices articulate what we want for ourselves, our children, future generations and our country.

**Keywords:** SDGs, sustainable development, pacific, strategic planning, monitoring

**Resource Type:** Report

**Focus:** National Sustainable Development Plan

**Region:** Melanesia, Vanuatu

**Language:** English

**Year:** 2016

**Citation:** 'Vanuatu 2030: The People's Plan. National Sustainable Development Plan 2016 to 2030'. Port Vila, Department of Strategic Policy, Planning & Aid Coordination, 2016

Resource entry updated: 2019-07-19

[Assessing nature's contributions to people: Recognizing culture, and diverse sources of knowledge, can improve assessments](#)

**Synopsis:**

A major challenge today and into the future is to maintain or enhance beneficial contributions of nature to a good quality of life for all people. This is among the key motivations of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), a joint global effort by governments, academia, and civil society to assess and promote knowledge of Earth's biodiversity and ecosystems and their contribution to human societies in order to inform policy formulation. One of the more recent key elements of the IPBES conceptual framework (1) is the notion of nature's contributions to people (NCP), which builds on the ecosystem service concept popularized by the Millennium Ecosystem Assessment (MA) (2). But as we detail below, NCP as defined and put into practice in IPBES differs from earlier work in several important ways. First, the NCP approach recognizes the central and pervasive role that culture plays in defining all links between people and nature. Second, use of NCP elevates, emphasizes, and operationalizes the role of indigenous and local knowledge in understanding nature's contribution to people.

**Keywords:** Ecosystem services, culture, knowledge systems, paradigm shift

**Resource Type:** Journal article

**Focus:** Review, ecosystem services, culture

**Region:** Worldwide

**Language:** English

**Year:** 2018

**Citation:** Díaz, S., Pascual, U., Stenseke, M., Martín-López, B., Watson, R. T., Molnár, Z., ... Shirayama, Y. (2018). Assessing nature's contributions to people: Recognizing culture, and diverse sources of knowledge, can improve assessments. *Science*, 359(6373), 270-272. <https://doi.org/10.1126/science.aap8826>

Resource entry updated: 2019-06-26



[Leveraging Native Lands, Sovereignty and Traditions: Models and Resources for Tribal Ecological Stewardship](#)

**Synopsis:**

In this report, First Nations showcases tribal models of culturally appropriate and values-centered development in which tribes are leveraging their lands and sovereignty to their economic, environmental and cultural benefit.

**Keywords:** land stewardship, culture, First Nations, traditional, ecological, knowledge

**Resource Type:** Report

**Focus:** Tribal ecological stewardship

**Region:** North America, United States

**Language:** English

**Year:** 2018

**Citation:** First Nations Development Institute. (2018) "Leveraging Native Lands, Sovereignty and Traditions: Models and Resources for Tribal Ecological Stewardship." Longmont, CO: First Nations Development Institute. © 2018 First Nations Development Institute.

Resource entry updated: 2019-06-26

[Tribal Climate Adaptation Guidebook](#)

**Synopsis:**

The Oregon Climate Change Research Institute, along with Adaptation International, created the Tribal Climate Adaptation Guidebook, which provides a framework for climate change adaptation planning in the context of existing tribal priorities. The Guidebook builds on the ongoing climate-related work in tribal communities, directly considers the unique issues facing Indigenous communities, and identifies opportunities and guidance for incorporating Traditional Knowledges based on the Climate and Traditional Knowledges Workgroup's Guidelines for Considering Traditional Knowledges (TKs) in Climate Change Initiatives.

The Tribal Climate Adaptation Guidebook is designed to be useful for tribes at any stage of adaptation planning and with varying degrees of funding and staff capacity. The Guidebook is designed so that tribes can work through any applicable section and skip sections that are not applicable.

The development of the guidebook was overseen by a group of advisors who supported the writing staff by refining the goals and objectives for the Guidebook and by providing regular reviews throughout the development process.

**Keywords:** climate change, adaptation, climate, impacts, indigenous, community management, traditional knowledge

**Resource Type:** Resource book

**Focus:** Guidebook, climate change adaptation

**Region:** Worldwide

**Language:** English

**Year:** 2018

**Citation:** Tribal Climate Adaptation Guidebook Writing Team (Meghan Dalton, Samantha Chisholm Hatfield, and Alexander "Sascha" Petersen). Tribal Climate Adaptation Guidebook. Corvallis, OR: Oregon State University, 2018.

Resource entry updated: 2019-06-26

[Collaborative Research Center for American Indian Health Tribal IRB Toolkit](#)

**Synopsis:**

This toolkit contains practical tools and guidance for starting a Tribal IRB. It is intended to serve as a resource for American Indian Tribal Nations or other Indigenous Nations developing Institutional Review Boards (IRBs) for the ethical review and monitoring of research on Tribal land.

**Keywords:** ethical, research, review, monitoring, tribal lands, indigenous

**Resource Type:** Resource book

**Focus:** Ethical review and monitoring

**Region:** North America, United States

**Language:** English

**Year:** 2015

**Citation:** Collaborative Research Center for American Indian Health. (2015). CRCAIH Tribal IRB Toolkit. Angal, J and Andalcio, T. Authors.

Resource entry updated: 2019-06-26

[Local Biodiversity Outlook: Indigenous Peoples' and Local Communities' Contributions to the Implementation of the Strategic Plan for Biodiversity 2011-2020](#)

**Synopsis:**

This publication presents the perspectives and experiences of indigenous peoples and local communities (IPLCs) on the implementation of the Strategic Plan for Biodiversity. It is intended to complement the fourth Global Biodiversity Outlook (GBO-4) by presenting the perspectives and experiences of IPLCs, and describing their contributions towards realising each of the Strategic Plan's goals and targets. To this end, accounts of local actions in different parts of the world were gathered from members of the International Indigenous Forum on Biodiversity (IIFB). The findings demonstrate that IPLCs are contributing enormously to the implementation of the Strategic Plan through their collective and on-the-ground actions, and that there is great potential for future collaboration between IPLCs and other actors in this regard.

The future of biodiversity and the future of IPLCs are inextricably linked. Recognition of these linkages (between cultural diversity and biological diversity) has grown in recent years and is embodied in the CBD's Strategic Plan. Target 18 is of central importance in this regard, focusing specifically on traditional knowledge and customary sustainable use. It is the main target related to the implementation of two of the most relevant articles of the CBD for IPLCs – Article 8(j) and Article 10(c) – and represents a cross-cutting theme for the entire Strategic Plan. Traditional knowledge and customary sustainable use are relevant to all the Aichi Biodiversity Targets, as is shown in the following pages.

This document explores the significance for IPLCs of each of the Plan's five Strategic Goals and 20 Aichi Biodiversity Targets in turn, and discusses the implications of recent trends and progress. It presents snapshots of on-the-ground initiatives by IPLCs and demonstrates that they are making vital contributions to the implementation of all 20 targets, although many challenges remain. Finally it outlines the way forward, highlighting key potential actions to accelerate progress in the implementation of the Plan as it relates to IPLCs.

**Keywords:** biodiversity, IPLCs, indigenous, CBD, community monitoring, Aichi

**Resource Type:** Report

**Focus:** Convention on Biological Diversity, Indigenous peoples and local communities

**Region:** Worldwide

**Language:** English

**Year:** 2016

**Citation:** Forest Peoples Programme, the International Indigenous Forum on Biodiversity and the Secretariat of the Convention on Biological Diversity (2016) Local Biodiversity Outlooks. Indigenous Peoples' and Local Communities' Contributions to the Implementation of the Strategic Plan for Biodiversity 2011-2020. A complement to the fourth edition of the Global Biodiversity Outlook. Moreton-in-Marsh, England.

Resource entry updated: 2019-06-26

## [Bringing Indigenous Kamchatka to Google Earth](#)

### **Synopsis:**

Indigenous peoples in the Russian Far East are engaged in vibrant cultural and linguistic resurgence and revitalization through their community and regional organizations. Through the activities of these organizations, a computer-aided cultural mapping project was initiated in collaboration with indigenous villages along the Kamchatka Peninsula, working with youth and elders to map out the histories of special cultural places. The project utilized innovative participatory methodologies using Google Earth and related Google mapping tools, which are freely accessible and desired for use in the communities, providing an accessible, low-cost, easy to-use computer application for detailed digital cultural mapping. This article elaborates on the use of these technologies to empower a community-based collaborative research project and reflects on critical issues in aligning community, corporate, and scholarly objectives in successful projects.

**Keywords:** collaborative methodologies; Google Earth; Indigenous language revitalization; Indigenous mapping; Itelmen (Kamchatka, Russia); Kamchatka; Russian Far East

**Resource Type:** Journal article

**Focus:** Cultural mapping

**Region:** Russia

**Language:** English

**Year:** 2016

**Citation:** Thom, Brian & J Colombi, Benedict & Degai, Tatiana. (2016). Bringing Indigenous Kamchatka to Google Earth: Collaborative Digital Mapping with the Itelmen Peoples. *Sibirica*. 15. 1-30. 10.3167/sib.2016.150301.

Resource entry updated: 2019-06-26

[Alaskan Inuit Food Security Conceptual Framework: How to Assess the Arctic from an Inuit perspective. Summary and Recommendations Report](#)

**Synopsis:**

The following summary report focuses on sharing the collective efforts of ICC-Alaska, 146 Inuit contributing authors, an 12-member Food Security Advisory Committee and many other Inuit, who provided input and guidance. Here we aim to illuminate food (in)security through our way of knowing. The summary report was created for those who are looking for a quick glimpse at what food security means to us, what it means to apply a food security lens to assessments and recommendations for strengthening food security. For a deeper understanding and more in-depth discussion, a technical report has been created. Within both reports you will find: 1) recommendations, 2) key barriers, 3) the Food Security Conceptual Framework, and 4) drivers of food security and insecurity. Following the introduction of this report, we present the Alaskan Inuit Food Security Conceptual Framework. The framework is the product of semi-directive interviews and analysis of information conducted through community meetings, regional workshops and at times with assistance of computer software to pull out themes. These themes were further analyzed and evaluated through regional meetings. During this process, IK holders and the project's Food Security Advisory Committee provided continuous guidance, feedback and direct involvement in the development of the conceptual framework. The framework provides an understanding of all the components that make up our food security and further begins to demonstrate the relationships that exist between all that is in the Arctic. To discuss Alaskan Inuit food security, it is important to understand the connected nature of the Arctic. To aid in illustrating this point, we provide two conceptual maps that demonstrate connectivity, cumulative impacts and shows how to apply a food security lens to understanding the Arctic. The report ends with recommendations to strengthen different parts of our food security. Additionally, we provide a list of key barriers identified throughout the process of completing this project. The recommendations may include components that are familiar – points that we have made for many years. Trough this report, we have another opportunity to express the need for particular actions, to define how we are involved in research, management and policymaking and to lay out what is needed to support our culture and overall food security.

**Keywords:** Food security, Indigenous knowledge, conceptual framework, Alaska, arctic, recommendations, community-based

**Resource Type:** Report

**Focus:** Food security, Indigenous knowledge

**Region:** Alaska, United States

**Language:** English

**Year:** 2015

**Citation:** Inuit Circumpolar Council. "Alaskan Inuit Food Security Conceptual Framework: How to Assess the Arctic from an Inuit perspective. Summary and Recommendations Report." Inuit Circumpolar Council, Anchorage, Alaska: 2015.

Resource entry updated: 2019-03-05

[Basic Course on Community-Based Monitoring & Information Systems \(CBMIS\) for Community Trainers and Organizers](#)

**Synopsis:**

This CBMIS course is designed for indigenous communities who are interested to start their CBMIS work and also for those who have already started. It is intended for community-based trainers and organizers, local people doing community-based monitoring and assessments, local advocates and communicators. This course intends to help facilitate the CBMIS work that is undergoing on the ground. This is mostly informative and non-prescriptive. It can be taken by group or individually; and it comes with corresponding group dynamics and individual self-checks for personal evaluation.

This course should be used and tailored according to the actual needs of the community. The training can run for two days but maybe prolonged or shortened depending on the participants.

It is suggested that this course should be taken by individuals who have undergone an orientation on the Indigenous Peoples' Sustainable, Self-Determined Development (IPSSDD) framework.

**Keywords:** Community-based monitoring, indigenous knowledge, indicators, self-determined development, sustainable development, framework

**Resource Type:** Book

**Focus:** Training, monitoring framework

**Region:** Worldwide

**Language:** English

**Year:** 2015

**Citation:** Biangalen-Magata, H. et al. (2015). Basic Course on Community-Based Monitoring and Information Systems (CBMIS) for Community Trainers and Organizers. Tebtebba Foundation.

Resource entry updated: 2018-11-09

[Cultural indicators of Indigenous Peoples' food and agro-ecological systems](#)

**Synopsis:**

The paper reviews Indigenous Peoples' rights, including their right to food, as enshrined in various UN Declarations, Conventions and Covenants, and summarizes the current work undertaken by UN and some other international organizations as well as some national agencies in using cultural and related indicators that are being or could be applied to Indigenous Peoples. A modified version of the Sustainable Livelihoods framework is proposed as a tool for understanding the relationships between culture and food and agro-ecological systems and the ways these interact with the natural environment and the policy and institutional context to influence livelihood, food security and well-being outcomes.

**Keywords:** Traditional food systems, cultural indicators, indigenous peoples' rights, development indicators, framework, indigenous knowledge, adaptability, resilience, agro-ecological systems

**Resource Type:** Discussion paper

**Focus:** Review, indicators

**Region:** Worldwide

**Language:** English

**Year:** 2006

**Citation:** Woodley, E. et al. (2006). "Cultural indicators of Indigenous Peoples' food and agro-ecological systems." SARD Initiative.

Resource entry updated: 2018-11-09

### [Ngā Mahi: A Kaupapa Māori Outcomes and Indicators Kete](#)

#### **Synopsis:**

As part of the Planning Under Cooperative Mandates research (PUCM) we developed a kaupapa Māori outcomes and indicators framework. This framework reflects tikanga Māori and Māori values. It also considers issues (including environmental issues) according to those tikanga that particular issues invoke. For example, tikanga brought into play in relation to council treatment and disposal of sewerage include tapu (sacred), and might also impact on the mauri (life-force) of water if treated effluent were to enter waterways.

The intention of our research has been to clarify and define key Māori environmental concepts so that stakeholders (including council staff) will have a terms of reference against which they can compare desired environmental outcomes from different perspectives and be better placed to integrate Māori environmental outcomes into planning processes. The end-point is this Nga Mahi kete report containing tikanga-based worksheets and the guidelines for using them.

**Keywords:** Māori values, outcomes and indicators framework, environmental issues, worksheets

**Resource Type:** Report

**Focus:** Worksheets, outcomes and indicators framework

**Region:** New Zealand

**Language:** English

**Year:** 2009

**Citation:** Jefferies, R. & Kennedy, N. (2009). Nga Mahi: Kaupapa Maori Outcomes and Indicators Kete. The International Global Change Institute.

Resource entry updated: 2018-11-09

### [Kūlana Noi'i](#)

#### **Synopsis:**

The Kūlana Noi'i provide guidance for building and sustaining not just working partnerships but long-term relationships between communities and researchers. These kūlana (standards) are intended to be flexible enough to apply to a range of different communities and to reflect on the perspectives and responsibilities of both communities and researchers. With support from the University of Hawai'i SEED Inclusion, Diversity, Equity, Access and Success Program (IDEAS), the He'eia National Estuarine Research Reserve, the University of Hawai'i Sea Grant College Program, and Kua'āina Ulu 'Auamo (KUA) established a partnership with a goal of promoting more collaborative and mutually-beneficial partnerships between UH faculty and students conducting research and the local communities who care for and utilize natural resources.

**Keywords:** Natural resource management, Kūlana Noi'i, research standards, Hawaii, co-learning, co-development

**Resource Type:** Report

**Focus:** Research guidelines, Community-based Research, Mutually-beneficial Partnerships, Knowledge Co-production

**Region:** Hawai'i

**Language:** English

**Year:** 2018

**Citation:** Kūlana Noi'i. (University of Hawai'i SEED Inclusion, Diversity, Equity, Access and Success (IDEAS) Program, He'eia National Estuarine Research Reserve, University of Hawai'i Sea Grant College Program, Kua'āina Ulu 'Auamo, and Paepae o He'eia, Honolulu, HI, 2018).

Resource entry updated: 2018-11-09

### [The Akwé: Kon Guidelines](#)

**Synopsis:**

Voluntary Guidelines for the Conduct of Cultural, Environmental and Social Impact Assessment regarding Developments Proposed to Take Place on, or which are Likely to Impact on, Sacred Sites and on Lands and Waters Traditionally Occupied or Used by Indigenous and Local Communities.

**Keywords:** Indigenous and local communities, guidelines, cultural assessment, environmental assessment, social impact assessment

**Resource Type:** Report

**Focus:** Research Guidelines, Cultural, Environmental and Social Impact Assessment, Indigenous and Local Communities

**Region:** Worldwide

**Language:** English (also available in Spanish, French, Russian, Arabic, and Chinese)

**Year:** 2004

**Citation:** Secretariat of the Convention on Biological Diversity (2004). Akwé: Kon Voluntary Guidelines for the Conduct of Cultural, Environmental and Social Impact Assessment regarding Developments Proposed to Take Place on, or which are Likely to Impact on, Sacred Sites and on Lands and Waters Traditionally Occupied or Used by Indigenous and Local Communities Montreal, 25p. (CBD Guidelines Series).

Resource entry updated: 2018-11-09

### [The Tkarihwaí:ri Code of Ethical Conduct](#)

**Synopsis:**

Code of Ethical Conduct to Ensure Respect for the Cultural and Intellectual Heritage of Indigenous and Local Communities Relevant to the Conservation and Sustainable Use of Biological Diversity.

**Keywords:** Indigenous and local communities, traditional knowledge, conservation, sustainable development

**Resource Type:** Report

**Focus:** Research guidelines, Cultural and Intellectual Heritage, Indigenous and Local Communities

**Region:**

**Language:** English (also available in Spanish, French, Russian, Arabic, and Chinese)

**Year:** 2011

**Citation:** Convention on Biological Diversity. Revised Draft of the Elements of an Ethical Code of Conduct to Ensure Respect for the Cultural and Intellectual Heritage of Indigenous and Local Communities: Note by the Executive Secretary UNEP/CBD/WG8J/6/4 (Secretariat of the Convention on Biological Diversity, Montreal, 2011).

Resource entry updated: 2018-11-09

### [The Whakatane Mechanism](#)

#### **Synopsis:**

A Mechanism for promoting rights-based conservation through practical implementation of IUCN Resolutions, including redressing historical injustices and securing communities' rights to their lands and territories. The Whakatane Mechanism originated from a dialogue between IUCN and indigenous peoples held in January 2011 at CEESP's "Sharing Power" conference in Whakatane, New Zealand. It emerged out of the 2008 WCC's call to develop "a mechanism to address and redress the effects of historic and current injustices against indigenous peoples in the name of conservation of nature and natural resources" (Res 4.052), and "a mechanism to ... advance key recommendations of the Durban Accord and Durban Action Plan ..." (Res 4.052). The aim of the Whakatane Mechanism is to assess the situation in different protected areas around the world and, where people are negatively affected, to propose solutions and implement them. It also celebrates and supports successful partnerships between peoples and protected areas.

**Keywords:** Protected areas, indigenous and local communities, conservation, assessments

**Resource Type:** Online platform

**Focus:** Research guidelines, Power sharing, Indigenous and Local Communities

**Region:** Worldwide

**Language:** English

**Year:** 2011

**Citation:** Whakatane Mechanism (2018); <http://whakatane-mechanism.org>

Resource entry updated: 2018-11-09

### [The Paoakalani Declaration](#)

#### **Synopsis:**

Developed by a coalition of Native Hawaiians at the 2003 Ka Aha Pono – Native Hawaiian Intellectual Property Rights Conference, the Paoakalani Declaration is a powerful statement affirming the Native Hawaiian people's collective right, as the creators of our traditional knowledge, to protect our cultural expressions from misuse by individuals who behave disrespectfully and inconsistently with our worldview, customs and traditions. Critically, the document declares the willingness on the part of Native Hawaiians to share our culture with humanity, provided that "we determine when, why, and how it is used."

**Keywords:** Hawai'i, traditional knowledge, worldview, self-determination, intellectual property, economic development, social development, cultural development, natural resources

**Resource Type:** Report

**Focus:** Research Guidelines, Intellectual Property, Indigenous and Local Communities

**Region:** Hawai'i

**Language:** English

**Year:** 2003

**Citation:** Ka 'Aha Pono '03: Native Hawaiian Intellectual Property Rights Conference, Paoakalani Declaration 2 (Oct. 3-5, 2003)

Resource entry updated: 2018-11-09

### [International Society for Ethnobiology Code of Ethics](#)

#### **Synopsis:**

The Code of Ethics of the International Society of Ethnobiology (ISE) reflects the vision of the Society and provides a framework for decision-making and conduct for ethnobiological research and related activities. The goals are to facilitate ethical conduct and equitable relationships, and foster a commitment to meaningful collaboration and reciprocal responsibility by all parties. The Code of Ethics is a living document that will adapt over time to meet changing understandings and circumstances. All Members of the ISE are bound in good faith to abide by the Code of Ethics as a condition of membership.

**Keywords:** Code of ethics, framework, decision-making, ethnobiology, mindfulness, traditional resource rights

**Resource Type:** Report

**Focus:** Research Guidelines, Code of Ethics

**Region:** Worldwide

**Language:** English (also available in French, Italian, Spanish, Chinese, Bahasa Indonesia, Hungarian, and Portuguese)

**Year:** 2008

**Citation:** International Society of Ethnobiology (2006). International Society of Ethnobiology Code of Ethics (with 2008 additions). <http://ethnobiology.net/code-of-ethics/>

Resource entry updated: 2018-11-09



[Community Well-being in Biocultural Landscapes: Are they Living Well?](#)

**Synopsis:**

There is a growing recognition that living well must go beyond economic and material plenty to encompass social and spiritual well-being. But what do they understand by these wider aspects of well-being? *Community well-being in Biocultural Landscapes: Are they living well?* provides an introduction to the concept of human well-being as it relates to international rural development and conservation policy and practice. It demonstrates that well-being is understood and managed in a variety of ways in different cultures but also across the geographical scales at which decision-making processes take place, from the local, to regional, national and international scales. Using case studies and examples from a number of institutions the book presents different approaches to well-being measurement and provides valuable reflections on the applicability of these experiences. This book shows how community well-being can be measured using indicators chosen by local people to reflect the worldviews of their culture. Deriving such indicators can be a lengthy process, but the results are typically locally owned and recognized. When assessing well-being between different communities, a quicker approach that relies more on uniform indicators is often needed – and some loss of local diversity is to be expected. This book discusses how both approaches may go hand-in-hand and provides a unifying approach that is flexible enough to be used by conservation and rural development workers. This book is important reading for the staff of international aid and conservation agencies, for students of international development and those exploring concepts of well-being.

**Keywords:** well-being, biocultural, landscapes, conservation policy, rural development

**Resource Type:** Book

**Focus:** Case studies, Well-being indicators

**Region:** Worldwide

**Language:** English

**Year:** 2014

**Citation:** Verschuuren, B., Subramanian, S.M. and Hiemstra, W. "Community well-being in Biocultural Landscapes: Are they Living Well?" Rugby, UK: Practical Action Publishing, 2014.

Resource entry updated: 2018-11-02

### [The Arctic Social Indicators \(ASI\) project](#)

#### **Synopsis:**

The Arctic Social Indicators (ASI) project is a project following up on the activities of the Arctic Human Development Report (AHDR) to device Arctic social indicators which will help facilitate the tracking and monitoring of human development in the Arctic over time. While the AHDR is a major achievement, it is apparent that the development of some means of monitoring trends in human development in the Arctic would be extremely helpful from the perspective of those involved in the policy process. Those wishing to track developments relating to the status of Arctic cultures, the evolution of indigenous rights, or the growth of the region's economy, for example, can take the picture presented in the AHDR as a point of departure and compare developments at various temporal intervals in order to get a handle on changes over time in human development or social welfare in the Arctic. What the AHDR does not do, however, is to provide time series data regarding the various elements of human development in the Arctic, and nor does it present a suite of quantifiable indicators suitable for use on the part of those seeking to monitor or track changes in human development in the Arctic. The development of indicators fall within six domains: (1) Fate control and or the ability to guide one's own destiny; (2) Cultural integrity or belonging to a viable local culture; (3) Contact with nature or interacting closely with the natural world; (4) Material Well-being; (5) Education; (6) Health/demography. Indicators are being developed for each of these domains. The report on Arctic social indicators will be directed at a broad audience, including the science community, inhabitants of the Arctic, policy makers at all levels, and in particular the Arctic Council and its SDWG. The plan is to have a book report on Arctic social indicators completed in year 2008.

**Keywords:** social indicators, arctic, human development

**Resource Type:** Online platform

**Focus:** Case studies, Social indicators

**Region:** Arctic, multiple countries

**Language:** English

**Year:** n/a

**Citation:** "The Arctic Social Indicators Project (ASI)," Stefansson Arctic Institute.

Resource entry updated: 2018-11-02

### [Culturally Grounded Indicators of Resilience in Social-Ecological Systems](#)

#### **Synopsis:**

Measuring progress toward sustainability goals is a multifaceted task. International, regional, and national organizations and agencies seek to promote resilience and capacity for adaptation at local levels. However, their measurement systems may be poorly aligned with local contexts, cultures, and needs. Understanding how to build effective, culturally grounded measurement systems is a fundamental step toward supporting adaptive management and resilience in the face of environmental, social, and economic change. To identify patterns and inform future efforts, we review seven case studies and one framework regarding the development of culturally grounded indicator sets. Additionally, we explore ways to bridge locally relevant indicators and those of use at national and international levels. The process of identifying and setting criteria for appropriate indicators of resilience in social-ecological systems needs further documentation, discussion, and refinement, particularly regarding capturing feedbacks between biological and social-cultural elements of systems.

**Keywords:** bioculture, indicator sets, Indigenous Peoples, local communities

**Resource Type:** Journal article

**Focus:** Case studies, indicators

**Region:** Worldwide

**Language:** English

**Year:** 2017

**Citation:** Sterling, E. et al. "Culturally grounded indicators of resilience in social-ecological systems." *Environment and Society* 8, no. 1 (2017): 63-95.

Resource entry updated: 2018-11-02

### [Kauri Cultural Health Indicators – Monitoring Framework](#)

#### **Synopsis:**

This work sets out to develop a culturally based monitoring methodology framework for Kauri Ngahere (Forest) Health (hereafter referred to as the KCI Methodology, Framework or Project). The overarching purpose of the monitoring framework for kauri health has been summed up by kaumatua as, "whangaia te mauri/hau o te kauri". This can be loosely translated as to nurture, feed or nourish the mauri ("life-force") or hau ora' ('the breath of life)' of Kauri as a reciprocal circle relationship that tangata whenua have with the forest. Key applications of the methodology will be to determine whether there are Cultural Health Indicators (that are measurable, repeatable and duplicable [quantitative or qualitative]) that can:

- Determine the state of health of kauri forests in different parts of the kauri catchment
- Anticipate or predict the presence of PTA; and
- Indicate resilient kauri trees or forests that resist the impact of or susceptibility to PTA.

#### **Keywords:**

**Resource Type:** Report

**Focus:** Monitoring framework, cultural health indicators

**Region:** Oceania, Aotearoa (New Zealand)

**Language:** English

**Year:** 2013

**Citation:** Shortland, T., Chetham, J. "Kauri Cultural Health Indicators - Monitoring Framework." Repo Consultancy Ltd, 2013.

Resource entry updated: 2018-11-02

### [Assessing Agrobiodiversity: A Compendium of Methods](#)

#### **Synopsis:**

Platform for Agrobiodiversity Research (PAR) has developed an online compendium of methods for assessing agrobiodiversity. Drawing on experiences from around the world, the Compendium was created to support the documentation, co-creation and sharing of knowledge about diversity and its management. The Compendium provides guidelines for the collection and analysis of data about the diversity of crops, livestock, pollinators and harvested wild plants.

Section 1 and 2 describe participatory approaches in agrobiodiversity research and data-gathering. Sections 3-13 describe how to collect, organize and analyse information on crops, livestock, pollinators, wild plants, land use, management practices and resilience in agricultural landscapes. Section 14 explains how to calculate richness, evenness and divergence for crop diversity; and Section 15 deals with some general aspects of data organization and analysis.

**Keywords:** landscape mapping, data collection, biodiversity, indicators, agrobiodiversity, management practices, resilience, agricultural landscapes, research methods

**Resource Type:** Resource book

**Focus:** Case studies, Agrobiodiversity

**Region:** Worldwide

**Language:** English

**Year:** 2018

**Citation:** PAR (2018) Assessing Agrobiodiversity: A Compendium of Methods (Platform for Agrobiodiversity Research, Rome).

Resource entry updated: 2018-11-02

[Indigenous ecological knowledge as the basis for adaptive environmental management: evidence from pastoral communities in the Horn of Africa](#)

**Synopsis:**

The proliferation of woody plants has been observed on rangelands globally and has significant impacts on subsistence livestock production. However, adaptation strategies to such environmental changes remain largely unexamined. This paper investigates pastoralists' adaptations to such environmental changes in the Borana zone of southern Ethiopia by integrating pastoralists' ecological knowledge, surveys of plant species composition, and census data on livestock holdings. The results indicated that a proliferation of woody plants and corresponding decline in herbaceous species would have negative impact on forage values for cattle and sheep, whereas goats would remain relatively unaffected, and camels would benefit. While census data showed declines in household herd size from 2000 to 2014, pastoralists have been adapting to the proliferation of woody plants by doubling their goat holdings, and wealthier households are investing in camels. These changes in livestock holdings based on indigenous ecological knowledge will mitigate the negative impacts of vegetation shifts on livestock production, and facilitate adaptive environmental management in the pastoral systems.

**Keywords:** Indigenous populations, resilience, biocultural indicators, biocultural landscapes, Boran pastoralists, livelihood, traditional land use, adaptive management, ethnobotanical knowledge

**Resource Type:** Journal article

**Focus:** Case study, Social-ecological resilience indicators

**Region:** Borana Zone in Southern Ethiopia

**Language:** English

**Year:** 2016

**Citation:** Liao, C. & Ruelle, M. L. et al. "Indigenous ecological knowledge as the basis for adaptive environmental management: evidence from pastoral communities in the Horn of Africa." *Journal of Environmental Management* 182 (2016): 70-79.

Resource entry updated: 2018-10-11

[Biocultural Approaches to Well-being and Sustainability Indicators Across Scales](#)

**Synopsis:**

Monitoring and evaluation are central to ensuring that innovative, multi-scale, and interdisciplinary approaches to sustainability are effective. The development of relevant indicators for local sustainable management outcomes, and the ability to link these to broader national and international policy targets, are key challenges for resource managers, policymakers, and scientists. Sets of indicators that capture both ecological and social-cultural factors, and the feedbacks between them, can underpin crossscale linkages that help bridge local and global scale initiatives to increase resilience of both humans and ecosystems. Here we argue that biocultural approaches, in combination with methods for synthesizing across evidence from multiple sources, are critical to developing metrics that facilitate linkages across scales and dimensions. Biocultural approaches explicitly start with and build on local cultural perspectives — encompassing values, knowledges, and needs — and recognize feedbacks between ecosystems and human well-being. Adoption of these approaches can encourage exchange between local and global actors, and facilitate identification of crucial problems and solutions that are missing from many regional and international framings of sustainability. Resource managers, scientists, and policymakers need to be thoughtful about not only what kinds of indicators are measured, but also how indicators are designed, implemented, measured, and ultimately combined to evaluate resource use and well-being. We conclude by providing suggestions for translating between local and global indicator efforts.

**Keywords:**

**Resource Type:** Journal article

**Focus:** Biocultural approach, well-being indicators, sustainability indicators

**Region:** Worldwide

**Language:** English

**Year:** 2017

**Citation:** Sterling, Eleanor J., et al. "Biocultural approaches to well-being and sustainability indicators across scales." *Nature ecology & evolution* 1.12 (2017): 1798.

Resource entry updated: 2018-08-22

[Biocultural Approaches to Developing Well-being Indicators in Solomon Islands](#)

**Synopsis:**

To meet local and global aspirations toward sustainable resource management, we must first understand what success looks like. At global levels, well-being can be narrowly defined, which may clash with local values and cause adverse impacts. Melanesia is home to a complex mosaic of resource management systems, and finding locally appropriate indicators of success poses particular challenges. We propose that biocultural approaches can assist in developing grounded and appropriate well-being indicators. Biocultural approaches frame issues from the perspectives of place-based communities and work with resource users to develop desired outcomes. In doing so, biocultural approaches recognize links between people and the environment and seek to understand feedbacks between social and ecological components. Biocultural approaches may help to improve the fit between local aspirations and national or international actions and can also cocreate knowledge that draws on local knowledge and practice as well as western science. Here, we report on one such approach in Western Province, Solomon Islands, where rural communities are weighing a variety of trade-offs around the use of natural resources. The work encompasses four locations and seeks to define local needs and priorities, develop appropriate local indicators of success, assess indicator baselines, and catalyze appropriate action. Implementation challenges have included scaffolding between local and national levels and the diversity of the four locations. These have, however, been offset by the engaged nature of indicator creation, which assists communities in planning toward action around local definitions of well-being.

**Keywords:** biocultural, indicators, monitoring and evaluation, resource management, Solomon Islands, Western Province

**Resource Type:** Journal article

**Focus:** Well-being indicators, monitoring and evaluation

**Region:** Oceania, Solomon Islands

**Language:** English

**Year:** 2018

**Citation:** McCarter, J. et al. "Biocultural approaches to developing well-being indicators in Solomon Islands." *Ecology and Society* 23, no1 (2018): 32.

Resource entry updated: 2018-08-22

[Moving Beyond the Human–Nature Dichotomy Through Biocultural Approaches: Including Ecological Well-being in Resilience Indicators](#)

**Synopsis:**

Diverse and productive ecosystems and human well-being are too often considered opposing targets. This stems mainly from nature being perceived as separate from culture, which results in resilience indicators that focus predominantly on either ecosystems or humans, and that overlook the interplay between the two. Meanwhile, global targets for biodiversity conservation and human well-being have yet to be satisfactorily achieved. We believe that in order to develop effective, culturally appropriate, and equitable conservation strategies that ensure social-ecological resilience, conservation planners and practitioners must conceive of human and ecological well-beings as an interrelated system. By giving nature a voice, and by viewing nature and people as an undifferentiated whole, some indigenous peoples and local communities (IPLC) have philosophical bases for achieving well-being for both humans and nature. Biocultural approaches to conservation ground management in local knowledges, practices, and ontologies. These approaches encompass both the biological and cultural aspects of a system, address complex relationships and feedbacks within human and ecological well-being, and offer flexible frameworks that facilitate synthesis across different metrics, knowledge systems, and ontologies. The process of developing indicators of resilience with a biocultural approach could help (1) overcome the human–nature dichotomy that often makes global approaches incompatible with local approaches by integrating local peoples' diverse forms of relating to nature, (2) reflect two-way feedbacks between people and their environment by focusing on processes, not just final states, and (3) define, measure, and monitor ecological and human well-being as a whole. It can also facilitate dialog between IPLCs and global decision-makers who are disconnected from local realities, and between people from a diversity of disciplinary, ontological, and professional backgrounds.

**Keywords:** biocultural approach, conservation, ecological well-being, human well-being, indicator, Indigenous Peoples and local communities, nature–culture, ontology, resilience, traditional ecological knowledge

**Resource Type:** Journal article

**Focus:** Well-being, resilience

**Region:** Worldwide

**Language:** English

**Year:** 2017

**Citation:** Caillon, S., G. Cullman, B. Verschuuren, and E. J. Sterling. "Moving beyond the human–nature dichotomy through biocultural approaches: including ecological well-being in resilience indicators." *Ecology and Society* 22.4 (2017): 27.

Resource entry updated: 2018-08-22

[Cultural Indicators for Kauri Ngahere](#)

**Synopsis:**

This report has been commissioned by the Tāngata Whenua Roopū of the Joint Agency Response team to investigate the cultural health indicators that may be applied to inform the management of the disease *Phytophthora taxon Agathis*, commonly known as Kauri Dieback or PTA. The Tāngata Whenua Roopū wishes to focus on assessing kauri health and building resilience to the disease. By confirming and utilising cultural indicators the kauri response should be informed by the enduring relationships and practices between tāngata whenua and kauri. In this case, cultural indicators are a mātauranga Māori approach to assessing the health of the environment in so far as this knowledge base can be applied to the health of kauri forests and kauri stands.

**Keywords:**

**Resource Type:** Report

**Focus:** Cultural health indicators, monitoring framework

**Region:** Oceania, Aotearoa (New Zealand)

**Language:** English

**Year:** 2011

**Citation:** Shortland, T. "Cultural Indicators for Kauri Ngahere". Repo Consultancy Ltd, 2011.

Resource entry updated: 2018-08-22

### [Defining Biocultural Approaches to Conservation](#)

**Synopsis:**

We contend that biocultural approaches to conservation can achieve effective and just conservation outcomes while addressing erosion of both cultural and biological diversity. Here, we propose a set of guidelines for the adoption of biocultural approaches to conservation. First, we draw lessons from work on biocultural diversity and heritage, social–ecological systems theory, integrated conservation and development, co-management, and community-based conservation to define biocultural approaches to conservation. Second, we describe eight principles that characterize such approaches. Third, we discuss reasons for adopting biocultural approaches and challenges. If used well, biocultural approaches to conservation can be a powerful tool for reducing the global loss of both biological and cultural diversity.

**Keywords:** biocultural conservation, biodiversity, culture, social–ecological systems

**Resource Type:** Journal article

**Focus:** Biocultural approaches

**Region:** Worldwide

**Language:** English

**Year:** 2015

**Citation:** Gavin, Michael C., et al. "Defining biocultural approaches to conservation." *Trends in ecology & evolution* 30.3 (2015): 140-145.

Resource entry updated: 2018-08-10

### [Incorporating Māori Perspectives into Decision-making](#)

**Synopsis:**

This protocol has been developed by Ngā Kaihautū Tikanga Taiao, the statutory Māori Advisory Committee of the Environmental Protection Authority (EPA). As a decision-making authority, the EPA uses several protocols to aid decision makers in producing consistent, high-quality decisions. Ngā Kaihautū Tikanga Taiao is required to provide advice and assistance to the EPA on matters relating to policy, process and decisions of the EPA. The intention of the protocol is for it to be used by decision makers (as representatives of the EPA) as a tool to incorporate Māori perspectives appropriately into any decision making. This protocol is also intended to be used by iwi, Māori and applicants to understand how a Māori perspective is considered in decision making. Further, both applicants and Māori can use it to assist with the preparation of applications to the EPA to ensure a full and complete application has been lodged. Areas covered in this protocol include Te Tiriti o Waitangi (The Treaty of Waitangi) obligations, Ngā Kaihautū Tikanga Taiao, impact on Māori, outcomes of significance to Māori, identifying and assessing risk and effects and engagement with Māori. It should be noted that this protocol is intended to be a 'living document' and will continue to be refined as further information or insights into the EPA's decision-making process become available, and as new case law is developed in New Zealand or internationally. This document is to support the EPA with its obligations under the Environmental Protection Authority Act 2011.

**Keywords:** decision making, Māori, environmental management, Indigenous knowledge, assessment

**Resource Type:** Resource book

**Focus:** Guidebook, Indigenous perspectives, cultural–environmental assessment and management

**Region:** Oceania, Aotearoa (New Zealand)

**Language:** English

**Year:** 2018

**Citation:** "Incorporating Māori Perspectives into Decision-making." Wellington: New Zealand Environmental Protection Authority, 2018.

Resource entry updated: 2018-08-03

[How Healthy is your Ahupua'a? HCA Community Watershed Snapshot Guidebook](#)

**Synopsis:**

The Hawai'i Conservation Alliance Community Watershed Snapshot Guidebook describes a community-friendly process to better understand the health of an ahupua'a using a tool called the Community Watershed Snapshot (CWS) to provide a status report on ridge-to-reef health. A community group can use the process in the guidebook to determine the health of its ridge-to-reef ecosystem by developing its own CWS. This guidebook strongly recommends that community groups use an experienced facilitator to help the group move through the process. The seasoned facilitator will utilize this guidebook as participatory and collaborative process advice. Although this resource is not a facilitation methods guide, the Community Watershed Snapshot Guidebook provides recommendations about how to engage a community group in interactive and inclusive exercises that generate dialogue, build capacity and result in consensus-based products. Rather than duplicating existing tools, this guidebook attempts to complement and reinforce resources already in use throughout the Pacific Islands. This guidebook provides resources to help inspire community interest at the beginning of a watershed management process and to evaluate long-term management efforts.

**Keywords:** monitoring, evaluation, reef, community based management, collaboration

**Resource Type:** Resource book

**Focus:** Guidebook, community-based resource management

**Region:** Polynesia, Hawai'i

**Language:** English

**Year:** 2018

**Citation:** Noori L., Atkinson S., Anders E., Parks J., Giardina C., Winter K., Mejia M., Feinholz C., Mathews T., "How Healthy is your Ahupua'a? HCA Community Watershed Snapshot Guidebook." Honolulu: Hawai'i Conservation Alliance, 2018.

Resource entry updated: 2018-08-03



[The Potential of the Global Person Generated Index for Evaluating the Perceived Impacts of Conservation Interventions on Subjective Well-being](#)

**Synopsis:**

There is growing interest in the importance of ensuring that biodiversity conservation is not achieved at the expense of local people's well-being. It has been suggested that when evaluating the impact of an intervention, the affected population should be allowed to define well-being (requiring a subjective measure), and impacts (requiring a participatory approach), but very few, if any, conservation evaluations live up to these standards. We used a participatory impact evaluation approach with the Global Person Generated Index (GPGI) to investigate the relative impacts of strict protection and community forest management on local well-being in Madagascar's rainforests. The GPGI captures the subjective and multidimensional nature of well-being by asking respondents to identify the five most important domains for their quality of life, to evaluate their own performance in each domain, and the relative importance of the five identified domains. Participatory impact evaluation establishes local perceptions of the cause-effect relationship between an intervention and respondents' performance in each domain. Over half the respondents perceived no positive or negative impacts from the conservation interventions. We found no significant difference between strict protection and community forest management in the measures we used to examine the magnitude of their relative impacts, but there were differences in the characteristics of domains impacted and in the priority domains that could be targeted to improve well-being in locally meaningful ways. Because of its subjectivity, the GPGI cannot provide quantitative information on the magnitude of impacts. Its strength lies in the wealth of information it provides on what life domains people value and their performance in these domains. Combined with the participatory impact evaluation approach, the GPGI provides highly relevant insights that can be used to improve interventions in ways which increase the local legitimacy and acceptability of conservation initiatives.

**Keywords:** Africa, biodiversity, community-based natural resource management, environmental justice, social sustainability, welfare

**Resource Type:** Journal article

**Focus:** Well-being

**Region:** Worldwide

**Language:** English

**Year:** 2018

**Citation:** Ranaivo A. et al. "The potential of the Global Person Generated Index for evaluating the perceived impacts of conservation interventions on subjective well-being". World Development Volume 105 (2018): 107-118

Resource entry updated: 2018-08-02

### [Te Āhuetanga o Te Waiiau Cultural Health Baseline Report](#)

#### **Synopsis:**

This report represents the realizing of a long-standing vision by Ngāi Tahu Whānui for a tribally lead environmental monitoring and reporting system, appropriately named - State of the Takiwā. State of the Takiwā, or 'SoT' for short, is an environmental monitoring approach that attempts to integrate Māori cultural values and western science measures in the gathering and reporting of information about the health of the environment and to understand changes over time. It is aimed at assisting tāngata whenua to gather information, assess and report on the cultural health of significant sites, natural resources and the environment within their particular takiwā, and to make better decisions on how to manage these into the future. This report specifically outlines the results of the SoT pilot study undertaken in the Waiiau River Catchment, Southland in March 2005, as part of the Ministry for the Environment funded Sustainable Management Fund project 'State of the Takiwā – Cultural Monitoring and Reporting on the Health of our Environment'. Importantly, this report presents critical 'baseline' information that is aimed at capturing the current cultural health of the 12 sites assessed within the pilot study. However, it also attempts to display information on past health and other measures of the state of these sites to understand significant changes over time.

**Keywords:** Takiwā, cultural monitoring, health of environment

**Resource Type:** Report

**Focus:** Cultural-environmental monitoring

**Region:** Oceania, Aotearoa (New Zealand)

**Language:** English

**Year:** 2005

**Citation:** Pauling C. et al. "Te Āhuetanga o Te Waiiau Cultural Health Baseline Report." Te Rūnanga o Ngāi Tahu Report, 2005

Resource entry updated: 2018-08-01

### [Cultural Health Assessment of the Avon-Heathcote Estuary and its Catchment](#)

#### **Synopsis:**

This report outlines the results of a cultural environmental health assessment of Te Ihutai/the Avon-Heathcote Estuary and its catchment undertaken by Te Rūnanga o Ngāi Tahu, in-conjunction with members of Ngāi Tūāhuriri and Ngāti Wheke, between March and May 2007. The purpose of the study was to undertake a review of the cultural health of the Ihutai catchment, including the Ōtākaro (Avon) and Ōpāwaho (Heathcote) rivers, through data collected at 30 river, estuary and coastal sites using the Takiwā cultural environmental monitoring and reporting tool. Takiwā is an environmental monitoring system developed by Ngāi Tahu that is aimed at facilitating Tāngata Whenua to gather, store, analyse and report on information in relation to the cultural health of significant sites, natural resources and the environment within their respective takiwā (tribal areas). The approach uses a series of assessment forms to enable the quantification of cultural health scores based on a number of factors including suitability for harvesting mahinga kai, physical and legal access, site pressures, degree of modification and the identification of valued as well as pest species present. Other tools including the Cultural Health Index (CHI), Stream Health Monitoring and Assessment Kit (SHMAK), E.coli testing and electric fishing surveys are also used to complement the Takiwā assessments.

**Keywords:** cultural health, managing waterways, cultural environmental, monitoring

**Resource Type:** Report

**Focus:** Cultural-environmental monitoring and reporting

**Region:** Oceania, Aotearoa (New Zealand)

**Language:** English

**Year:** 2007

**Citation:** Pauling C., Lenihan T. M., Rupene M., Tirikatene-Nash N. and Couch R. "Cultural Health Assessment of the Avon-Heathcote Estuary and its Catchment." Te Rūnanga o Ngāi Tahu Report, 2007.

Resource entry updated: 2018-08-01

### [Cultural Health Assessment of the Maitara and Waikawa Catchments](#)

#### **Synopsis:**

This report outlines the results of a cultural environmental health assessment of the Maitara and Waikawa catchments undertaken by Te Rūnanga o Ngāi Tahu, in-conjunction with Ngā Rūnanga o Murihiku, between May and November 2007. This study was carried out for Manaaki Whenua Landcare Research as part of a wider research project being conducted with Te Ao Marama called "He pūau awa – he ūngututanga mātauranga: Environmental reporting for a riverine system – a bicultural approach". The purpose of the study was to undertake a review of the cultural health of the catchments, through data collected at selected sites using the Takiwā cultural environmental monitoring and reporting tool. Takiwā is an environmental monitoring system developed by Ngāi Tahu that is aimed at facilitating Tāngata Whenua to gather, store, analyse and report on information in relation to the cultural health of significant sites, natural resources and the environment within their respective takiwā (tribal areas). The approach uses a series of assessment forms to enable the quantification of cultural health scores based on a number of factors including suitability for harvesting mahinga kai, physical and legal access, site pressures, degree of modification and the identification of valued as well as pest species present. Other tools including the Cultural Health Index (CHI), Stream Health Monitoring and Assessment Kit (SHMAK), E.coli testing and electric fishing surveys are also used to complement the Takiwā assessments.

**Keywords:** cultural health, health of environment, biocultural approach

**Resource Type:** Report

**Focus:** Cultural-environmental monitoring and reporting

**Region:** Oceania, Aotearoa (New Zealand)

**Language:** English

**Year:** 2008

**Citation:** Pauling C. "Cultural Health Assessment of the Maitara and Waikawa Catchments." Te Rūnanga o Ngāi Tahu and Mahaanui Kurataiao Ltd Report, 2008.

Resource entry updated: 2018-08-01

### [Cultural Health Assessment of ō Tū Wharekai / The Ashburton Lakes](#)

#### **Synopsis:**

Te Rūnanga o Arowhenua is working in partnership with the Department of Conservation to restore the Ō Tū Wharekai / Ashburton Lakes area as part of a national initiative to protect and enhance wetlands and waterways of outstanding significance. Part of this work is to undertake an assessment of the cultural values and health of the Ō Tū Wharekai area. The first report produced through this project, the 'Ō Tū Wharekai Cultural Values Report' was completed in September 2009. It aimed to identify, compile and record the traditional and contemporary cultural values of tangata whenua associated with Ō Tū Wharekai / the Ashburton Lakes, and involved a site visit and reviewing published and unpublished literature and tribal records. The values report confirmed Ō Tū Wharekai as an area of immense cultural significance to Ngāi Tahu Whānui, being both an important seasonal mahinga kai area and a major travelling route between the settlements on the eastern coast of Te Waipounamu (the South Island) and those on Te Tai Poutini (the West Coast). This second report complements and extends the cultural values report by assessing the contemporary cultural health and state of the Ō Tū Wharekai / Ashburton Lakes area, as well as identifying the pressures, issues, actions and opportunities that exist which can be taken into account to guide and assist the future management, development and restoration of the area. The methodology employed to assess the cultural health of Ō Tū Wharekai included a Ngāi Tahu monitoring team undertaking Takiwā, Cultural Health Index and SHMAK assessments, e.coli testing and electric fishing and fyke net surveys of 24 selected sites across the Ō Tū Wharekai / Ashburton Lakes area.

**Keywords:** wetlands, waterways, cultural health, Indigenous community

**Resource Type:** Report

**Focus:** Cultural-environmental monitoring and reporting

**Region:** Oceania, Aotearoa (New Zealand)

**Language:** English

**Year:** 2010

**Citation:** Pauling C. and Norton T. "Cultural Health Assessment of ō Tū Wharekai/The Ashburton Lakes." Te Rūnanga o Arowhenua Report, 2010.

Resource entry updated: 2018-08-01

[Cultural Health Assessment of the Avon-Heathcote Estuary and its Catchment](#)

**Synopsis:**

This report presents the results of a cultural environmental health assessment of Te Ihutai / Avon-Heathcote Estuary and its catchment undertaken by representatives from Te Ngāi Tūāhuriri Rūnanga and Mahaanui Kurataiao Ltd between March and May 2012. The purpose of the 2012 State of the Takiwā programme was to undertake a cultural assessment of Te Ihutai (Avon-Heathcote Estuary) and its tributaries, the Ōtākaro (Avon) and Ōpāwaho (Heathcote) rivers at 31 sites within the catchment. This mahi is a continuation of the work initiated by Pauling et al. (2007) in their previous State of the Takiwā assessment, and in addition provides an indication of the post-earthquake state of these waterways in relation to Ngāi Tahu values. The same State of the Takiwā methodology as used in the 2007 programme was used. Two additional fishing survey techniques using hīnaki (set nets) and drag nets were employed to extend the fish survey component to a greater number of sites. In addition a new site was added in Mt Vernon valley to provide an example of a hill-country stream site within the monitoring programme since there are several such streams within the Ōpāwaho/ Heathcote catchment.

**Keywords:** cultural environmental health, waterways, fishing

**Resource Type:** Report

**Focus:** Cultural-environmental monitoring and reporting

**Region:** Oceania, Aotearoa (New Zealand)

**Language:** English

**Year:** 2012

**Citation:** Lang M., Orchard S., Falwasser T., Rupene M., Williams C., Tirikatene-Nash N. and Couch R. "Cultural Health Assessment of the Avon-Heathcote Estuary and its Catchment." Te Rūnanga o Ngāi Tahu and Mahaanui Kurataiao Ltd Report, 2012.

Resource entry updated: 2018-08-01

[Indicators Relevant for Indigenous Peoples: A Resource Book](#)

**Synopsis:**

This guidebook aims to assist and encourage development of social and environmental indicators relevant to indigenous peoples, with more participation from indigenous peoples and organizations. It is divided into in three parts. The first part reports on some of the work already done to develop global and regional indicators – a process which so far has aimed particularly to influence the Convention of Biological Diversity and the Millenium Development Goals. Part II presents a collection of readings to assist readers setting out to develop indicators relevant to indigenous peoples. Part III is provided for reference: it shows the monitoring frameworks of three global indicators processes that affect indigenous peoples.

**Keywords:** Indigenous, policies, global indicators, regional indicators, readings, strategies

**Resource Type:** Resource book

**Focus:** Guidebook, indicators

**Region:** Worldwide

**Language:** English

**Year:** 2008

**Citation:** Stankovitch, Mara. "Indicators Relevant for Indigenous Peoples: a Resource Book." Tebtebba Foundation, 2008.

Resource entry updated: 2018-07-31

[Biocultural Community Protocols: A Toolkit for Community Facilitators](#)

**Synopsis:**

This Toolkit is intended to support communities to make informed decisions about participatory and legal empowerment methods and tools that can help secure their rights and responsibilities and strengthen customary ways of life and stewardship of their territories and areas. It is directed primarily towards facilitators from the communities themselves or from supporting organizations with whom they have long-standing and positive relationships.

**Keywords:** biocultural, community, community rights, legal

**Resource Type:** Resource book

**Focus:** Governance

**Region:** Worldwide

**Language:** English

**Year:** 2012

**Citation:** Holly Shrumm and Harry Jonas (editors). "Biocultural Community Protocols: A Toolkit for Community Facilitators." Natural Justice: Cape Town, 2012.

Resource entry updated: 2018-07-31

### [Indigenous Navigator](#)

**Synopsis:**

The Indigenous Navigator is a framework and set of tools for and by indigenous peoples to systematically monitor the level of recognition and implementation of their rights. By using the Indigenous Navigator, indigenous organisations and communities, duty bearers, NGOs and journalists can access free tools and research based on community-generated data. The Indigenous Navigator monitors the implementation of: the UN Declaration on the Rights of Indigenous Peoples; Core human rights conventions as they pertain to indigenous peoples; Essential aspects of the Sustainable Development Goals; and the outcomes of the World Conference on Indigenous Peoples.

**Keywords:** rights, development, indicators, Indigenous, human rights

**Resource Type:** Online platform

**Focus:** Governance

**Region:** Worldwide

**Language:** English

**Year:** n/a

**Citation:** Asia Indigenous Peoples Pact (AIPP), Forest Peoples Programme (FPP), International Labour Organization (ILO), International Work Group on Indigenous Affairs (IWGIA), Tebtebba Foundation, The Danish Institute for Human Rights, Indigenous Peoples Major Group for Sustainable Development.

Resource entry updated: 2018-07-31

### [Toolkit for the Indicators of Resilience in Socio-ecological Production Landscapes and Seascapes \(SEPLS\)](#)

**Synopsis:**

This toolkit provides practical guidance for making use of the "Indicators of Resilience in Socio-ecological Production Landscapes and Seascapes (SEPLS)" in the field. The indicators are a tool for engaging local communities in adaptive management of the landscapes and seascapes in which they live. The approach presented is centred on holding participatory "assessment workshops", involving discussion and a scoring process for the set of twenty indicators designed to capture communities' perceptions of factors affecting the resilience of their landscapes and seascapes. The toolkit is divided into chapters. Chapter 1 explains the conceptual background, the purpose, uses and benefits of the indicators. Chapter 2 introduces the twenty indicators themselves. Chapter 3 provides practical guidance on how to use the indicators in an assessment workshop held by the local community. This involves steps to be taken before, during and after the workshop itself, including follow up discussions and repeated workshops, encouraging a continuing, long-term, adaptive approach to management. Chapter 4 presents examples of past use of the indicators to highlight certain aspects of the assessment process.

**Keywords:** socio-ecological, production, landscapes, seascapes, indicators, adaptive management, local communities, resilience

**Resource Type:** Resource book

**Focus:** Indicators

**Region:** Worldwide

**Language:** English

**Year:** 2014

**Citation:** UNU-IAS, Bioversity International, IGES and UNDP (2014) Toolkit for the Indicators of Resilience in Socio-ecological Production Landscapes and Seascapes (SEPLS)

Resource entry updated: 2018-07-31

[Cultural Indicators of Indigenous Peoples' Food and Agro-ecological Systems](#)

**Synopsis:**

This paper aims to contribute to the development, collection, and use of cultural indicators of Indigenous Peoples' food and agro-ecological systems for policy, planning and advocacy purposes. The paper reviews Indigenous Peoples' rights, including their right to food, as enshrined in various UN Declarations, Conventions and Covenants, and summarizes the current work undertaken by UN and some other international organizations as well as some national agencies in using cultural and related indicators that are being or could be applied to Indigenous Peoples. A modified version of the Sustainable Livelihoods framework is proposed as a tool for understanding the relationships between culture and food and agro-ecological systems and the ways these interact with the natural environment and the policy and institutional context to influence livelihood, food security and wellbeing outcomes. The intended users of this paper are Indigenous Peoples' Organizations (IPOs), Government departments responsible for data collection and statistics, UN agencies, NGOs, and other development actors.

**Keywords:** economic development, culture, land/resource, relationships, Indigenous, food, livelihood, well-being

**Resource Type:** Journal article

**Focus:** Cultural indicators

**Region:** Worldwide

**Language:** English

**Year:** 2009

**Citation:** Ellen Woodley, Eve Crowley, Jennie Dey de Pryck and Andrea Carmen. Cultural indicators of Indigenous Peoples' food and agro-ecological systems. UN paper. E/C.19/2009/CRP. 3 17 February 2009. English.

Resource entry updated: 2018-07-31

[Alternative Indicators of Well-being for Melanesia: Vanuatu Pilot Study Report](#)

**Synopsis:**

The objective of this pilot study on well-being in Vanuatu is to open dialogue on well-being at a national level to inform the indicators and formalize them into national and local-level governance procedures. Survey instruments are designed by Vanuatu National Statistics Office (VNSO) and checked thoroughly by key informants at MNCC, Vanuatu Cultural Centre (VKS), as well as project steering committee members. The individual well-being survey considered variables of resource access, culture, and community, as well as subjective well-being. It was designed to look more closely at individual and household-level factors of well-being inclusive of economic, health, and education factors taken through the Household Income and Expenditure Survey (HIES) for which it was administered to a sub-sample. The rural community well-being survey—the second component to the study—was designed to measure collective well-being at the broader community level and considered variables of traditional governance, safety, respect, cooperation, cultural participation, environmental protection, and church cooperation. The results of the study will not serve as an official baseline for Vanuatu well-being. Rather, they will serve to cement the need for collection of such data at the national and provincial levels by demonstrating the value added to our understanding of well-being through such data collection.

**Keywords:** well-being, kindness, generosity, individual, vanuatu

**Resource Type:** Report

**Focus:** Pilot study, indicators of well-being

**Region:** Melanesia, Vanuatu

**Language:** English

**Year:** 2012

**Citation:** Vanuatu National Statistics Office. 'Alternative Indicators of Well-being for Melanesia, Vanuatu Pilot Study Report.' Port Vila: Vanuatu National Statistics Office, 2012.

Resource entry updated: 2018-07-31

[Health of the Land, Health of the People: A Case Study on Gwich'in Berry Harvesting in Northern Canada](#)

**Synopsis:**

Many Aboriginal groups, in northern Canada and elsewhere, recognize the strong relationship between the health and the well-being of people and environment. Ecosystem science, including theory and literature related to forest ecosystem management, has been slow to recognize the complex and diverse values that Aboriginal people associate with their lands and resources. Through case study research on the berry-harvesting practices of Gwich'in women from the community of Fort McPherson, Northwest Territories, Canada, the authors investigated the values that Teetl'it Gwich'in women associate with the land or nan kak. Nine different values, as well as a set of detailed measures, were identified during the research, including individual preference and well-being, family well-being, social connectivity, cultural continuity, land and resource use, stewardship, self-government, and spirituality.

**Keywords:** health, ecosystem, Aboriginal, Dene Gwich'in, non timber forest products, berries

**Resource Type:** Journal article

**Focus:** Case study, social-ecological well-being

**Region:** North America, Canada

**Language:** English

**Year:** 2005

**Citation:** Parlee, Brenda, Fikret Berkes, and Teetl'it Gwich'in. "Health of the Land, Health of the People: A Case Study on Gwich'in Berry Harvesting in Northern Canada." *EcoHealth* 2, no. 2 (June 2005): 127-37.

Resource entry updated: 2018-07-31

[Linkages Between Cultural and Scientific Indicators of River and Stream Health](#)

**Synopsis:**

Scientific monitoring of river health is well established and has a significant role to play in environmental assessment by communities, managers and policy makers. Cultural indicators help to articulate cultural values, assess the state of the environment from a cultural perspective and assist with establishing a role for Maori in environmental monitoring. We reviewed the philosophies behind cultural and scientific monitoring of river health and compared the results from the two approaches at 25 sites in the Motueka and Riwaka catchments. Both scientific and cultural indicators suggested a decrease in river health in relation to increased land-use pressure. There were also correlations between the results from the two approaches suggesting cultural indicators could be used in a similar manner as scientific indicators to set environmental benchmarks. Using scientific approaches alongside culturally based monitoring provides a wealth of knowledge to understand better what we mean by river health. The two approaches can be regarded as complementary and reflect two different knowledge systems and perspectives.

**Keywords:** resource management, ecosystem health, Indigenous

**Resource Type:** Journal article

**Focus:** Cultural indicators

**Region:** Oceania, Aotearoa (New Zealand)

**Language:** English

**Year:** 2011

**Citation:** Harmsworth, GR., et al. "Linkages between cultural and scientific indicators of river and stream health." *New Zealand Journal of Marine and Freshwater Research* 45, no. 3 (November 2012): 423-436.

Resource entry updated: 2018-07-31

[Implementing Maori Indigenous Knowledge \(Mātauranga\) in a Scientific Paradigm: Restoring the Mauri to Te Kete Poutama](#)

**Synopsis:**

Trustees of native land taken under the Tasman Pulp and Paper Company Enabling Act (1954) and used as an industrial waste dump-site for more than 30 years have been battling for decades for the opportunity and means to exercise decision-making authority (manawhenua) over their land and realize their role as guardians (kaitiaki). The Trustees are looking to “science” – the language of the courts, technical reports and resource consents – as the knowledge system to make informed decisions, but to date have not found appropriate or satisfactory methods. With the land due to be returned in 2013, the Trustees are determined to develop and execute a programme that will restore the life-force, the mauri, to their land – known as Te Kete Poutama. Ultimately, to find a solution the restoration plan must involve investigating and successfully navigating integration of science and indigenous Māori knowledge (mātauranga). Herein we propose the Mauri Model (Morgan, 2006) as an integration tool and evaluate its efficacy and utility. We suggest that the Mauri Model affords the opportunity for successful integration of matauranga with science to produce appropriate, meaningful and positive outcomes.

**Keywords:** integrating science and matauranga, kaitiaki, manawhenua, mauri model, te kete poutama

**Resource Type:** Journal article

**Focus:** Multiple knowledge-systems, ecological and cultural restoration

**Region:** Oceania, Aotearoa (New Zealand)

**Language:** English

**Year:** 2011

**Citation:** Hikuroa, Daniel, Angela Slade, and Darren Gravley. "Implementing Maori indigenous knowledge (mātauranga) in a scientific paradigm: Restoring the mauri to Te Kete Poutama." MAI Review, no. 3 (2011): 1-9.

Resource entry updated: 2018-07-31

[Local Level Criteria and Indicator Frameworks: A Tool Used to Assess Aboriginal Forest Ecosystem Values](#)

**Synopsis:**

Although the importance of aboriginal knowledge, values and perspectives in sustainable development has been recognised for many decades, worldwide examples exist showing that aboriginal involvement is less than effective. How and where to include aboriginal needs and goals has however been problematic. Ultimately, aboriginal forest values need to be considered with scientific strategies and their role and compatibility with forest conditions needs to be explored. Criteria and indicator (C&I) frameworks can be used as a platform to include community needs and goals in management decisions. This review compares aboriginal forest ecological perspectives defined by Canadian local level C&I frameworks with non-aboriginal local level C&I frameworks to identify their differences at the indicator level. Three major themes mark the differences between aboriginal and non-aboriginal indicators: (1) aboriginal frameworks introduce ecological indicators of cultural importance; (2) there is an aesthetic concern for forest operations especially if they affect cultural owners; and (3) indicators regarding the access to resources are more complex and include the sustainability of the productivity, proximity, integrity and quality of resources used in traditional activities. Results show that First Nation forest sustainability issues are in effect a combination of forest conditions and values. Inclusion of forest values in C&I frameworks is necessary because: (1) aboriginal communities do not dissociate culture from the environment and thus forest values from forest condition, (2) they have an impact on resulting forest management strategies and decisions, and (3) they offer a holistic approach to sustainability issues and a better picture of local environmental contexts.

**Keywords:** Aboriginal, forestry, criteria and indicators, integration, forest values, forest conditions

**Resource Type:** Journal article

**Focus:** Indicators

**Region:** North America, Canada

**Language:** English

**Year:** 2008

**Citation:** Adam, M. and D. Kneeshaw. "Local level criteria and indicator frameworks: A tool used to assess aboriginal forest ecosystem values." Forest Ecology and Management 255, n. 7 (2008): 2024-2037.

Resource entry updated: 2018-07-31



[Putting the Community Back Into Community-Based resource Management: A Criteria and Indicators Approach to Sustainability](#)

**Synopsis:**

Advocates of community-based resource management often depict indigenous communities as homogeneous sites of social consensus. While proving successful at advancing local involvement in the management and decision-making process, these idealized images fail to represent the plurality of values and personal interests nested within indigenous communities. By failing to account for internal diversity, indigenous communities that are now regaining management responsibility for their traditional homelands risk furthering the traditional "top-downism" long inherent in institutionalized resource management. However, in regaining these responsibilities, indigenous communities have an opportunity to implement new and locally defined approaches to management. This paper describes one such community-based process and builds upon the experiences of the Little Red River Cree Nation of Alberta, Canada, to illustrate the challenges and opportunities involved. Specifically, through the use of criteria and performance indicators, derived from multiple community perspectives, the Little Red River Cree Nation has developed a self-improving forest management system that is proving responsive to the values, expectations, and changing needs of community members.

**Keywords:** sustainability, Indigenous, community, Cree, Canada, co-management, pluralism

**Resource Type:** Journal article

**Focus:** Case study, community-based resource management, indicators

**Region:** North America, Canada

**Language:** English

**Year:** 2002

**Citation:** Natcher, D. C. and C. G. Hickey. "Putting the Community Back Into Community-Based resource Management: A Criteria and Indicators Approach to Sustainability." *Human Organization* 61, no. 4 (2002): 350-363.

Resource entry updated: 2018-07-31

[Tuktoyaktuk and Aklavik Tariuq \(Ocean\) Community-based Monitoring Program: Results from the First Indicators Workshop, Tariuq \(Oceans\) Monitoring Program](#)

**Synopsis:**

This report provides the proceedings and results of the Tariuq (Ocean) Monitoring Program Indicators Workshop with Members of the Aklavik and Tuktoyaktuk Community Working Groups. Community concerns, identified at previous workshops, were reviewed and updated. A series of indicators and monitoring activities were discussed for Tuktoyaktuk and Aklavik. From these, two indicators and monitoring methods were chosen to begin monitoring in Summer 2001. The first was the monitoring of water temperatures, to be obtained by deploying data loggers at two locations for each community. The second monitoring activity was the index gill netting at three locations for each community.

**Keywords:** indicators, ocean, workshop, locals, community-based monitoring

**Resource Type:** Report

**Focus:** Indicators

**Region:** North America, Canada

**Language:** English

**Year:** 2001

**Citation:** Eddy, S. (2001). *Tuktoyaktuk and Aklavik Tariuq (Ocean) Community-based Monitoring Program: Results from the First Indicators Workshop, Tariuq (Oceans) Monitoring Program.*

Resource entry updated: 2018-07-31

[Anpernirrentye: a Framework for Enhanced Application of Indigenous Ecological Knowledge in Natural Resource Management](#)

**Synopsis:**

Robust approaches to natural resource management (NRM) in indigenous cross-cultural contexts require coherent understandings of Indigenous Ecological Knowledge (IEK) systems. We synthesize a framework to represent the traditionally derived worldview of Arrernte Aboriginal people within which IEK is embedded. This is an ecology-focused worldview with three interrelated domains of knowledge that are intricately linked, comprising many complex dynamic elements that interact with each other. This worldview is from desert Australia but is relevant to those working in complex cross-cultural environments across Australia and internationally. The visual framework presented fills an important conceptual gap in IEK documentation being positioned at a meso conceptual scale. Comparisons between this knowledge framework and social–ecological systems theory indicate similarities in systems thinking, in explicit links between people and ecology, and in the emphasis on processes and relationships through causal loops and feedbacks. Important differences lie in the inextricable integration of economic and spiritual domains in the Arrernte worldview. In Arrernte eyes, interrelationships between people, resource species, land, and spiritual domains are central to NRM. Scientific approaches commonly overlook or segregate elements of indigenous knowledge. The multiple values indigenous people attribute to species are often ignored or overridden, which contributes to decoupling within their knowledge system. Western scientists and natural resource managers are looking for better understandings of indigenous knowledge systems. The framework offers a tool that can be applied to both cross-cultural and intergenerational learning to improve NRM and people's well-being and sense of self.

**Keywords:** Aboriginal economy, australia, biodiversity, bush foods, cultural values, desert, Indigenous knowledge system, natural resource management, social–ecological system

**Resource Type:** Journal article

**Focus:** Framework, Indigenous ecological knowledge

**Region:** Oceania, Australia

**Language:** English

**Year:** 2013

**Citation:** Walsh, F. J., et al. "Anpernirrentye: a Framework for Enhanced Application of Indigenous Ecological Knowledge in Natural resource Management." *Ecology & Society* 18, no. 3 (2013): 135-154.

Resource entry updated: 2018-07-31

[A Research Process for Integrating Indigenous and Scientific Knowledge in Cultural Landscapes: Principles and Determinants of Success in the Wet Tropics World Heritage Area, Australia](#)

**Synopsis:**

It is widely accepted that Indigenous ecological knowledge (IEK) is potentially valuable for maintaining biodiversity within linked social-ecological systems, and cultural landscapes in particular. However, IEK is declining globally, along with biodiversity. Adaptive co-management frameworks incorporating both Indigenous and scientific knowledge systems have the capacity for greater success than frameworks embedded within a singular world view. A major challenge exists, however, in identifying pathways for the integration of these knowledge systems. The need to integrate both IEK and science into management is widely recognised; various approaches have been trialled but there are few successful examples. Cooperative research using joint learning is emerging as one potentially useful approach. Here we present an example of applying co-research in a cultural landscape in Australia, the wet Tropics World Heritage Area, where we aimed to develop linked cultural and biophysical indicators of ecosystem condition. Our approach was founded on five stakeholder-defined core principles for research. The study revealed seven determinants of successful implementation within these principles: strong Indigenous governance; problem-framing and conceptualisation; relationship building; data collection and management; considerations of scale; agreed dissemination of results; and evaluation. We identify cooperative problem-framing as one of the most important determinants, and argue that by starting the co-research process with this task, co-research can assist the equitable convergence of IEK and contemporary natural resource management, thereby potentially enhancing social-ecological system resilience and sustainability.

**Keywords:** cooperative research, research methods, knowledge integration, research partnerships, rainforest Aboriginal people, Indigenous knowledge

**Resource Type:** Journal article

**Focus:** Adaptive co-management

**Region:** Oceania, Australia

**Language:** English

**Year:** 2012

**Citation:** Cullen-Unsworth, L. C., et al. "A research process for integrating Indigenous and scientific knowledge in cultural landscapes: principles and determinants of success in the wet Tropics World Heritage Area, Australia." *The Geographical Journal* 178 (2012): 351–365.

Resource entry updated: 2018-07-31

[Including Aboriginal Issues in Forest Planning: A Case Study in Central Interior British Columbia, Canada](#)

**Synopsis:**

Generic criteria and indicator (C&I) frameworks have been the focus of recent work on sustainable forest management. These templates, however, may not be an appropriate approach for directing landscape-level forest management strategies. Instead, many argue that sustainable management should be determined using "bottom-up" approaches rather than standardized frameworks. This requires engaging local expertise in defining sustainability. Having a culturally distinct form of local knowledge, Aboriginal communities have an important role to play in decision-making processes. However, conventional participatory approaches, such as generic C&I frameworks and multi-stakeholder planning processes, are often inappropriate for engaging Aboriginal involvement. We suggest that landscape-level forest planning should highlight rather than assimilate cultural perspectives on sustainable forest management. Using the co-managed John Prince Research Forest in central interior British Columbia as a case study, this paper presents the results of using C&I and a scenario planning approach to describe an Aboriginal perspective of good forest stewardship. These results demonstrate that, in contrast with existing C&I frameworks, locally-based sustainability criteria provide better guidance for developing and adapting landscape-level forest plans.

**Keywords:** criteria and indicators, Indigenous people, forest planning

**Resource Type:** Journal article

**Focus:** Case study, multiple knowledge systems, natural resource management

**Region:** North America, Canada

**Language:** English

**Year:** 2003

**Citation:** Karjala, M. K. and S. M. Dewhurst. "Including aboriginal issues in forest planning: a case study in central interior British Columbia, Canada." *Landscape and urban planning* 64, no. 1-2 (2003): 1-17.

Resource entry updated: 2018-07-31

## [Decision-support Tools and the Indigenous Paradigm](#)

### **Synopsis:**

Sustainability legislation in New Zealand (NZ) provides an interesting challenge for decision-makers such as planners, architects and engineers. NZ's Action Plan for Sustainable Development requires 'taking account of the social, economic, environmental and cultural effects of our decisions'. The assessment of sustainability in NZ thus occurs in four dimensions. Internationally, cultural effects are generally considered within the analysis of societal effects. The separate consideration of cultural effects is necessary in NZ to acknowledge the status of the indigenous people, the Ta<sup>ng</sup>ata Whenua. The requirement for separate consideration of cultural effects was created in NZ's founding document, the 1840 Treaty of Waitangi. Although the addition of a cultural criterion to decision-support tools (DSTs) could be considered a viable solution to accommodate the partnership obligations created by the Treaty, the extension of international sustainability DSTs in this way has not worked in practice. The acknowledgement of a specific cultural dimension in the definition of sustainable development seems to accept that NZ's prevalent societal values and beliefs are not representative of its indigenous people. Therefore, in order to incorporate effectively indigenous values and beliefs into sustainability decision-making in NZ, an approach based on indigenous concepts is essential. The indigenous concept of mauri (binding force) has been identified for inclusion in a new DST that provides a culturally consistent measure of sustainability. The NZ context is used to identify and illustrate the requirements of a culturally consistent model for including sustainability in decision-making. A preliminary ranking of the four dimensions of sustainability assessment is presented using an established hierarchy definition process. The result is a methodology for sustainability assessment, developed specifically for the NZ context, but which may also have wider international applications where decision-makers have limited knowledge and understanding of the indigenous people's culture, values and beliefs.

**Keywords:** environment, municipal and public service engineering, social impact

**Resource Type:** Journal article

**Focus:** Decision-making

**Region:** Oceania, Aotearoa (New Zealand)

**Language:** English

**Year:** 2006

**Citation:** Morgan, T. "Decision-support tools and the indigenous paradigm." *Engineering Sustainability* 159, no. 4 (2006): 169-177.

Resource entry updated: 2018-07-31

[Conceptualizing and Operationalizing Human Wellbeing for Ecosystem Assessment and Management](#)

**Synopsis:**

There is growing interest in assessing the effects of changing environmental conditions and management actions on human wellbeing. A challenge is to translate social science expertise regarding these relationships into terms usable by environmental scientists, policymakers, and managers. Here, we present a comprehensive, structured, and transparent conceptual framework of human wellbeing designed to guide the development of indicators and a complementary social science research agenda for ecosystem-based management. Our framework grew out of an effort to develop social indicators for an integrated ecosystem assessment (IEA) of the California Current large marine ecosystem. Drawing from scholarship in international development, anthropology, geography, and political science, we define human wellbeing as a state of being with others and the environment, which arises when human needs are met, when individuals and communities can act meaningfully to pursue their goals, and when individuals and communities enjoy a satisfactory quality of life. We propose four major social science-based constituents of wellbeing: connections, capabilities, conditions, and cross-cutting domains. The latter includes the domains of equity and justice, security, resilience, and sustainability, which may be assessed through cross-cutting analyses of other constituents. We outline a process for identifying policy-relevant attributes of wellbeing that can guide ecosystem assessments. To operationalize the framework, we provide a detailed table of attributes and a large database of available indicators, which may be used to develop measures suited to a variety of management needs and social goals. Finally, we discuss four guidelines for operationalizing human wellbeing measures in ecosystem assessments, including considerations for context, feasibility, indicators and research, and social difference. Developed for the U.S. west coast, the framework may be adapted for other regions, management needs, and scales with appropriate modifications.

**Keywords:** human wellbeing, indicators, ecosystem-based management, integrated ecosystem assessment, social-ecological system, sustainability

**Resource Type:** Journal article

**Focus:** Framework, well-being indicators

**Region:** North America, United States

**Language:** English

**Year:** 2016

**Citation:** Sara Jo Breslow, Brit Sojka, Raz Barnea, Xavier Basurto, Courtney Carothers, Susan Charnley, Sarah Coulthard, Nives Dolšak, Jamie Donatuto, Carlos García-Quijano, Christina C. Hicks, Arielle Levine, Michael B. Mascia, Karma Norman, Melissa Poe, Terre Satterfield, Kevin St. Martin, Phillip S. Levin. "Conceptualizing and operationalizing human wellbeing for ecosystem assessment and management." *Environmental Science & Policy* 66 (2016): 250-259.

Resource entry updated: 2018-07-31

[Developing Human Wellbeing Indicators in the Puget Sound: Focusing on the Watershed Scale](#)

**Synopsis:**

Planning for and monitoring human wellbeing (HWB) as a component of ecosystem recovery is a growing trend in environmental management. Within the Puget Sound specifically, organizations at the watershed and basin scale have been developing recovery action plans with placeholders for HWB or quality of life indicators. While the actual incorporation of HWB into policy has been limited, there is significant interest to receive guidance for developing indicators and begin addressing HWB in practice. This article describes the results of a pilot process to develop scientifically and practically relevant HWB indicators for the Hood Canal watershed of the Puget Sound. We gathered data on why residents and visitors value the Hood Canal from prior surveys, workshops, and nineteen open-ended interviews with diverse residents from the region. We coded these values into potential indicators of HWB for six domains: Psychological, Cultural, Social, Physical, Economic, and Governance. Three facilitated workshops with expert-stakeholders and an online survey with social scientists helped refine and rate indicators for recommendation to the regional watershed recovery coordination council. We present the final indicators, detail the methods for getting to them, and discuss how they will be applied to enhance watershed recovery in the Hood Canal watershed. We then describe how this process can be replicated elsewhere and how it will be used to test hypotheses about scalability of HWB indicators in the Puget Sound.

**Keywords:** coastal zone management, human wellbeing indicators, watershedrecovery

**Resource Type:** Journal article

**Focus:** Well-being indicators

**Region:** North America, United States

**Language:** English

**Year:** 2014

**Citation:** Kelly Biedenweg, Adi Hanein, Kara Nelson, Kari Stiles, Katharine Wellman, Julie Horowitz & Stacy Vynne. "Developing Human wellbeing Indicators in the Puget Sound: Focusing on the Watershed Scale." *Coastal Management* 42, no. 4 (2014): 374-390.

Resource entry updated: 2018-07-31

[Pacific Intangible Cultural Heritage Mapping Toolkit](#)

**Synopsis:**

The toolkit is designed to provide guidance in mapping intangible cultural heritage (ICH) in Pacific Island countries and communities. It focuses on the simpler tools and techniques of mapping cultural resources, including documenting, archiving and interpreting cultural data. The toolkit provides a general step-by-step framework to help countries and communities research, collect, collate and archive data for use by current and future generations. Additionally, the toolkit can be used to establish programmes that will help in revitalising ICH. The toolkit has been developed as part of the European Union-funded and Secretariat of the Pacific Community-managed project 'Structuring the Cultural Sector for Improved Human Development', and follows on from the Subregional Workshop on Endangered Cultural Heritage Mapping, which was held in Sigatoka, Fiji on 17–21 October 2011. The toolkit can be used to: map evolving ICH elements in communities; develop cultural programmes or strategies for government and non-governmental organisations (NGOs); assist in the development of policies and legislative measures for the protection, preservation and promotion of ICH; develop a central database system to store collected data; enhance transmission and continuity of ICH in the local community; and identify endangered ICH so that safeguarding measures can be developed.

**Keywords:** traditional, Indigenous, cultural knowledge, traditional knowledge, Fiji

**Resource Type:** Resource book

**Focus:** Cultural heritage mapping

**Region:** Melanesia, Fiji

**Language:** English

**Year:** 2012

**Citation:** Nemani Sipiriano. "Pacific Intangible Cultural Heritage Mapping Toolkit". Secretariat of the Pacific Community, Suva, 2012.

Resource entry updated: 2018-07-31

[Indicators of Resilience in Socio-ecological Production Landscapes \(SEPLs\)](#)

**Synopsis:**

The following policy report constitutes an important supplement to a set of 20 indicators for resilience in socio-ecological production landscapes (SEPLs) that was developed over the course of joint collaboration between Bioversity International and the United Nations University Institute of Advanced Studies (UNU-IAS). The indicators were disseminated widely in pamphlet form for the first time in March 2012. Subsequently, a need was identified for sharing a more in-depth overview of the considerations that went into creating this list of indicators as well as the outcomes of initial field-testing. The report begins by defining the terminology of socio-ecological production landscapes (SEPLs), resilience, and the existing gap that this set of inclusive indicators has helped to bridge. In subsequent sections, the principles for developing the indicators are introduced and the four groupings of indicators are described in detail, namely (1) Ecosystems protection and the maintenance of biodiversity; (2) Agricultural biodiversity; (3) Knowledge, learning and innovation; (4) Social equity and infrastructure. The latter portion of the policy report introduces the indicators themselves as well as the respective set of scores (1-5) for each indicator. A short section on the practical application of the indicators is then followed by a description of the first lessons learned from applying the indicators in Cuba's Cuchillas del Toa Biosphere Reserve. The field testing took place from October-November 2011 and a supplementary annex provides a detailed indicator-by-indicator record of this process, including whether the indicators could be adequately assessed using the survey method or if further revisions to the study methodology are also required. In addition to summarizing the key lessons learned from the development and testing of the indicators, the conclusion section also provides a short overview of further progress made in testing and refining the indicators as well as next steps.

**Keywords:** indicators, resilience, socio-ecological production landscapes, field testing

**Resource Type:** Report

**Focus:** Resilience indicators

**Region:** Caribbean, Cuba

**Language:** English

**Year:** 2013

**Citation:** Bergamini, N., Blasiak, R., Eyzaguirr, P., Ichikawa, K., Mijatovic, D., Nakao, F., Subramanian, S. M. "Indicators of resilience in socio-ecological production landscapes (SEPLs)." Policy Report. United Nations University Institute of Advanced Studies, 2013.

Resource entry updated: 2018-07-31



[Social-Ecological Indicators of Resilience in Agrarian and Natural Landscapes](#)

**Synopsis:**

Purpose: The purpose of this paper is to present an approach aimed at facilitating nature conservation that builds on the ecological and social synergies that exist in traditionally managed landscapes in and around protected areas and integrates conservation and social goals to achieve a reduction in the levels of marginalization of indigenous and local communities while preventing ecosystem degradation and biodiversity loss. Design/methodology/approach: Drawing on literature research and insights from political and historical ecology and systems theory, a framework was developed to aid the understanding of human-environment interactions taking place in traditionally managed ecosystems and landscapes and to monitor the role that these interactions play in the maintenance of such systems. Findings: Virtually all ecosystems and landscapes must be seen as coupled social-ecological systems whose ability to respond to stresses and change derives from ecological and social characteristics, as well as from the link between these natural and human components. A variety of mechanisms by which indigenous and rural communities help anchor biodiversity and contribute to social-ecological resilience were identified. Originality/value: This paper challenges the rationale behind exclusionary approaches to nature conservation. Indicators are developed to facilitate a shift towards the widespread adoption of "human-centered" conservation practices, in which nature conservation benefits from the inclusion and empowerment of human communities instead of their exclusion and marginalization.

**Keywords:** conservation areas, agriculture, ecology, social-ecological systems

**Resource Type:** Journal article

**Focus:** Social-ecological resilience indicators

**Region:** Worldwide

**Language:** English

**Year:** 2011

**Citation:** Frederik J.W. van Oudenhoven, Dunja Mijatović, Pablo B. Eyzaguirre. "Social-ecological indicators of resilience in agrarian and natural landscapes", *Management of Environmental Quality: An International Journal* 22, n. 2 (2011): 154-173.

Resource entry updated: 2018-07-31

[Landscape Performance Scorecard \(LPS\)](#)

**Synopsis:**

The Landscape Performance Scorecard (LPS) is designed to help you keep track of the status of a landscape. The scorecard is based on the 'twenty questions for assessing landscape performance'. A data capture form provides a means for analyzing data from the scoring exercise and presenting the information that is generated. The performance scores highlight the dimensions of the landscape that are performing comparatively well, as well as those that are performing relatively poorly. Use these findings to facilitate discussion about the status of the landscape, and the forces and dynamics that may be contributing to the scores. This insight can be useful in helping a Landscape Measures Leadership Team and stakeholders decide which goals to pursue for improving the performance of the landscape, and to select indicators for tracking progress toward reaching the goals. Landscape performance scores can be useful also in selecting meaningful performance indicators for tracking change in the landscape over time. The 'twenty questions' that comprise the items on the LPS are linked to descriptions of landscape performance criteria that derive from the Landscape Measures Framework document. The descriptions of the criteria help to clarify the meaning of each question on the Scorecard. The Framework document in turn can help to clarify the meaning of the criteria if this is needed in preparing for the LPS exercise. A six-step process for using the LPS tool includes preparing for the exercise, conducting the survey, capturing the data, presenting the data, discussing the findings and outlining next steps.

**Keywords:** monitoring, landscape performance, criteria, indicators

**Resource Type:** Online platform

**Focus:** Landscape performance assessment tool

**Region:** Worldwide

**Language:** English

**Year:** 2007

**Citation:** Landscape Performance Scorecard (LPS). Landscape Measures Resource Center, Cornell University and Ecoagriculture Partners, 2007.

Resource entry updated: 2018-07-31

[Understanding Ecoagriculture: A Framework for Measuring Landscape Performance](#)

**Synopsis:**

Ecoagriculture is already being practiced in hundreds of locations worldwide, with promising results for regions where biodiversity conservation, food production, and poverty alleviation are all high priorities. In particular, given that protected areas alone are often inadequate to conserve unique species and ecosystems, ecoagriculture is a promising approach for accommodating significant biodiversity in the inhabited parts of biodiverse regions. Yet their understanding of ecoagricultural systems and their ability to improve them, replicate them, and scale them up is hindered by the lack of a comprehensive framework for measuring and monitoring the performance of ecoagriculture landscapes over time. The goal of this paper, therefore, is to propose such a framework and discuss how it may be implemented in diverse landscapes worldwide. Over the past year and a half, many people have contributed to a dialogue about how best to measure the performance of ecoagriculture landscapes. The culmination of this dialogue, which has occurred through interviews, literature reviews, two workshops, and a graduate seminar at Cornell University, is the framework proposed in this discussion paper. The framework provides an approach to measuring the performance of entire landscapes with respect to the goals of ecoagriculture. The purpose is not to determine whether a given landscape has attained some desirable end condition, but whether it is moving in the right direction—that is, whether the management practices and resulting mosaic of land uses across the landscape are yielding progress toward the goals, individually and collectively. Locally, stakeholders who have interests in the performance of a particular landscape can set targets for meeting specific goals.

**Keywords:** ecoagriculture, monitoring, landscape performance, measuring

**Resource Type:** Discussion paper

**Focus:** Landscape performance assessment

**Region:** Worldwide

**Language:** English

**Year:** 2006

**Citation:** Buck, Louise & Milder, Jeffrey & A. Gavin, Thomas & Mukherjee, Ishani. Ecoagriculture Discussion Paper No. 2 "Understanding Ecoagriculture: A Framework for Measuring Landscape Performance." Ecoagriculture Partners and Cornell University, 2006.

Resource entry updated: 2018-07-31

### [Te Reo o Te Repo: The Voice of the Wetland](#)

#### **Synopsis:**

Te Reo o Te Repo: The Voice of the wetland, is the first handbook to focus on the importance of repo (wetland) values in Aotearoa New Zealand from a cultural perspective. In the last 150 years, more than 90% of repo in Aotearoa New Zealand have been destroyed, and remaining repo are under threat from land modification and other human activities. Māori are becoming increasingly aware of the dire state of repo and this has resulted in many hapū and iwi-led projects centred on the restoration of repo within their rohe (region). Te Reo o Te Repo: The Voice of the wetland, highlights a range of mahi (work) undertaken by whānau, marae, hapū, and iwi to increase the health and wellbeing of their repo. The handbook includes processes to facilitate renewed and vibrant connections between whānau and their repo, understanding of cultural resources, and learnings from case studies on repo restoration, cultural indicators, and monitoring – all led by or in collaboration with tangata whenua (indigenous people). Weavers hui, Te Kaha. The articles are written by kairangahau Māori (Māori researchers) and environmental managers, as well as researchers who work with iwi and hapū partners. The handbook aims to provide best practice techniques for the enhancement and protection of cultural wetland values to share with tangata whenua throughout the motu (country). It will also help local authorities, research providers, and community groups understand the cultural priorities for repo restoration.

**Keywords:** cultural indicators, monitoring, cultural wetland values

**Resource Type:** Resource book

**Focus:** Handbook, ecological and cultural restoration and protection

**Region:** Oceania, Aotearoa (New Zealand)

**Language:** English

**Year:** 2017

**Citation:** Taura, Yvonne, Cheri van Schravendijk-Goodman, and Beverley Clarkson, eds. "Te reo o te repo = The Voice of the Wetland: connections, understandings and learnings for the restoration of their wetlands." Hamilton, New Zealand.: Manaaki Whenua-Landcare Research and Waikato Rauapatu River Trust, 2017.

Resource entry updated: 2018-07-31

### [Indigenous Māori Knowledge and Perspectives of Ecosystems](#)

#### **Synopsis:**

A framework/model based on Māori knowledge, values and perspectives is presented that distinguishes 'cultural values' from 'cultural services' and extends the definition of cultural values across the whole ecosystem services framework. Māori aspirations and wellbeing are interdependent on ecosystems and ecosystem services. Ultimately Māori wish to use these ecosystem approaches and frameworks to increase participation and inclusion in decision-making, to achieve multidimensional aspirational goals and desired indigenous outcomes.

**Keywords:** well-being, cultural values, governance, Māori, decision-making

**Resource Type:** Journal article

**Focus:** Framework, decision-making, Indigenous knowledge

**Region:** Oceania, Aotearoa (New Zealand)

**Language:** English

**Year:** 2013

**Citation:** Harmsworth, Garth R, and Shaun Awatere. "Indigenous Māori Knowledge and Perspectives of Ecosystems." Ecosystem Services in New Zealand—Conditions and Trends. Manaaki Whenua Press, Lincoln, New Zealand (2013): pp. 274–286.

Resource entry updated: 2018-07-31

[Community-based Management Induces Rapid Recovery of a High-value Tropical Freshwater Fishery](#)

**Synopsis:**

Tropical wetlands are highly threatened socio-ecological systems, where local communities rely heavily on aquatic animal protein, such as fish, to meet food security. Here, we quantify how a 'win-win' community-based resource management program induced stock recovery of the world's largest scaled freshwater fish (*Arapaima gigas*), providing both food and income. We analyzed stock assessment data over eight years and examined the effects of protected areas, community-based management, and landscape and limnological variables across 83 oxbow lakes monitored along a ~500-km section of the Juruá River of western Brazilian Amazonia. Patterns of community management explained 71.8% of the variation in arapaima population sizes. Annual population counts showed that protected lakes on average contained 304.8 ( $\pm 332.5$ ) arapaimas, compared to only 9.2 ( $\pm 9.8$ ) in open-access lakes. Protected lakes have become analogous to a high-interest savings account, ensuring an average annual revenue of US\$10,601 per community and US\$1046.6 per household, greatly improving socioeconomic welfare. Arapaima management is a superb window of opportunity in harmonizing the co-delivery of sustainable resource management and poverty alleviation. They show that arapaima management deserves greater attention from policy makers across Amazonian countries, and highlight the need to include local stakeholders in conservation planning of Amazonian floodplains.

**Keywords:** community-based resource management, freshwater fish, lakes, Amazonia, socioeconomic welfare, sustainability

**Resource Type:** Journal article

**Focus:** Community-based resource management

**Region:** South America, Brazil

**Language:** English

**Year:** 2016

**Citation:** Campos-Silva, João Vitor, and Carlos A. Peres. "Community-Based Management Induces Rapid Recovery of a High-Value Tropical Freshwater Fishery." *Scientific Reports* 6, no. 1 (2016).

Resource entry updated: 2018-07-31

[A Multicountry Assessment of Tropical Resource Monitoring by Local Communities](#)

**Synopsis:**

The rapid global growth of conservation schemes designed to incentivize local communities to conserve natural resources has placed new importance on biological monitoring to assess whether agreements and targets linked to payments are being met. To evaluate competence in natural resource monitoring, we compared data on status and trends collected independently by local-community members and trained scientists for 63 taxa and five types of resource use in 34 tropical forest sites across their countries over 2.5 years. We hypothesized that the results would vary according to differences in the education and value systems of the monitors. We found that, despite considerable differences in countries, cultures, and the types of natural resources monitored, the community members and the scientists produced similar results for the status of and trends in species and natural resources. Our findings highlight the potential value of locally based natural resource monitoring for conservation decision-making across developing countries.

**Keywords:** locally based resource monitoring, conservation, forests, decision-making

**Resource Type:** Journal article

**Focus:** Monitoring

**Region:** East Africa, Madagascar, Tanzania; Central America, Nicaragua; Southeast Asia, Philippines

**Language:** English

**Year:** 2014

**Citation:** Finn Danielsen, Per M. Jensen, Neil D. Burgess, Ronald Altamirano, Philip A. Alviola, Herizo Andrianandrasana, Justin S. Brashares, A. Cole Burton, Indiana Coronado, Nancy Corpuz, Martin Enghoff, Jon Fjeldså, Mikkel Funder, Sune Holt, Hanne Hübertz, Arne E. Jensen, Richard Lewis, John Massao, Marlynn M. Mendoza, Yonika Ngaga, Christian B. Pipper, Michael K. Poulsen, Ricardo M. Rueda, Moses K. Sam, Thomas Skielboe, Marten Sørensen, Richard Young. "A Multicountry Assessment of Tropical Resource Monitoring by Local Communities." *BioScience* 64, no. 3 (March 2014): 236–251.

Resource entry updated: 2018-07-31

[I Ka Wā Ma Mua: The Value of a Historical Ecology Approach to Ecological Restoration in Hawai'i](#)

**Synopsis:**

Human activity has altered nearly every landscape on earth, and ecological restoration to repair degraded ecosystems has become a conservation necessity. Hawai'i is a microcosm for intense landscape change, where levels of native biodiversity and threats to it are among the highest in the world, and where Kānaka Maoli (Hawai'i's indigenous people), who stewarded these lands for a millennium, currently face massive inequalities. Consequently, biocultural restoration has emerged as a method to reciprocally restore ecological and cultural integrity and is especially applicable in Hawai'i's sizeable invasive dominated areas. Since Kānaka Maoli are an inseparable part of every land and seascape in Hawai'i, any ecological restoration project has the potential to use a biocultural restoration approach. However, most restoration approaches are purely ecological, and for many conservation practitioners a sociocultural understanding of the landscape can seem inaccessible. In this article, we discuss the value of a historical ecology approach (understanding the interaction between people and landscapes over time) for successful restoration and management of biocultural landscapes in Hawai'i. We use a case study in Kahalu'u, Kona, to outline historical ecology methods and available resources in Hawai'i, including written documents, maps, imagery, archaeological studies, and interviews, and discuss applications of this approach on-the-ground. Potential benefits of employing this approach include expanding knowledge of reference conditions, understanding practices contributing to landscape function over space and time, and building meaningful relationships to engaging community around a site. We argue that a historical ecology approach is readily adoptable into ecological restoration in Hawai'i, especially in its human-dominated landscapes.

**Keywords:** Indigenous populations, biocultural approach, biocultural landscapes, restoration, Kānaka Maoli

**Resource Type:** Journal article

**Focus:** Case study, ecological and cultural restoration

**Region:** Polynesia, Hawai'i

**Language:** English

**Year:** 2017

**Citation:** Natalie Kurashima, Jason Jeremiah, and Tamara Ticktin. "I Ka Wā Ma Mua: The Value of a Historical Ecology Approach to Ecological Restoration in Hawai'i." *Pacific Science* 71, no. 4 (2017): 437-456.

Resource entry updated: 2018-07-31

[Weaving Knowledge Systems in IPBES, CBD and Beyond—Lessons Learned for Sustainability](#)

**Synopsis:**

Indigenous peoples and local communities live in, manage and own vast areas often rich in biodiversity and critical for ecosystem services. Bridging indigenous and local knowledge systems with scientific knowledge systems is vital to enhance knowledge, practice, and ethics to move towards sustainability at multiple scales. We focus on international science-policy processes and present a framework for evidence-based guidance on how tasks to mobilise, translate, negotiate, synthesise and apply multiple forms of evidence can bridge knowledge systems. Effective engagement of actors, institutions and knowledge-sharing processes is crucial in each of these tasks. We use examples from the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) and the Convention on Biological Diversity (CBD) to illustrate and discuss our framework.

**Keywords:** governance, multiple knowledge systems, sustainability, evidence-based

**Resource Type:** Journal article

**Focus:** Framework, multiple knowledge systems, governance

**Region:** Worldwide

**Language:** English

**Year:** 2017

**Citation:** Maria Tengö, Rosemary Hill, Pernilla Malmer, Christopher M Raymond, Marja Spierenburg, Finn Danielsen, Thomas Elmqvist, Carl Folke. "Weaving knowledge systems in IPBES, CBD and beyond—lessons learned for sustainability." *Current Opinion in Environmental Sustainability* 26–27 (2017): 17-25.

Resource entry updated: 2018-07-31

[Effects of Changing Sea Ice on Marine Mammals and Subsistence Hunters in Northern Alaska from Traditional Knowledge Interviews](#)

**Synopsis:**

Marine mammals are important sources of food for indigenous residents of northern Alaska. Changing sea ice patterns affect the animals themselves as well as access to them by hunters. Documenting the traditional knowledge of Inupiaq and Yupik hunters concerning marine mammals and sea ice makes accessible a wide range of information relevant to understanding the ecosystem to which humans belong. We interviewed hunters in 11 coastal villages from the northern Bering Sea to the Beaufort Sea. Hunters reported extensive changes in sea ice and weather that have affected the timing of marine mammal migrations, their distribution and behaviour and the efficacy of certain hunting methods. Amidst these changes, however, hunters cited offsetting technological benefits, such as more powerful and fuel-efficient outboard engines. Other concerns included potential impacts to subsistence hunting from industrial activity such as shipping and oil and gas development. While hunters have been able to adjust to some changes, continued environmental changes and increased disturbance from human activity may further challenge their ability to acquire food in the future. There are indications, however, that innovation and flexibility provide sources of resilience.

**Keywords:** arctic marine mammals, sea ice, Alaska, Indigenous communities, traditional knowledge, resilience

**Resource Type:** Journal article

**Focus:** Resilience and adaptation

**Region:** North America, United States

**Language:** English

**Year:** 2016

**Citation:** Huntington HP, Quakenbush LT, Nelson M. "Effects of changing sea ice on marine mammals and subsistence hunters in northern Alaska from traditional knowledge interviews." *Biology Letters* 12 (2016).

Resource entry updated: 2018-07-31

[Local Perceptions as a Guide for the Sustainable Management of Natural Resources: Empirical Evidence from a Small-scale Society in Bolivian Amazonia](#)

**Synopsis:**

Research on natural resource management suggests that local perceptions form the basis upon which many small-scale societies monitor availability and change in the stock of common-pool natural resources. In contrast, this literature debates whether local perceptions can be effective in guiding the sustainable management of natural resources. With empirical evidence on this matter still highly limited, we explored the role of local perceptions as drivers of harvesting and management behavior in a small-scale society in Bolivian Amazonia. We conducted structured interviews to capture local perceptions of availability and change in the stock of thatch palm (*Geonoma deversa*) among the Tsimane', an indigenous society of foragers-horticulturalists (n = 296 adults in 13 villages). We analyzed whether perceptions of availability match estimates of abundance obtained from ecological data and whether differences in perception help to explain harvesting behavior and local management of thatch palm. Perceptions of availability of *G. deversa* are highly contingent upon the social, economic, and cultural conditions within which the Tsimane' have experienced changes in the availability of the resource, thus giving a better reflection of the historical, rather than of the ecological, dimensions of the changes undergone. Although local perceptions might fall short in precision when scrutinized from an ecological standpoint, their importance in informing sustainable management should not be underestimated. Our findings show that most of the harvesting and management actions that the Tsimane' undertake are, at least partially, shaped by their local perceptions. This paper contributes to the broader literature on natural resource management by providing empirical evidence of the critical role of local perceptions in promoting collective responses for the sustainable management of natural resources.

**Keywords:** change perceptions, collective action, common-pool resources, local peoples, overharvesting, Tsimane'

**Resource Type:** Journal article

**Focus:** Case study, natural resource management

**Region:** South America, Bolivia

**Language:** English

**Year:** 2016

**Citation:** Fernández-Llamazares, Á., I. Díaz-Reviriego, M. Guèze, M. Cabeza, A. Pyhälä, and V. Reyes-García. "Local perceptions as a guide for the sustainable management of natural resources: empirical evidence from a small-scale society in Bolivian Amazonia." *Ecology and Society* 21, no. 2 (2016).

Resource entry updated: 2018-07-31

[Combining Science and Traditional Ecological Knowledge: Monitoring Populations for Co-Management](#)

**Synopsis:**

Using a combination of traditional ecological knowledge and science to monitor populations can greatly assist co-management for sustainable customary wildlife harvests by indigenous peoples. Case studies from Canada and New Zealand emphasize that, although traditional monitoring methods may often be imprecise and qualitative, they are nevertheless valuable because they are based on observations over long time periods, incorporate large sample sizes, are inexpensive, invite the participation of harvesters as researchers, and sometimes incorporate subtle multivariate cross checks for environmental change. A few simple rules suggested by traditional knowledge may produce good management outcomes consistent with fuzzy logic thinking. Science can sometimes offer better tests of potential causes of population change by research on larger spatial scales, precise quantification, and evaluation of population change where no harvest occurs. However, science is expensive and may not always be trusted or welcomed by customary users of wildlife. Short scientific studies in which traditional monitoring methods are calibrated against population abundance could make it possible to mesh traditional ecological knowledge with scientific inferences of prey population dynamics. This paper analyzes the traditional monitoring techniques of catch per unit effort and body condition. Combining scientific and traditional monitoring methods can not only build partnership and community consensus, but also, and more importantly, allow indigenous wildlife users to critically evaluate scientific predictions on their own terms and test sustainability using their own forms of adaptive management.

**Keywords:** adaptive management, catch per unit effort, community-based conservation, customary harvesting, indigenous people, population monitoring, sustainability, New Zealand, Canada

**Resource Type:** Journal article

**Focus:** Case study, adaptive co-management

**Region:** North America, Canada; Oceania, Aotearoa (New Zealand)

**Language:** English

**Year:** 2004

**Citation:** Moller, H., F. Berkes, P. O. Lyver, and M. Kislalioglu. "Combining science and traditional ecological knowledge: monitoring populations for co-management." *Ecology and Society* 9, no. 3 (2004).

Resource entry updated: 2018-07-31

[Pyrenean Pastoralists' Ecological Knowledge: Documentation and Application to Natural Resource Management and Adaptation](#)

**Synopsis:**

Pastoral production systems in the Spanish Pyrenees have changed dramatically in recent decades, leading to the loss of traditional ecological knowledge (TEK). We documented TEK of pastoralists from two valleys in the western Central Pyrenees of Aragón and explored its potential applications to resource management and adaptation. Pyrenean pastoralists possess extensive knowledge of relationships between terrain, climate, vegetation and animal nutrition and behavior. TEK could contribute to sustainable stewardship and facilitate adaptation by informing pasture monitoring; providing traditional practices to manage mountain vegetation; and preserving knowledge of extensive livestock production strategies, such as transhumance. Institutional barriers to applying TEK include weak economic cooperation among stockmen, their dependence on EU subsidies, and lack of voice in regional government decisions about local resources. A more collaborative, place-based stewardship of the Central Pyrenees might begin with direct involvement of pastoralists in designing monitoring of pasture conditions and vegetation type changes.

**Keywords:** transhumance, adaptive capacity, Indigenous knowledge, local knowledge, pyrenees, monitoring, indicators, resilience

**Resource Type:** Journal article

**Focus:** Traditional ecological knowledge

**Region:** Europe, Spain

**Language:** English

**Year:** 2012

**Citation:** María E. Fernández-Giménez and Federico Fillat Estaque. "Pyrenean Pastoralists' Ecological Knowledge: Documentation and Application to Natural Resource Management and Adaptation." *Human Ecology* 40, no. 2 (April 2012): 287-300.

Resource entry updated: 2018-07-31



[The Study of Inuit Knowledge of Climate Change in Nunavik, Quebec: A Mixed Methods Approach](#)

**Synopsis:**

This study addresses first, the lack of documented indigenous knowledge of climate change in Nunavik, Quebec, regarding impacts on plants; and second, the frequent underutilization of indigenous knowledge in decision making and policy. The study of three communities indicates that there are similarities and contrasts among and within different areas of Nunavik that point to both general and localized impacts of climate change on Arctic communities. General trends include changes in berry and mammal distribution. Local trends include lower snow abundance, changing wind patterns and varying levels of impacts on travel and traditional activities. To assess these patterns, we used a novel mixed methods approach combining a qualitative analysis followed by a quantitative study of resulting codes and relevant quotes from interviewees. We believe this methodology can provide important insights into translating traditional knowledge into quantitative evidence for environmental policy and decision making.

**Keywords:** climate change, vegetation, traditional, ecological knowledge, Nunavik, Quebec

**Resource Type:** Journal article

**Focus:** Case study, traditional ecological knowledge

**Region:** North America, Canada

**Language:** English

**Year:** 2015

**Citation:** Alain Cuerrier, Nicolas D. Brunet, José Gérin-Lajoie, Ashleigh Downing, Esther Lévesque. "The Study of Inuit Knowledge of Climate Change in Nunavik, Quebec: A Mixed Methods Approach." *Human Ecology* 43, no. 3 (2015): 379–394.

Resource entry updated: 2018-07-31

[An Indigenous Community-based Monitoring System for Assessing Forest Health in New Zealand](#)

**Synopsis:**

The underlying ethos of 'nature's benefits' contributing to human wellbeing provides a common platform for understanding the function and value of biodiversity for stakeholders. Diverse societal worldviews however create differences in the way cultures relate to and understand the environment. The objective of this study was to identify community-based indicators and metrics used by Māori in New Zealand to monitor forest health and community wellbeing. Eighty semi-directed interviews were conducted with 55 forest users within the Tuawhenua tribal group to identify forest health indicators and associated gradient of metrics to assess each indicator. Indicators were grouped within nine culturally-relevant themes: (1) food procurement (mahinga kai), (2) natural productivity (hua o te whenua), (3) nature of water (āhua o te wai), (4) nature of the land (āhua o te whenua), (5) nature of the forest (āhua o te ngahere), (6) perpetual occupation of land and place (ahikaaroa), (7) spiritual dimension (taha wairua), (8) physical health (taha kikokiko), and (9) mental health (taha hinengaro). Within these themes, indicators and associated metrics were aligned within two monitoring approaches: field survey and interview based. Community members (n = 35 individuals) were asked to prioritise field survey indicators using a seven point Likert Scale of importance. A second survey was also conducted with Tuawhenua elders (n = 43 individuals) to determine changes in the frequency of forest use by the community.

**Keywords:** community-based indicators, forest health, Indigenous peoples, traditional knowledge

**Resource Type:** Journal article

**Focus:** Well-being indicators

**Region:** Oceania, Aotearoa (New Zealand)

**Language:** English

**Year:** 2017

**Citation:** Lyver, P.O.B., Timoti, P., Jones, C.J. et al. "An indigenous community-based monitoring system for assessing forest health in New Zealand." *Biodivers Conservation* 26, (2017).

Resource entry updated: 2018-07-31

[Using the Cultural Health Index: How to Assess the Health of Streams and Waterways](#)

**Synopsis:**

The Cultural Health Index (CHI) was developed as a tool that Maori can use to assess and manage waterways in their area. It is an index that allows iwi/hapū to assess the cultural and biological health of a stream or catchment of their choosing. These guidelines outline how to identify areas that need to be evaluated and how to set the programme up. They then direct how to collect data and analyse it so that changes at a site are identified and the site can be restored or enhanced if necessary. The CHI can also be used to monitor changes after restoration work has been carried out at a stream site.

**Keywords:** Maori, managing waterways, cultural and biological health

**Resource Type:** Resource book

**Focus:** Guidebook, cultural-environmental assessment and management

**Region:** Oceania, Aotearoa (New Zealand)

**Language:** English

**Year:** 2006

**Citation:** "Using the Cultural Health Index: How to assess the health of streams and waterways." Ministry for the Environment, Wellington, New Zealand (2006).

Resource entry updated: 2018-07-31

[National Happiness Criteria \(Indicators\)](#)

**Synopsis:**

ОБОСНОВАНИЕ ПРОВЕДЕНИЯ ФОРУМА: Человечество сегодня переживает переломный момент своей истории. Набирающий обороты тотальный кризис запустил процесс глубокого переосмысления основополагающих принципов и стандартов жизнедеятельности и развития общества, а также процесс необратимого перехода общества от рационально-потребительского к энергоинформационному (духовному) мировосприятию и образу жизни. Иными словами, восстановление памяти о духовной природе человека и возвращение к соответствующему этой природе экологически чистому (в широком смысле) образу жизни стало сегодня уже объективной необходимостью для сохранения жизни на Земле.

**Keywords:**

**Resource Type:** Online platform

**Focus:** Indicators

**Region:** Central Asia, Kyrgyzstan

**Language:** Russian

**Year:** 2014

**Citation:**

Resource entry updated: 2018-07-31

### [Coastal Monitoring Indigenous Knowledge Holders Meeting Report](#)

#### **Synopsis:**

The Coastal Expert Monitoring Group (CEMG) is organized under a Conservation of Arctic Flora and Fauna's (CAFF) Circumpolar Based Monitoring Program. The primary goal of the CEMG is to develop a long term, integrated, multi-disciplinary, circumpolar Arctic Coastal Biodiversity Monitoring Plan that relies on science and Indigenous Knowledge, and has direct and relevant application for communities, industry, government decision makers, and other clients of the knowledge generated. Given approval of the Coastal Plan, CEMG will work to develop an implementation plan that will identify a timeline, costs, organizational structure and partners. It is fundamental to the Coastal Plan that implementation partners will include Arctic Indigenous peoples and information/concepts from Indigenous Knowledge. There are many questions that Indigenous Knowledge holders must address and many decisions that our coastal communities face. In working with scientists and international programs, some of the questions and decisions include how to share our information, how information from IK should be categorized when used with science, how to safeguard information documented from IK holders, and how to ensure that IK holders are involved in analysis and interpretation of their information. With this understanding Canada hosted a one-day meeting, facilitated by ICC that brought together IK holders to become familiar with CAFF, CBMP and to prepare for the Coastal Expert Group Monitoring workshop. Through the one-day workshop, participants held open discussions on the threats to biodiversity within their given regions, changes occurring; ways that IK directs daily monitoring activities; challenges and potential solutions for the inclusion of IK within CEMG; monitoring priorities and IK approaches to monitoring; what programs may be occurring within their respective regions that are based on IK and/or science and the potential benefits to taking part in CEMG.

**Keywords:** Indigenous, Indigenous knowledge, biodiversity monitoring, multiple knowledge systems, governance, decision-making

**Resource Type:** Report

**Focus:** Indigenous knowledge, governance

**Region:** North America, Canada

**Language:** English

**Year:** 2016

**Citation:** "Coastal Monitoring Indigenous Knowledge Holders Meeting Report." Inuit Circumpolar Council (ICC), Ottawa, Canada: 2016.

Resource entry updated: 2018-07-31

### [The Bering Strait Marine Life and Subsistence Data Synthesis](#)

#### **Synopsis:**

This synthesis is the product of a collaboration between Oceana, Inc. and Kawerak, Inc. to better document and map the marine ecosystem of the Bering Strait region. Oceana gathered available studies, data, and information on subsistence, marine mammals, seabirds, fish, zooplankton, seafloor life, primary production, and sea ice. Kawerak shared their geodatabase showing subsistence use and important habitat areas for ice seals and walrus. Oceana combined Kawerak's geodatabase with information from Oceana's geodatabase, and produced seasonal synthesis maps for sea ice, subsistence use, and concentration areas for walrus and all four species of ice seals. Kawerak and Oceana held a joint workshop where local experts reviewed the synthesis maps. Oceana edited maps based on expert feedback, and incorporated this information with other data sets. Kawerak and Oceana co-wrote many sections of this synthesis using both traditional knowledge from qualitative interviews and Western scientific literature. This synthesis of information is intended to give an overview of the marine ecosystems of the region to help with conservation, education and policy-making.

**Keywords:** Arctic, Alaska, Indigenous, Indigenous knowledge, marine mammals, marine conservation, multiple knowledge systems, subsistence use

**Resource Type:** Report

**Focus:** Multiple knowledge systems, natural resource management

**Region:** North America, United States

**Language:** English

**Year:** 2014

**Citation:** The Bering Strait Marine Life and Subsistence Data Synthesis. Oceana. Kawerack Inc. 2014.

Resource entry updated: 2018-07-31

[Seal and Walrus Harvest and Habitat Areas for Nine Bering Strait Region Communities](#)

**Synopsis:**

To engage in marine policy-making, tribes need documentation of their community's marine resource use. This map book was produced by Kawerak Social Science staff as part of the Ice Seal and Walrus Project (ISWP). One goal of this project was to work with elders and expert seal and walrus hunters to document subsistence use and important habitat areas for these species. Nine tribes participated in the Ice Seal and Walrus Project. This book presents the maps and traditional knowledge shared by selected hunters and elders in the 9 participating Bering Strait communities during 2011 and 2012. These maps show areas where people hunt in different seasons, as well as places where seals and walrus have been observed feeding, hauling out, and migrating. The goal is for these maps to be a resource for tribes. These maps can be used to support local decisions, such as the locations of docks, roads, or gravel pits, as well as tribal participation in state, federal, or international policy-making.

**Keywords:** Arctic, Indigenous, traditional knowledge, subsistence use, seal, walrus, community-based natural resource management, policy-making

**Resource Type:** Book

**Focus:** Community-based resource management

**Region:** North America, United States

**Language:** English

**Year:** 2013

**Citation:** "Seal and Walrus Harvest and Habitat Areas for Nine Bering Strait Region Communities." Kawerak, Inc. Social Science Program Natural Resources Division, 2013.

Resource entry updated: 2018-07-31

[Alternative Indicators of Well-being for Melanesia: Cultural Values Driving Public Policy](#)

**Synopsis:**

Melanesia is a sub-region of Oceania in the Southwest Pacific comprised of the independent nations of Papua New Guinea (PNG), the Solomon Islands, Fiji, and Vanuatu, as well as several other indigenous groups, islands and atolls sharing the Melanesian identity. The people of Melanesia continue to depend largely on a traditional model of economic development that is self-contained, and ensures equitable distribution of wealth and opportunity within society. The 'traditional economy', as it has come to be referred to in Vanuatu, is governed by shared cultural values and rules that dictate control over available resources. Unlike an economy valued solely in monetary terms, in the traditional economy there are imposed limits to growth and wealth, and defined roles for resource management. It is, in every sense, as formal an economy as the modern cash-based capitalist economy, yet there is no government-issued financial currency. Instead, every exchange is an investment in social capital. There remains, however, the challenge of measurement.

**Keywords:** gross domestic product, United Nations, traditional knowledge, Solomon Island, alternative indicator

**Resource Type:** Book chapter

**Focus:** Indicators of well-being

**Region:** Melanesia

**Language:** English

**Year:** 2015

**Citation:** Tanguay J. (2015) Alternative Indicators of Wellbeing for Melanesia: Cultural values driving public policy. In: MacDowall L., Badham M., Blomkamp E., Dunphy K. (eds) Making Culture Count. New Directions in Cultural Policy Research. Palgrave Macmillan, London

Resource entry updated: 2018-07-31

[Field Testing the Cultural Indicators for Food Security, Food Sovereignty and Sustainable Development in Indigenous Communities](#)

**Synopsis:**

The Cultural Indicators for Food Security, Food Sovereignty and Sustainable Development in Indigenous Communities are a result of several years of work by the International Indian Treaty Council together with Indigenous organizations, traditional Indigenous food producers and knowledge holders from around the world, as well as the FAO, focusing on the inextricable link between the traditional Indigenous food systems and the bio-cultural relationships, understandings and practices upon which they are based. We provide a framework and practical tool for Indigenous Peoples to assess and measure the positive and negative effects of programs, methods and technologies coming from outside their communities and environmental impacts such as mining and climate change, as well as the vitality and resiliency of traditional practices and methods and their ability to transmit them to new generations. This report highlights some of the results from training workshops focused on implementing and using the Cultural Indicators in 8 distinct bio-cultural regions, with the participations of over 500 representatives from 66 different Indigenous Peoples and communities.

**Keywords:** threats, Indigenous, indicators, traditional knowledge, climate change, culture

**Resource Type:** Report

**Focus:** Cultural indicators

**Region:** Central America, Guatemala, Nicaragua; North America, Canada, Mexico, United States

**Language:** English

**Year:** 2010

**Citation:** "Field Testing the Cultural Indicators for Food Security, Food Sovereignty and Sustainable Development in Indigenous Communities". Report to the United Nation Permanent Forum on Indigenous Issues Ninth Session 19 – 29 April 2010. Co-Submitted by the International Indian Treaty Council (IITC) and the United Nations Food and Agriculture Organization (FAO)

Resource entry updated: 2018-07-30

[A Cultural Health Index for Streams and Waterways: Indicators for Recognising and Expressing Maori Values](#)

**Synopsis:**

This report presents the results of three years' work by the authors to develop Māori stream health indicators for mauri and mahinga kai. The purpose of the study was to develop a tool to facilitate the input and participation of iwi into land and water management processes and decision making. It resulted in the Cultural Health Index (CHI) for streams, developed by linking western scientific methods and cultural knowledge about stream health.

**Keywords:** land, water, management, decision, community, tool, new zealand

**Resource Type:** Report

**Focus:** Cultural indicators

**Region:** Oceania, Aotearoa (New Zealand)

**Language:** English

**Year:** 2003

**Citation:** Tipa, Gail, and Laurel Teirney. "A Cultural Health Index for Streams and Waterways Indicators for recognising and expressing Maori values." Ministry for the Environment, June 2003.

Resource entry updated: 2018-07-30

[Developing Criteria and Indicators for Aboriginal Forestry: Mutual Learning Through Collaborative Research](#)

**Synopsis:**

Over the past few years, community-based criteria and indicators (C&I) frameworks have been developed by several First Nations throughout Canada in an effort to better define Aboriginal forestry. In some cases, the development process has been an empowering exercise, but implementation still often remains a challenge. In this chapter we discuss how culturally adapted C&I frameworks can be used as an adaptive strategy for implementing Aboriginal forestry in Canada. In particular, we will present results from a collaborative research project undertaken with the Anicinapek of Kitcisakik in Quebec. An environmental education approach was adopted which allowed 'voice' to be given to the people of Kitcisakik in order to characterize their representations of the forest and forestry. The C&I framework for Aboriginal forestry that was built through this process relies upon Anicinapek ethical and educational principles. These principles are based on their representation of the forest as Anicinape territory, heritage, and social responsibility. Elements of a compromise supporting Aboriginal participation in forest management also emerged as a result of dialogue among community members, university researchers, and industrial and government representatives.

**Keywords:** criteria and indicators, Indigenous, natural resource management, forestry

**Resource Type:** Book chapter

**Focus:** Indicators, collaborative research

**Region:** North America, Canada

**Language:** English

**Year:** 2009

**Citation:** Saint-Arnaud, Marie, Hugo Asselin, Claire Dubé, Yvan Croteau, and Charlie Papatie. "Developing Criteria and Indicators for Aboriginal Forestry: Mutual Learning through Collaborative Research." In *Changing the Culture of Forestry in Canada: Building Effective Institutions for Aboriginal Engagement in Sustainable Forest Management*, edited by Marc Stevenson and David C. Natcher, 85-105. N.p.: Canadian Circumpolar Institute Press, 2009.

Resource entry updated: 2018-07-30

[A Process for Developing Sustainability Indicator Sets](#)

**Synopsis:**

In 2009, Cawthron Institute (Cawthron) began its research programme, Soft Urban Infrastructure for Sustainable Settlements (SUISS). Funded by the Ministry of Business, Innovation and Employment (MBIE), this programme aimed to work with councils and communities in the top of New Zealand's South Island (Te Tau Ihu) to investigate: how to change behaviour so cities, towns and settlements become more sustainable, and how to develop measures that understand and determine a community's progress towards sustainability. This report focuses on the second of these aspects, and specifically it addresses the following three questions: 1. What is a credible process for developing sustainability indicator sets to measure a community's progress towards sustainability? 2. Have any existing and well-known sustainability indicator sets used such a process? 3. Could any of the 11 sets be used to measure progress in communities beyond those for which the sets were originally developed?

**Keywords:** sustainability, community, Indigenous, New Zealand, indicator sets

**Resource Type:** Report

**Focus:** Sustainability indicators

**Region:** Oceania, Aotearoa (New Zealand)

**Language:** English

**Year:** 2013

**Citation:** Challenger, Ian. "A Process for Developing Sustainability Indicator Sets." Prepared for Ministry of Business, Innovation and Employment. Cawthron Report No. 2224, (2013): 44 p.

Resource entry updated: 2018-07-30

[Biodiversity and Resilience Indicators: Communities Managing Production Landscapes and Seascapes](#)

**Synopsis:**

IGES e-Learning Series - Biodiversity and Resilience Indicators: Communities managing production landscapes and seascapes. Informational video introducing the Indicators of Resilience in Socio-ecological Production Landscapes and Seascapes (SEPLS); a unique tool developed for engaging communities in adaptive management of the land- and seascapes in which they live. This set of indicators is valuable for NGOs, development agencies and policy makers working with local communities, and for communities themselves to understand and then increase their resilience and capacity to endure in the face of social, economic and environmental pressures.

**Keywords:** indicators, community-based management

**Resource Type:** Video

**Focus:** Social-ecological resilience indicators

**Region:** Worldwide

**Language:** English

**Year:** 2017

**Citation:** "Biodiversity and Resilience Indicators: Communities managing production landscapes and seascapes." Video file. Posted by Institute for Global Environmental Strategies Japan, July 20, 2017.

Resource entry updated: 2018-07-30

[Maori Environmental Performance Indicators for Wetland Condition and Trend](#)

**Synopsis:**

Report from Phase 2 of the Coordinated Monitoring of NZ Wetlands Project (July 2000–June 2002), implemented to provide nationally consistent indicators and tools for coordinated monitoring of wetland condition and trend in New Zealand. The work continued from that carried out in the Phase 1 wetlands project 1998–1999, which established wetland classifications and iwi relationships. The objective of Phase 2 was to develop a generic set of matauranga Maori based indicators for wetland condition and trend; an illustrated field guide and key to the national wetland classification; a handbook for managers. The report covers methods for developing Maori wetland indicators and national application.

**Keywords:** indicator development, wetlands

**Resource Type:** Report

**Focus:** Indicators

**Region:** Oceania, Aotearoa (New Zealand)

**Language:** English

**Year:** 2002

**Citation:** Harmsworth, Garth. (2002). "Maori environmental performance indicators for wetland condition and trend. Coordinated Monitoring of New Zealand wetlands, Phase 2, Goal 2. A Ministry for the environment SMF Project 5105." Landcare Research Contract Report LC 0102/099. 65 p.

Resource entry updated: 2018-07-30

[A Cultural Health Index for Streams and Waterways: A Tool for Nationwide Use](#)

**Synopsis:**

This report details the development of the Cultural Health Index (CHI). It compares the results of studies involving testing on the different rivers, carries out further analysis of all data sets combined and describes a generic CHI that can be applied by any iwi to any river in New Zealand. The report concludes with a discussion of how the CHI responds to the values, beliefs and aspirations of Māori, as well as outlining how its application could assist resource managers, not only to enhance contemporary resource management practice but also to fulfil their obligations stemming from the Treaty of Waitangi and New Zealand's resource management laws.

**Keywords:** Maori, resource management, managing waterways

**Resource Type:** Report

**Focus:** Cultural-environmental assessment and management

**Region:** Oceania, Aotearoa (New Zealand)

**Language:** English

**Year:** 2006

**Citation:** Gail Tipa and Laurel Teirney. "A Cultural Health Index for Streams and Waterways: A tool for nationwide use." Ministry for the Environment, 2006.

Resource entry updated: 2018-07-30

[Cultural Health Assessment of the Ruataniwha / Cam River and its Catchment](#)

**Synopsis:**

This report presents the results of a cultural environmental health assessment of the Ruataniwha / Cam River and its catchment. This was the first cultural health assessment of the catchment using the State of the Takiwa approach developed by Ngai Tahu, and was undertaken by Ngai Tuahuriri Runanga in conjunction with Mahaanui Kurataiao Ltd (MKT) between July and August 2012. The programme was based on forty four monitoring sites located across the catchment. These were selected by Ngai Tuahuriri Runanga representatives to reflect the Ngai Tahu Ki Uta Ki Tai (source to sea) resource management philosophy. The sites chosen included headwaters, tributaries, and main-stem river sites, and artificially created Nga Tapuwae o Mua / Kaiapoi Lakes which are now a feature of the lower catchment. The catchment is of immense significance for Ngai Tahu, in part due to its strong connections to Kaiapoi Pa.

**Keywords:** cultural environmental health, Indigenous, river

**Resource Type:** Report

**Focus:** Cultural-environmental monitoring and reporting

**Region:** Oceania, Aotearoa (New Zealand)

**Language:** English

**Year:** 2012

**Citation:** Orchard S., Lang M., Falwasser T., Rupene M., Te Karu T., Tirikatene-Nash N. and Williams C. "Cultural Health Assessment of the Ruataniwha/Cam River and its Catchment." Mahaanui Kurataiao Ltd Report, 2012.

Resource entry updated: 2018-07-30

[Arctic Social Indicators II: Implementation](#)

**Synopsis:**

ASI-II is a follow-up activity to Arctic Social Indicators (ASI, 2010) and the Arctic Human Development Report (AHDR, 2004). Following in the footsteps of AHDR and ASI-I, ASI-II is produced under the auspices of the SDWG. The objectives of the current volume of ASI are to measure the final set of recommended ASI indicators; to systematically identify and describe data challenges; to conduct a series of regional case studies to illustrate and further test the strength and applicability of the selected ASI indicators; to draw conclusions about the ability of ASI to track changes in human development and to show its strength in making inter-regional comparisons; and to formulate policy relevant conclusions for the long-term monitoring of human development. ASI-II also helps facilitate continuity between AHDR processes and provides input into the Arctic Council endorsed assessment of Arctic human development. The core content of ASI-II is a set of carefully selected case studies. Five case studies form the basis for drawing conclusions about the applicability of the ASI set of indicators and for formulating policy relevant conclusions. Case studies are performed on the following regions: SakhaYakutia; the West-Nordic Region; Northwest Territories; Inuit Regions of Alaska, and the Inuit World, using Survey of Living Conditions in the Arctic (SLiCA) to augment ASI.

**Keywords:** social indicators, arctic, human development

**Resource Type:** Report

**Focus:** Social indicators

**Region:** Arctic, multiple countries

**Language:** English

**Year:** 2014

**Citation:** Joan Nymand, Peter Schweitzer and Andrey Petrov, eds. "Arctic Social Indicators - ASI II: Implementation". Copenhagen: Nordic Council of Ministers, 2014.

Resource entry updated: 2018-07-30



[Arctic Social Indicators - a follow-up to the Arctic Human Development Report](#)

**Synopsis:**

The Arctic Human Development Report (AHDR), published in 2004, offers a comprehensive overview of the state of human development in the Arctic at the beginning of the twenty-first century. As such, it constitutes a unique and indispensable resource. It addresses Arctic demography, political, economic and legal systems, and key issues in the North such as resource governance, community viability, human health and well-being, education, gender issues, and circumpolar international relations and geopolitics. The Arctic Social Indicators (ASI) project responded to the AHDR, in aiming to develop a set of indicators to track changes in human development in the Arctic, for domains that reflect prominent aspects of human development in the Arctic. Initiated by the Stefansson Arctic Institute, Akureyri, Iceland, the ASI project in its first phase (2006-2009) was an International Polar Year project and was endorsed by the Arctic Council. It grew organically from the AHDR. The ASI project chose six domains in which to develop indicators for monitoring human development – the three domains identified by the AHDR (fate control, cultural integrity, contact with nature), and the three domains constituting the UN Human Development Index (life expectancy, literacy and standard of living), adapted for the Arctic context (to health/ population, education and material well-being). This suite of domains provides an approach that is broad and inclusive while remaining manageable.

**Keywords:** social indicators, arctic, human development

**Resource Type:** Report

**Focus:** Social indicators

**Region:** Arctic, multiple countries

**Language:** English

**Year:** 2010

**Citation:** "Arctic Social Indicators - a follow-up to the Arctic Human Development Report." Copenhagen: Nordic Council of Ministers, 2010.

Resource entry updated: 2018-07-30

[Alaskan Inuit Food Security Conceptual Framework: How to Assess the Arctic from an Inuit perspective. Technical Report](#)

**Synopsis:**

The following summary report focuses on sharing the collective efforts of ICC-Alaska, 146 Inuit contributing authors, an 12-member Food Security Advisory Committee and many other Inuit, who provided input and guidance. Here we aim to illuminate food (in)security through our way of knowing. This project has been ongoing for three-and-a-half years. Since the beginning of the project in 2012, the impacts resulting from rapid changes have escalated. Where before we discussed changes that had never seen, today, these changes are persistent, and inconsistency is becoming a new norm. For example, before people mentioned having less meat to dry, and today some have no meat to dry. There is no time to waste; we must begin to make changes today, not just for the sake of our culture but also for the sake of the entire Arctic ecosystem. Using a food security lens, the tools provided through this project and applying the recommendations will help us be able to make the changes needed.

**Keywords:** Arctic, Inuit, Indigenous, food, food security

**Resource Type:** Report

**Focus:** Food security

**Region:** North America, Canada

**Language:** English

**Year:** 2015

**Citation:** Inuit Circumpolar Council. "Alaskan Inuit Food Security Conceptual Framework: How to Assess the Arctic from an Inuit perspective. Technical Report." Inuit Circumpolar Council, Anchorage, Alaska: 2015.

Resource entry updated: 2018-07-30

[Reindeer Herding, Traditional Knowledge and Adaptation to Climate Change and Loss of Grazing Land](#)

**Synopsis:**

The IPY EALÁT project (EALÁT: Reindeer herding, traditional knowledge, adaptation to climate change and loss of grazing land), led by Norway and Association of World Reindeer Herders (WRH) in Arctic Council, Sustainable Development Working Group (SDWG) was initiated in 2006. The project has been coordinate by International Centre for Reindeer Husbandry (ICR), Kautokeino, and by Sami University College (SA) also in Kautokeino, Norway, and was designed to gather information about the environmental changes which Arctic reindeer herders are facing and to give concrete examples of herders' traditional knowledge leading their adaptation to changing conditions, e.g. traditional uses of grazing land. In all, 21 workshops have been held in local herding communities in the reindeer herding regions of Norway, Sweden, Finland, and Russia in 2007–2011 and recently in Canada. The challenge of EALÁT is to transfer herders' knowledge into action for sustainable development of the rapidly changing Arctic. The legacy of IPY EALÁT work has therefore developed into local information centers for different types of reindeer husbandry in Russia, as well as the UArctic EALÁT Institute - University of the Arctic Institute for Circumpolar of Reindeer Husbandry. This report is produced for the 7th Arctic Council Ministerial Meeting in Nuuk, Greenland, as a Sustainable Development Working Group (SDWG) executive summary report. The report builds on information collected during IPY EALÁT including the community-based workshops, and includes key findings and recommendations. The report also is based on the IPY EALÁT scientific report (Magga, Mathiesen, Corell and Oskal in prep.). A 30-minute documentary EALÁT – People and Reindeer in a Changing Climate has been produced and is delivered with this report. We acknowledge the Russian Association of Indigenous Peoples of the North (RAIPON), the Saami Council (SC) and the Reindeer Herders Union of Russia (RHUR) for partnership and fruitful cooperation and more recently the Arctic Athabaskan Council (AAC), the Gwich'in Council International International (GCI) and the Inuit Circumpolar Council – (ICC) for holding a workshop as part of the Norway-Canada High North Dialogue in Canada. The Arctic is the home of indigenous peoples like reindeer herders and is now changing rapidly. The ambition of EALÁT and this report is to contribute to increased cooperation between Arctic nation states and indigenous peoples to secure future sustainable development in circumpolar north and maintain a highly resilient society for reindeer herders.

**Keywords:** Indigenous, Arctic, traditional knowledge, climate change, adaptation, herding

**Resource Type:** Report

**Focus:** Community-based resource management

**Region:** Arctic, multiple countries

**Language:** English

**Year:** 2013

**Citation:** Ealát. "Reindeer Herding, Traditional Knowledge and Adaptation to Climate Change and Loss of Grazing Land." Norway and Association of World Reindeer Herders (WRH) In Arctic Council, Sustainable Development Group (SDWG), Alta, Norway: 2013.

Resource entry updated: 2018-07-30

[Youth: The Future of Reindeer Herding Peoples. Executive Summary](#)

**Synopsis:**

This report is one of the deliverables to the Arctic Council Sustainable Development Working Group project 'EALLIN - The Voice of Reindeer Herding Youth 2012-2014'. The main goal of the project was to maintain and further develop a sustainable and resilient reindeer husbandry in the Arctic, working towards a vision of creating a better life for circumpolar reindeer herders. Through this project, over 160 youth from different reindeer herding peoples have had the opportunity to meet each other, learning maybe as much about themselves in the process as they learned from their peers. The material, findings and recommendations below are derived from 12 community-based workshops in Norway, Sweden and Russia, China and Mongolia, where herding youth have been both organizers and participants.

**Keywords:** herding, sustainability, Arctic, Indigenous communities, resilience, traditional ecological knowledge, reindeer husbandry

**Resource Type:** Report

**Focus:** Community-based resource management

**Region:** Arctic, multiple countries

**Language:** English

**Year:** 2015

**Citation:** Eallin. "Youth: The Future of Reindeer Herding Peoples." Arctic Council Sustainable Development Working Group (SDWG), EALLIN Reindeer Herding Youth Project, 2015.

Resource entry updated: 2018-07-30

[Indigenous Youth, Food Knowledge & Arctic Change](#)

**Synopsis:**

This is a book about the fabulous abundance and diversity of food in the Arctic. While many think of the Arctic as a place of climatic extremes and scarcity, in fact the Arctic hosts an extraordinary food culture, built on 10,000 years of knowledge, and intergenerational knowledge transfer. To our knowledge, this is the first attempt to present an overview of the culinary world of Arctic Indigenous Peoples in one volume. This book provides a snapshot of the rich, diverse and living culinary traditions of the food systems of Arctic Indigenous Peoples. We also want to show that the skills and knowledge associated with these food systems is also undergoing rapid change.

**Keywords:** Arctic, Indigenous, traditional knowledge, food

**Resource Type:** Book

**Focus:** Indigenous food culture

**Region:** Arctic, multiple countries

**Language:** English

**Year:** 2017

**Citation:** Eallu. "Indigenous Youth, Food Knowledge & Arctic Change." International Centre for Reindeer Husbandry (ICR), Kautokeino, Norway: 2017.

Resource entry updated: 2018-07-30

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