



Cultural Keystone Places: Conservation and Restoration in Cultural Landscapes

Authors: Cuerrier, A., Turner, N. J., Gomes, T. C., Garibaldi, A., and Downing, A.

Source: Journal of Ethnobiology, 35(3) : 427-448

Published By: Society of Ethnobiology

URL: <https://doi.org/10.2993/0278-0771-35.3.427>

BioOne Complete (complete.BioOne.org) is a full-text database of 200 subscribed and open-access titles in the biological, ecological, and environmental sciences published by nonprofit societies, associations, museums, institutions, and presses.

Your use of this PDF, the BioOne Complete website, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at www.bioone.org/terms-of-use.

Usage of BioOne Complete content is strictly limited to personal, educational, and non - commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

BioOne sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

CULTURAL KEYSTONE PLACES: CONSERVATION AND RESTORATION IN CULTURAL LANDSCAPES

A. Cuerrier^{1*}, N. J. Turner², T. C. Gomes³, A. Garibaldi⁴, and A. Downing¹

“Sense of place” as an anthropological, geographical, and philosophical construct has been a focus of research in recent decades, particularly following the publication of Keith Basso’s Wisdom Sits in Places. Simultaneously, the emergence of the concept of social-ecological systems and their value in the application of conservation and restoration practices has highlighted the unique benefits of recognizing the interconnectedness of social and ecological spheres. Real and metaphorical parallels identified between social and ecological systems in terms of “health,” “resilience,” and adaptive responses help to promote understanding and to communicate corresponding processes and traits across these systems. Extending from an earlier concept of “Cultural Keystone Species,” and drawing on the recognition of “sense of place” as an important construct, here we propose the recognition of “Cultural Keystone Places” (CKPs): places of high cultural salience for a particular group of people at a particular time and critical to their identity and well-being. We define and characterize cultural keystone places, provide three case examples, and discuss the significance and potential applications of CKPs in biocultural conservation and renewal.

Keywords: *sense of place, biocultural diversity, cultural landscapes, Canadian First Nations, Métis*

L’idée de ‘place’ en tant qu’élément anthropologique, géographique et philosophique a été la cible de recherche depuis plusieurs décennies, surtout à la suite de la publication du livre de Keith Basso, Wisdom Sits in Places. En marge, l’émergence du concept des systèmes socio-écologiques ainsi que leur importance dans la mise en place de pratiques de conservation et de restauration ont fait ressortir l’immense avantage de reconnaître l’interconnexion des sphères sociale et écologique. Des parallèles réels et métaphoriques entre les systèmes sociaux et écologiques en ce qui concerne la ‘santé’, la ‘résilience’ et les réponses adaptatives ont aidé à promouvoir la compréhension et à communiquer des processus et des caractéristiques correspondants au sein de ces systèmes. Partant du concept déjà existant ‘d’Espèces culturellement importantes’ (Cultural Keystone Species) tout en s’appuyant sur l’idée de ‘place’ comme élément important, nous proposons le concept de ‘Places culturellement importantes’ (Cultural Keystone Places). Ce sont des sites de grande importance culturelle, identitaire et de bien-être. Nous définissons et caractérisons ce concept, puis discutons trois exemples en lien avec son importance et son application potentielle dans la conservation bioculturelle et la restauration.

Introduction

Keith Basso’s (1996) captivating book, *Wisdom Sits in Places*, epitomizes the deep, culturally mediated associations between people and place, often designated as “sense of place.” This phrase identifies more than simply habitation or use of a place or territory. Rather it reflects a close attachment of a group of people to a given locale, cemented by historical ties, sense of identity, associated

¹Plant Biology Research Institute, Montreal Botanical Garden, University of Montreal, Montreal, QC H1X 2B2, Canada.

²School of Environmental Studies, University of Victoria, Victoria, BC, Canada V8W 2Y2.

³Departamento de Ecologia e Zoologia, Universidade Federal de Santa Catarina, Florianópolis, SC, Brazil.

⁴Integral Ecology Group, Victoria, BC, Canada.

*Corresponding author (alain.cuerrier@umontreal.ca)

cultural practices, affiliated communities of plants and animals, particular geographical features, and the human role in shaping landscapes in a dynamic process of reciprocity. This paper provides an ethnoecological perspective on the importance of place and place-based knowledge in the lifeways of Indigenous and local peoples and their environments, focusing on First Peoples of Canada. Recognizing that there are particular places, for any cultural group, that are critically important to people's lifeways and identity, and that these need special attention for effective biocultural protection, conservation, and restoration, we propose the concept of "Cultural Keystone Place" (CKP) as a way of portraying places of strong cultural attachment that need particular consideration in any proposed development activities (see Cuerrier et al. 2012a for a brief introduction of the concept). This concept in no way negates the importance of people's entire territories and all landscapes and ecosystems to their sustenance, culture, and well-being, but, just as some species have particular prominence in any culture, so, too, do particular, key locales. Further, the concept does not imply that other sites, which are not as culturally salient, do not need to be taken into consideration for conservation. Indeed, fragmenting land is less than adequate for conservation purposes and poses problems to both ecosystems and the people who inhabit them (Berryman et al. 2013). Tobias (2010:46) also recalls that

In the absence of context, maps appear to illustrate cultural features isolated from one another in a sea of blank space. That 'blank space' however, is critical to cultural survival.

The interpretation of Tobias' blank space is at the core of Cultural Keystone Places. Indigenous people identify areas of core use and salience while simultaneously acknowledging the necessity of a broader area for cultural purposes. For instance, the Cree and Dene people of Fort McKay hunt and harvest along trails en route to the historic and still currently used village site at Moose Lake. Both the resources along the trail *and* the heavily occupied and spiritually important Moose Lake area are crucial veins and nodes that connect and guide people through their land. The identification of CKPs seeks to elevate the awareness that key locations can have for people culturally and socially on the landscape, not to diminish the importance of other areas. As Tobias (2010:46–47) further describes,

The danger of showing cultural features as disconnected islands or fragments on a map is that corporations and government agencies carry on with business as usual on the portions for which no data are mapped. They regard the mapped features as isolated remnants of heritage instead of parts of living cultural systems.

Today, as perhaps never before, there are deep threats to both biological diversity and cultural diversity (Maffi 2012; Maffi and Woodley 2010; Posey 1999; UNESCO 2010). Combating biodiversity loss cannot be undertaken effectively without addressing losses to cultural diversity. In many cases, cultural knowledge and wisdom, if applied in locally situated contexts, can actually help sustain biological diversity (Anderson 2005; Berkes 2012; Cuerrier et al. 2012a; Deur and Turner 2005; Minnis and Elisens 2000). This puts *place* at the

forefront of our efforts to conserve biocultural diversity. Conversely, losses of language and cultural diversity cannot be addressed adequately without also confronting environmental deterioration and loss of species and habitats, since these are so integral to all aspects of Indigenous and local societies (Turner 2005; Turner 2014). Both key habitats and the peoples whose detailed knowledge systems are embedded within them must be carefully supported if humans are to avoid a continued erosion of the world's biological and cultural richness (Ignace 2008; Johnson 2010; Nabhan 1997).

This paper explores one means by which culturally significant places can be given proper recognition as a vital component of critically important social-ecological systems, through which awareness and understanding of cultural knowledge and perspectives and associated ecological processes in a rapidly changing world can be emphasized. We first present an overview of cultural landscapes and biocultural diversity. We then propose "Cultural Keystone Place" as a metaphorical label for places of high biocultural salience. We elaborate on the utility of this concept, as well as point out some potential limitations. To ground the concept, we present three case examples of iconic Cultural Keystone Places. Finally, we discuss the potential utility of the Cultural Keystone Place concept in biocultural conservation, restoration, and land use planning efforts.

Cultural Landscapes and Biocultural Diversity

Cultural landscapes are regions of the world that express a long and intimate relationship between peoples and their natural environments, reflecting specific techniques of sustainable land use, the characteristics and limits of the natural environment they are established in, and a specific spiritual relation with nature (UNESCO 2010). These landscapes have evolved under the joint influence of natural processes and sustainable human cultural practices, which have tended to maintain biodiversity and productivity over generations (SER 2004). Although cultural landscapes may also depict historical, unsustainable management practices, we suggest that a deep understanding of ecological processes gained by long-standing people-and-place relationships, or even experiences from depletion of resources, will generally lead to conserving practices (Berkes and Turner 2006; Turner and Berkes 2006; Turner et al. 2013a).

Many researchers, particularly in the fields of anthropology and ethnobiology, have described cultural associations with place, particularly in relation to Indigenous Peoples (Ingold 2000; Johnson and Hunn 2010; Thom 2005; Thornton 2008). Furthermore, almost any ethnographic description of a people includes identification of cultural landscapes, especially the exceptionally important locations within a homeland or territory. Such places are mentioned frequently in discourse and stories as destinations and places of dwelling that feature powerfully in a people's lifeways. Knowledge of the species and geographical features of these landscapes is a key element of a group's Traditional Ecological Knowledge (TEK) system (Turner et al. 2000). Practices such as food harvesting and/or processing, educational activities, long-term habitation, trade and exchange, or ceremonies are often associated with these places and some locales are widely known as sources for particular key resources.

Biocultural diversity is defined by Maffi (2005:602) as “the diversity of life in all of its manifestations – biological, cultural, and linguistic – which are interrelated [and likely coevolved] within a complex socio-ecological adaptive system.” Biological and cultural diversity are often inextricably linked and express a positive correlation (Posey 1988). The UN’s Environment Programme has incorporated the concept into its discourse: “Biodiversity also incorporates human cultural diversity, which can be affected by the same drivers as biodiversity, and which has impacts on the diversity of genes, other species, and ecosystems” (UNEP 2007:160).

Loss of biocultural diversity is a worldwide trend (Maffi and Woodley 2010), driven by the same processes of change that are causing ecosystem degradation (Posey 1999), and taking some ecosystems into novel configurations (Hobbs et al. 2009; Hobbs et al 2013). Also at risk are associated cultural landscapes and social-ecological knowledge systems. Protection of these culturally significant landscapes, including conservation and restoration of their unique biocultural features, is a vital component for providing sustainable and resilient future landscapes in the face of drastic environmental change (Posey 1999; UNESCO 2010). Present and historical cultural landscapes serve as an ideal ground for understanding connections that support long-standing social-ecological and cultural sustainability. The question is, how can these very special cultural landscapes be represented in a way that is meaningful to people from outside a particular culture or homeland, and without the same relationships with a culturally special place? The answer may be in the use of an evocative metaphor (Raymond et al. 2013).

“Cultural Keystone Place”: A Proposal

Cultural Keystone Place represents an extrapolation of a previously described concept, “Cultural Keystone Species.” The terms reflect strong connections, as well as meta-level similarities, between social and ecological systems in terms of concepts and processes (Berkes and Folke 1998; Berkes et al. 2003; Turner et al. 2003). Garibaldi and Turner (2004) and others originally proposed cultural keystone species as a metaphorical parallel to the ecological keystone species (Mills et al. 1993; Paine 1969). Garibaldi and Turner (2004) defined it as “culturally salient species that shape in a major way the cultural identity of a people, as reflected in the fundamental roles these species have in diet, materials, medicine, and/or spiritual practices.” The concept was intended to provide a focus for cultural revitalization, conservation, and community-based ethnoecological restoration activities, and has been applied in these ways in a number of research projects (Garibaldi 2009; Platten and Henfrey 2009).

Drawing from the cultural keystone species concept, we suggest that “Cultural Keystone Place” can be an effective metaphor to signify particular places of high cultural importance – places that are also generally high in regional biological diversity (Cuerrier et al. 2012a; Gomes 2012; Turner 2012; Turner 2014). We hope that applying such a categorization will help to bridge the gap of understanding that frequently exists when some individuals, often from outside an area, regard a place merely in terms of its economic potential, unaware of its deep cultural meaning to others, who see it as a source of cultural

identity, direct sustenance, spirituality, and associated wisdom. Although methods of quantifying a “sense of place” as direct attachment to physical landscape attributes may be useful (Stedman 2013), as are species surveys, they cannot convey the degree to which it is interconnected with a people’s culture and identity or how it is cherished as a “living” landscape (Brown and Brown 2009). For Inuit people, for example, such landscapes are living stories that convey their own identity. Designating places within these landscapes that hold cultural importance as a Cultural Keystone Place may give it greater meaning for outsiders and emphasize its need for special protection. It is related to the idea of “sacred sites”; however, sacred sites are more narrowly defined than Cultural Keystone Places. Further, the notion of sacred sites is not always culturally appropriate, such as with the Inuit people of Northern Canada who do not generally denote areas in this manner (Cuerrier, personal observations). In Canada, interpretations of the meaning and significance of sacred sites have not been very effective in conveying the value and meaningfulness of key cultural areas (Ross 2005) and laws have yet to be promulgated for stricter conservation of these places. In the United States, sacred sites have received more recognition legally. Indeed, within the American Indian Religious Freedom Act, Public Law 95-341; Doc. 96–13597 (Clinton 1996), the definition of a sacred site is stated:

Sacred site means any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site.

Although the concept of CKP is close to the notion of sacred site, it is meant to be broader, encompassing not only sacred sites, but any sites of high cultural importance.

We propose the following definition of “Cultural Keystone Place”: “A given site or location with high cultural salience for one or more groups of people and which plays, or has played in the past, an exceptional role in a people’s cultural identity, as reflected in their day to day living, food production and other resource-based activities, land and resource management, language, stories, history, and social and ceremonial practices.” From our conversations and interviews during the course of our research in ethnobotany and ethnoecology, where local observations and perceptions were shared, we have become aware of such places, in some cases because they have been under threat of damage or destruction from industrial development (mining, pipeline construction, development of coastal shipping and transportation corridors, clearcut logging, hydro dams, urban expansion, and other land-altering activities). Such developments are often spread over a wide area, with their associated transportation corridors, processing requirements, pollution and invasive species, resulting in devastating impacts for the people who value the places for sustenance, or for other personal, cultural and/or spiritual reasons (Berger 1999; Booth and Skelton 2011; Clayoquot Scientific Panel 1995; Turner et al. 2008). Globally, there have been many Cultural Keystone

Places that could have been protected if properly identified prior to onset of development activities. Some places have been seriously impacted by settlement and industrial activities (for instance, the relocation of Nemaska, from Nemaska Lake to Champion Lake, due to a hydro megaproject that would have flooded the community, but ironically was finally abandoned). These threats are perhaps more daunting today than ever before as technological advancements expand the reach and impact of development activities.

As in the cultural keystone species concept, the Cultural Keystone Place designation is a relative one, applicable over a range of temporal, geographical and social scales. Assessing CKPs requires inclusion of diverse aspects ranging from the history of the place (based on archaeology, oral history, and memory), associated vocabulary, social-economic features, spiritual and ceremonial values, role in cultural knowledge transmission, and ecological function and processes (see Figure 1). Here we propose assessing the overall importance of a place through ten general indicators:

1. **Agreement within a cultural group about the importance of a place:** the frequency with which it is identified by members of a particular cultural group as a place of high importance to them;
2. **Occurrence in language and discourse:** the existence of a particular name or associated vocabulary for a place, and the extent to which it is discussed in day-to-day conversation;
3. **Intensity and frequency of use:** the extent to which a place is or has been visited, occupied, or involved in cultural activities such as food harvesting and processing, harvesting materials and medicines on an annual, seasonal, or permanent basis;
4. **Diversity of use:** the range and variety of cultural activities carried out at a place, including ceremonial and spiritual activities;
5. **Antiquity of use:** as reflected in the existence of associated archaeological sites (e.g., burial sites, rock art, shell middens, pit-cooking depressions, groves of culturally modified trees) and its inclusion in cultural narratives, origin stories, songs and/or ceremonies;
6. **Extent of traditional resource management undertaken:** the intensity with which the landscape, habitats, or plant and animal species are managed or tended at a place — for example, with fire, pruning, fertilizing or planting as well as fishing, trapping, hunting techniques;
7. **Uniqueness:** the extent to which a given place is unique in its role of supporting cultural identity and survival, particularly in comparison with other places in a people's homeland or territory;
8. **Ecological diversity:** diversity of species (including identified "cultural keystone species") and different habitats represented at a given locale;
9. **Role in trade and cultural exchange:** the position of a locale as a meeting place where groups come together for economic and social exchange, allowing a group to obtain new products and share extra resources, as well as knowledge, with others;
10. **Role in cultural protocols:** the extent of associated customary proprietorship and control by individuals, lineages, clans, or communities at a given place.

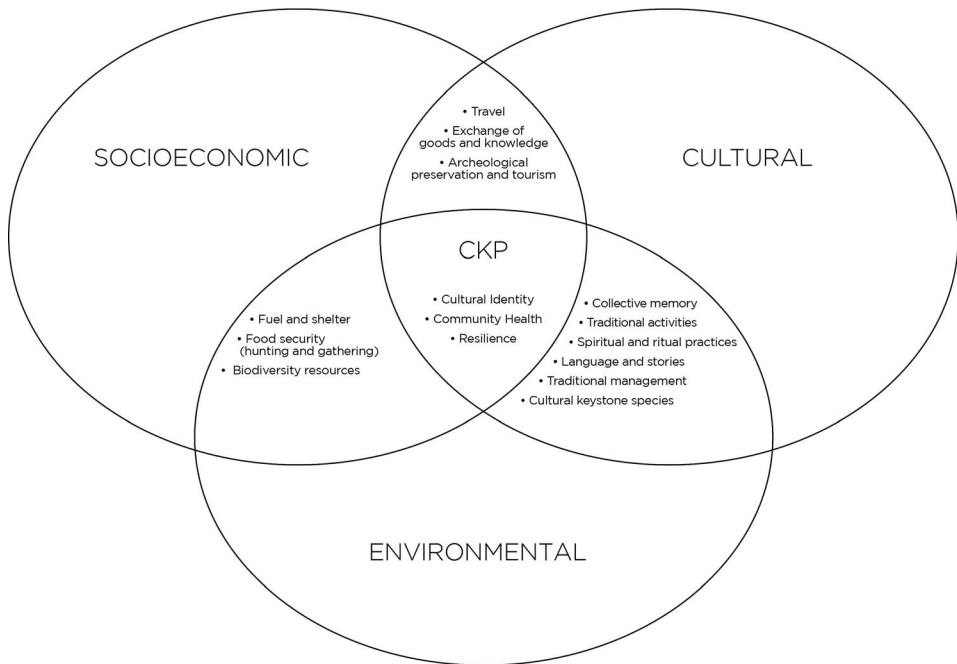


Figure 1. Schematic diagram showing the diverse aspects of interrelationships between people and particular places.

Limitations must be acknowledged for such a general approach to assess the status of a place with so many multi-faceted and dynamic influences. Given the range of different types of culturally important sites, and the different scales at which they may be identified, it seems inevitable that some places that are profoundly significant to a particular individual or family may slip through such a broad-scale assessment. Peoples' lifeways change over time as well, so that contemporary people may not identify a place that may have been critically important in the past as significant. Conversely, a place that may not be seen as important to past or present generations may have potential for high significance in the future, particularly as development limits people's ability to access valued traditional use locations. Also, due to the dynamic aspect of natural habitats, some places may change to a point where the cultural bond may rupture.

Use and access to special places can be restricted if travel routes that lead to these locations are not protected, or if development in a closely connected area, such as another part of the watershed, impacts that area. Furthermore, significant and rapid change, whether from direct natural or human influences, or from more obscure forces such as human induced climate change, may make it difficult to maintain the character of a Cultural Keystone Place despite the recognition of its significance. As well, some of these parameters would be more relevant for particular cultural groups than others, depending on how they use and occupy the land. Nevertheless, using the range of indicators and suggested rankings can yield quantitative support to a people's assertions about the values

they hold for a particular place, and can therefore be used in efforts to protect a place from damage, to maintain its integrity, or to restore it in cases where it has been damaged (Cuerrier et al. 2012a; Gomes 2012). Another possible way of quantifying the information can be done by using a multilayered mapping approach (through GIS or other algorithms), with each layer being one of the elements defined above. With such an approach, other layers could be added and information extracted for specific sites. As defined here, the elements that characterize CKPs are universal, and can be tested as a framework for CKPs in different geographical locations.

Case Examples of Cultural Keystone Places

To ground the concept in reality, we present three case examples from territories of Canadian First Nations of such iconic Cultural Keystone Places (Figures 2 and 3). These places were assessed retrospectively as CKPs, but, ideally, future identification and documentation of particular places will be applied both as a preventative tool and in response to development, where decisions on the future of particular places will be assisted through such a process.

I. Tl'chés, Chatham Islands, Victoria, British Columbia (Lekwungen)

Tl'chés (Lekwungen Straits Salish word for "island") is a small archipelago comprised of Discovery Island, the Chatham Islands, and adjacent islets, near the City of Victoria. For countless generations these islands have been vital to the livelihoods and cultural expression of Straits Salish peoples in the region, especially the Lekwungen. In fact, there are burial cairns, shell middens, and other archaeological elements within the islands. Uninhabited today, *Tl'chés* represents approximately two-thirds of Lekwungen reserve lands. The southern portion of Discovery Island was designated as Provincial Park in 1972 (BC Parks 2010), and some of the islets in the group are part of the Provincial Oak Bay Islands Ecological Reserve.

Tl'chés is a focal place in the narrative "Origin of Salmon" (Jenness n.d.; Turner 2005:50), which tells the story of how salmon, one of the most important species in the culture and subsistence of all Coastal Peoples of the Pacific Northwest (sometimes called "Salmon Nation"), gave themselves to the Straits Salish people. Moreover, *Tl'chés* was fundamental to the survival of many Lekwungen families, serving as a "refuge" during the smallpox epidemic of 1862-3, which killed thousands throughout Vancouver Island (Lutz 2009). The islands continued to sustain Lekwungen livelihoods and economy (fishing, sheep rearing, fruit orchards and vegetable gardens) until the first half of the twentieth century, when residents moved to the main Lekwungen reserve in Esquimalt (Gomes 2012). *Tl'chés* also played an important role in Straits Salish cultural maintenance; the Lekwungen hosted secret potlatches and winter dances on the islands during times of prohibition (Lutz 2009).

Furthermore, *Tl'chés* represents one of the best-protected remnants of Garry oak (*Quercus garryana* Douglas ex Hooker) ecosystem in the region, which comprises the most-at-risk terrestrial ecosystem in Canada, with less than 5% of



Figure 2. Map showing location of the three case examples from Canada of “Cultural Keystone Places.”

its original cover remaining (Lea 2006). Garry oak savannahs are part of a culturally maintained landscape, reflecting the ecological imprint of intensive Indigenous management practices, mainly through frequent low-intensity fires, over thousands of years, yielding an open landscape for hunting and increased production of camas (*Camassia quamash* [Pursh] Greene, *C. leichtlinii* [Baker] S.Watson) and other edible geophytes (Anderson 2005; Beckwith 2004; Turner 1999). *Tl'chés's* Garry oak ecosystem is habitat for many native species, including red-listed California buttercup (*Ranunculus californicus* Bentham), Macoun's meadow-foam (*Limnanthes macounii* Trelease) and the endangered sharp-tailed snake (*Contia tenuis* Baird & Girard), among others (COSEWIC 2009). Camas, a cultural keystone species for Coast Salish peoples of Vancouver Island (see Garibaldi and Turner 2004), survives on ancient, cultivated shallow soils in parts of *Tl'chés*, and has been the object of restoration studies recently (Beckwith 2004; Gomes 2012; Gomes 2013; Higgs 2003). *Tl'chés* encompasses numerous culturally significant areas such as heritage orchards, shell middens, culturally modified trees, and sacred sites; however, the archipelago's biocultural diversity is threatened by land use conflicts and invasive species (Gomes 2012).

The last generation of *Tl'chés*-born-and-raised Lekwungen, now elders, are eager to share their memories and local knowledge about *Tl'chés* with a younger

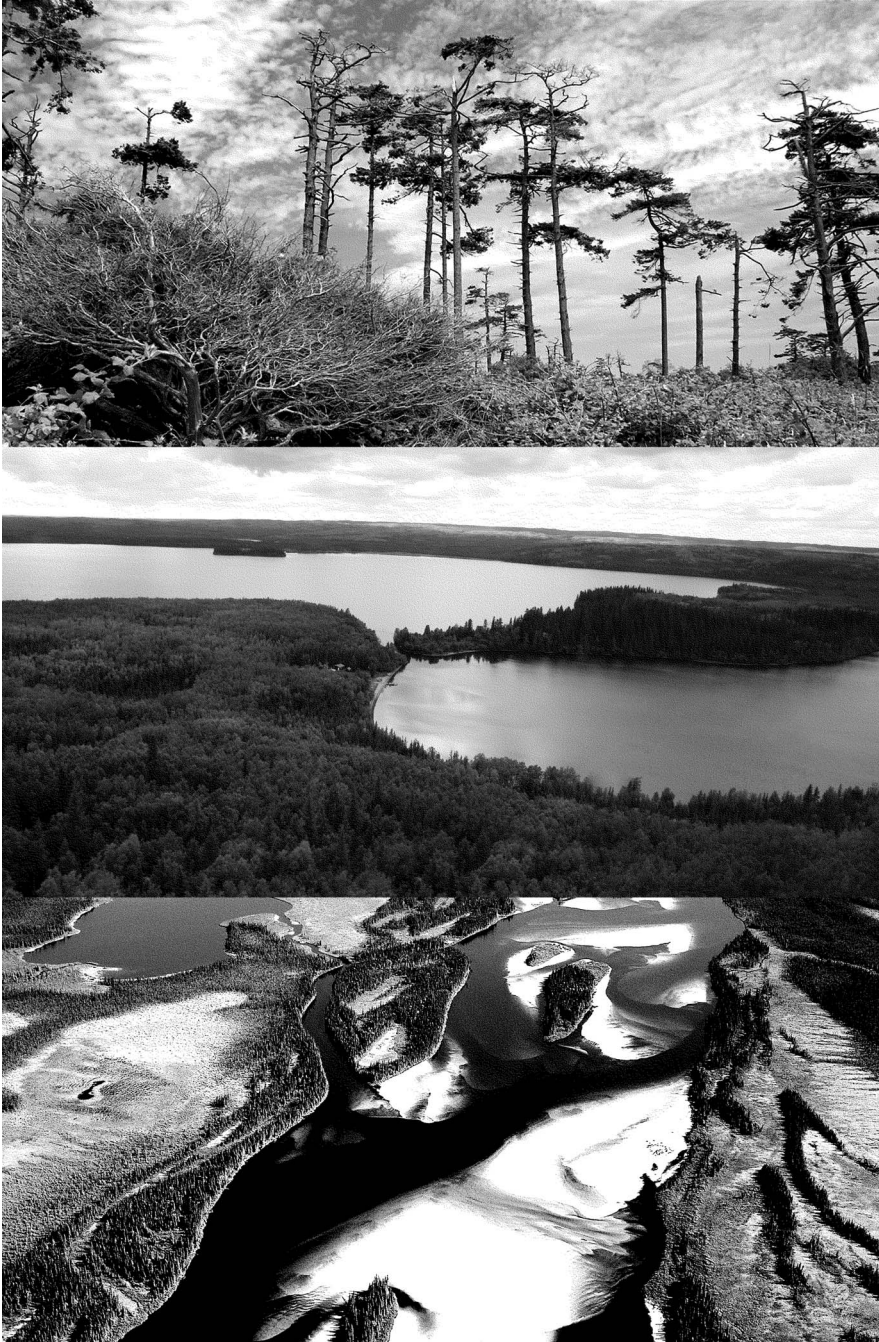


Figure 3. From top to bottom: *Tl'chés*, Chatham Islands, Victoria, British Columbia; *Dene Tuai tchoit* (Big Moose Lake in Dene) and *Tonnssi dene tuai* (Middle Moose Lake in Dene), Alberta; and Aerial view of the Témiscamie River, *Eeyou Istchee*, Quebec. Pictures taken by T.G., A.G. and Alain Hébert, respectively.

generation. In fact, they have been doing so during field outings and traditional pitcooks at *Tl'chés*, which aim for cultural renewal and long-term protection of the islands (Gomes 2012, 2013). Recent biocultural restoration efforts, led by Lekwungen elder Joan Morris (*Sellemah*), highlight not only the ecological importance of protecting and recovering these islands' sensitive ecosystems, but reaffirm their robust social and cultural significance. *Tl'chés* depicts important human-environment relationships and sustainable land use over time, standing today as a CKP for cultural revival and social-ecological health.

II. Moose and Buffalo Lakes Area, Fort McKay, Alberta

For the Cree, Dene, and Métis community of Fort McKay, Moose and Buffalo Lakes (together referred to by community members as the "Moose Lake area") represent a critical tether between historic and current traditional land use practices and cultural identity. Imbued with a strong historical and current spiritual connection to the land in the Moose Lake area, for the people of Fort McKay, the area is more than a location for resources – it provides a critical link to their history that helps maintain their cultural identity. As one community member stated, "It's not just another piece of land, it's a sacred piece of land that ties [our] very existence to who [we] are as a First Nations person" (Fort McKay Respondent #58, February 6, 2013). A landscape rich in both biological and cultural diversity, the Moose Lake area is a historic village site that has supported numerous dwellings for multiple families. The majority of people moved away from the area as recently as the 1950s when mandatory school attendance forced relocation to the present day hamlet of Fort McKay. However, the value and significance of the Moose Lake area has not diminished in subsequent years. In fact, in response to the rapidly expanding oil sands development (Garibaldi and Behr 2013), the area has transformed into a "refuge" for people whose current homes are less than 4 km away from the nearest mine. One community member shared,

Moose Lake is one of the last places in the area that people from Fort McKay can practice their traditional culture. And the importance of Moose Lake is immeasurable. Losing Moose Lake to the industry would impact our community in ways that I don't think anyone else will ever understand (Fort McKay Respondent #103, February 13, 2013).

Young and old alike recognize the unique status of the area and its valuable contribution to community history, cultural identity, and sustenance. The area serves as a teaching place for cultural practices through annual culture camps as well as other community gatherings. The strong community-wide desire for its protection is evidenced by Fort McKay's recent intervention on a proposed oil sands project directly adjacent to reserves at Moose Lake.

The Moose Lake area has been prized for its abundant supplies of various species of fish (char or lake trout [*Salvelinus namaycush* Walbaum], lingcod or burbot [*Lota lota* L.], walleye [*Sander vitreus* Mitchell], jackfish/northern pike [*Esox lucius* L.] and lake whitefish [*Coregonus clupeaformis* Mitchell]), fur bearers (beaver [*Castor canadensis* Kuhl], muskrat [*Ondatra zibethicus* L.], mink [*Neovison vison* Schreber], lynx [*Lynx canadensis* Kerr]), large game (moose [*Alces alces* L.], caribou

[*Rangifer tarandus caribou* Gmelin]), and culturally important birds (loons [*Gavia immer* Brunnich], various species of ducks, pelicans [*Pelecanus erythrorhynchos* Gmelin]). The area is also known to supply highly prized berries (cranberries, blueberries, raspberries, chokecherries, and strawberries) and medicines (e.g., ratroot or sweetflag – *Acorus americanus* [Raf.] Raf, and Canada mint – *Mentha arvensis* L.). Trees in the surrounding forests provide materials for technology and medicine. In accordance with the seasonal harvesting rounds, people still travel to the Moose Lake area to gather resources for their own families and others in the community. The significant numbers of cabins and burial sites found within the area reflect the large concentration of people who have utilized the region. The area continues to be used for dwelling, primarily seasonally. For several years the Fort McKay First Nation has maintained community cabins at Moose Lake, and additional cabins continue to be built by the Nation or individual members.

The abundance of valued resources has supported the Moose Lake area as a gathering and trading location for many Cree and Dene people in the region. Oral and historic evidence indicates that this area has been of strong economic, cultural, and livelihood significance prior to and following European contact (Fort McKay Respondent #16, July 29, 2011; McCormack 2013). In recognition of the richness of the area, other Aboriginal people from the region, including from the Chipewyan Lakes area (approximately 85 km to the southwest) and Fort Chipewyan (approximately 155 km to northeast), have traveled to the Moose Lake area to gather and exchange resources (FMFN 1994). For many people, Moose Lake represents a uniquely valued location within the heart of their traditional territory that may become the sole remaining place where they can transmit environmental knowledge, tradition, and cultural practices in a region undergoing tremendous development pressure.

III. Eeyou Istchee, Areas of the Future Albnel-Témiscamie-Otish National Park, Québec

The region of what will become Albnel-Témiscamie-Otish National Park (MDDEFP 2002) is home to the Cree people of Mistissini, one of the southern communities within *Eeyou Istchee* (land of the Eeyouch or Cree). Occupation of the territory dates back to about 6000–6500 BP (Martijn and Rogers 1969). The park will cover more than 11,000 km² of land and freshwater. Cree place names are woven throughout this future parkland, including important lakes and essential navigation features (especially the historical canoe route). The park area is known for its watersheds, pristine boreal forests, taiga, and tundra on higher plateaus as well as for a range of culturally valuable species, such as woodland caribou, hoary bat (*Lasiurus cinereus* Beauvois), southern bog lemming (*Synaptomys cooperi* Baird), and bald eagle (*Haliaeetus leucocephalus* L.), all vulnerable species, as well as a number of threatened plant species: orange agoseris (*Agoseris aurantiaca* [Hooker] Greene), small round-leaved orchid (*Galearis rotundifolia* [Banks ex Pursh] R.M. Bateman), calypso (*Calypso bulbosa* [L.] Oakes), man-hater sedge (*Carex petricosa* var. *misandroides* [Fernald] B. Boivin), slender-leaved sundew (*Drosera linearis* Goldie), Robinson's hawkweed (*Hieracium robinsonii* [Zahn] Fernald), little-tree willow (*Salix arbusculoides* Andersson), and McCalla's

willow (*Salix maccalliana* Rowlee). Due to its hydrographic feature, the Cree people have named the northern part of the park *E'weewach*, meaning 'where water originates,' thus paying tribute to an important watershed. During meetings with the Mistissini Cree whose traplines are within the limits of the future park, they identified significant cultural places within the park's boundaries (Cuerrier et al. 2012b). One salient feature was the presence of mature old growth stands of spruces. Cree people value these areas for their medicinal plants, woodland caribou, and hunting and trapping grounds. Indeed, bear skulls have been found attached to trees in some areas, indicating respect to animals and their spirits in order to thank the animal and allowing the people to continue hunting. The Tallymen (Cree stewards) have voiced their concerns over possible logging, mining, and dams. Community members were also concerned with ecotourism, which could potentially conflict with their own activities (BAPE 2006). Graves and other archaeological sites exist in the area, allowing the Cree to secure these sites so that Westerners will need permits to gain access. They are also asking for an additional expanse of the surrounding area to be preserved in order to improve its protection. Their concerns are merited, as demonstrated by mining exploration that has already taken a toll on the proposed park, reducing the area of the Témiscamie, and it is still unclear how much of the Témiscamie River will be included within the park. In meetings unrelated to the park, regarding medicinal plants and the community's interest in patenting traditional remedies, community members wanted to know if a patent could be used as a tool to protect areas where culturally important plants grow within the park (Cuerrier et al. 2012b).

The area encompassing the northern part of Albanel-Témiscamie-Otish is particularly notable for its old growth stands of white spruce (*Picea glauca* [Moench] Voss). This tree has been ranked high among other medicinal plants for helping diabetics to reduce their symptoms (Leduc et al. 2006), and further scientific findings have given support to Cree traditional medicine (Harris et al. 2008). Linking the Témiscamie River to L'Eau Froide Lake, this historical canoe travel road is also embedded in ancient forests. Both black spruce (*P. mariana* [Mill.] Britton, Sterns & Poggenb.) and white spruce, two cultural keystone species, have been spared from fire and logging. This travel route was privileged by First Nations and other settlers. Elders and Healers have mentioned the importance of keeping this route intact. Other sites known as repositories of collective memories in the park include *Wapushakamikw*, commonly known as the Hare's Den — a cavern where Cree people have prayed and held rituals. Cree legends also mention that a giant hare once inhabited the region (Hébert and Gagnon 2005). Another CKP site within the park's limits is Mistassini ('big rock'), which is well-known to Crees as it is the land feature that gave its name to the community of Mistissini. The area was historically important since it was a source of quartzite used for tools and weapons; this mineral constituted a tradegood that served to link the Cree to numerous other nations. Using the concept of Cultural Keystone Place as a tool to define and communicate the importance of this region may help the Cree to convince the ministry to reanalyze the park's boundaries.

With this last case we come back to the example that we presented earlier in the introduction, namely the Cree and Dene people of Fort McKay, where we describe the landscape as a complex network of nodes and routes. The Albnel-Témiscamie-Otish National Park is such an example, presenting different scales (see Hunn and Meilleur [2010] for a landscape ethnoecological classification): a cultural landscape with multiple places with high cultural value — all sites being connected by different routes, most importantly lakes and rivers. As we have seen, the Cree people view some places as highly protected while others are open to visitors.

Discussion: Cultural Keystone Places in Biocultural Conservation and Biocultural Restoration

One of the major roles we see for the application of CKPs is to provide a metaphorical designation for places of exceptional ecological and cultural value so that the depth of their roles in a people's cultural fabric can be more widely appreciated. Such places often encompass an entire complex of knowledge, practice and belief: language and vocabulary, stories and ceremonies, phenological knowledge, technical knowledge for sustainable food production, and approaches for resource management and stewardship (Berkes 2012; Turner and Turner 2008). Having a structured way to assess these cultural associations with particular places will assist in both regional and local land use planning processes, signaling a need for special consideration of particular landscapes to ensure their integrity into the future. Both the UN Convention on Biological Diversity and the UN Declaration on the Rights of Indigenous Peoples recognize cultural significance of particular places and habitats as being important and legitimate. Labeling a culturally valued and ecologically rich locale a "Cultural Keystone Place" can also enable more effective and meaningful communication about cultural ties and interactions with a particular landscape to decision-makers who might otherwise choose options that would destroy such places.

The advantages of the Cultural Keystone Place designation are many, ranging from supporting conservation efforts and protection for landscapes that are damaged or under threat, to aiding cross-cultural understanding in co-management arrangements, to helping to maintain a group's cultural integrity and resilience in the face of rapid change. We discuss each of these roles in the following sections.

CKP Designations Supporting Conservation Efforts

Besides the case studies provided, countless other examples of CKPs exist throughout North America, and beyond (Davis 2011; Gitga'at Nation and Coasts Under Stress 2003; Turner et al. 2011). While the three examples discussed relate to Indigenous communities, the CKP concept applies equally to non-Indigenous groups. CKPs all share a common feature of unique biocultural significance and many have retained their essential integrity even in modern times. Yet, despite their importance to Indigenous and other local communities, many of these places have been damaged, destroyed, or are currently under serious threat from development. As noted above, the Moose Lake area, in the heart of Fort McKay's traditional territory, is at risk of significant change from the oil sands development that has already severely impacted the ecological and cultural

integrity of the adjacent region. Cumulative and project-specific impacts on landscape surrounding the Moose Lake area are likely to make it significantly more difficult for people to hunt, fish, and harvest their plant resources. Another example is *Teztan Biny* (Fish Lake), in the Tsilhqot'in Nation homeland of British Columbia. *Teztan Biny* is threatened by the proposed development of a large open-pit gold-copper mine, which, if allowed, would significantly alter the lake ecosystem, severing the deep and enduring connection the Tsilhqot'in have with this place of unique and special significance (Cariboo Chilcotin Conservation Society 2013). In this case, an argument for *Teztan Biny* as a Cultural Keystone Place had some influence on the decision of the Joint Review Panel to reconsider the mine application (revised from the original application), which in the end recommended against construction of the mine (Joint Review Panel 2013). In February 2014, based on the Joint Review Panel recommendation, the Federal Environment Minister announced the rejection of the mine construction.

Importantly, traditional activities involve more than simply gathering resources from a place; they necessitate having confidence that the resources are safe to consume, that they are available in quantities that do not violate traditional management practices, and that the land is free from the noise, sounds, and contaminating smells of industrial development. Designating locales threatened with development as Cultural Keystone Places may help raise their profile among members of the public and policy-makers, divert or mitigate planned developments, and help maintain their cultural and ecological integrity. In some cases, as with the *Eeyou Istchee* example described previously, the designation can assist in identifying and planning parks or other protected areas.

CKPs Aiding Cross-Cultural Understanding In Co-Management

Indigenous and local peoples across the globe have developed many practices and traditions that ultimately conserve and sustain the resources and the ecosystems on which they rely. Although not always regarded as biological conservation or ecological restoration per se, traditional land and resource management systems have been documented as supporting meaningful and long-standing restoration and conservation goals (Berkes 2012; Berkes and Folke 1998; Nazarea 1999; Turner et al. 2000; Turner 2014). In many cases, successful co-management arrangements have been developed in which traditional systems are recognized in parallel with, or integrated with, Western resource and protected area management approaches (Johnson and Hunn 2010; Middleton 2011), as well as in ecological restoration (Senos et al. 2006). The CKP designation can assist with the communication of mutually held values between co-management and biocultural restoration partners.

Using the concept of Cultural Keystone Places to map the cultural aspects held by stakeholders would ease discussion, provide guidelines, and create a tool all parties could refer to when assessing the use and development of a specific territory. This could prove of great interest to governments as well, and one need only to consult the proposed Plan Nord in Northern Québec for such a possibility. For those who do not inhabit the area situated at the core of Northern Québec, it may not be well-known aside from the knowledge of a few mining explorations and even fewer research projects. Using the concept of CKP as a collaborative

tool within a participatory framework, Northerners (First Nation, Inuit, and local people in general) could address the sustainable development of the area, mapping key places not to be disturbed. Co-management leading to co-decision making is integral to CKPs.

CKPs helping to maintain a group's cultural integrity and resilience

Today as never before, young Indigenous people are losing connections with their homelands (Cuerrier et al. 2012a; Turner et al. 2011; Turner et al. 2013b). It is essential for children and youth to have opportunities for experiential learning out on the land if they are going to be able to practice and continue their culture. They also need to hear the stories of these places in situ and to learn first-hand from elders and cultural experts in ways that embody the places in their minds, in ways that "situate" their knowledge (Nabhan 1997; Nazarea 1999). Educational institutions and school curricula can help young people to build and re-build connections to their ancestral lands, through a focus on Cultural Keystone Places, thus helping the process of identity formation. Indeed, a youth attending a workshop in Nain, Labrador (Cuerrier et al. 2012a; Downing et al. 2013:28) with her elders evoked her experience by underlying that it "made me feel like me and proud and good about myself." She added that we need to "Go home where the heart is." A Cultural Keystone Place can be seen as representing the "heart" of a people's territory. Concomitantly, Lekwungen elder Joan Morris (*Sellemah*) voices her desire to see the relationship of her people with the ecosystems at *Tl'chés*, her home-island, restored, instructing younger Lekwungen on principles of "getting back to our roots" for healthier and more sustainable ways of life (Gomes 2012). A CKP can be seen as the *heart* and the *roots* of a people's territory.

Unfolding the Cultural Keystone Place concept

It must be acknowledged that frequently Cultural Keystone Places are strongly *contested spaces*, desired by more than one group, often at cultural and geographical crossroads (Ruru et al. 2011). Many of the traits that render places so desirable to one group of people – presence of water, fertile soils, and productive and diverse species, for example – also make them attractive to others. For this reason, a group's prime lands have often been appropriated by newcomers, including settlers, during the colonial era of European expansion. Often the newcomers were oblivious to some of the values of these places, and they ended up transforming these places to other purposes (Lutz 2009; Turner 2014). Not only did they often exclude the original occupiers, but they frequently prohibited the very activities – such as landscape burning – that shaped the biocultural features of the place to begin with (Beckwith 2004; Turner 1999).

Another trait of CKPs that must be emphasized is that they represent far more than just a physical presence of particular species and geographical features. Just as Platten and Henfrey (2009) asserted for Cultural Keystone Species, that these should not be simply regarded as biological species important in a culture per se, but rather as a complex of both material and non-material system elements, Cultural Keystone Places, too, embody profound non-tangible aspects. In societies that embrace kincentricity (Salmón 2000) – in which all species and other entities are regarded as our close relatives, or kin, to which we have responsibilities for

respect and care – all places, and especially Cultural Keystone Places, must be regarded as the homes of our non-human relatives as well as ourselves, and therefore they take on multiple meanings, including deep spiritual attachments which are often difficult to express to those outside of a given culture. It is perhaps ironic, then, that some of these places become appropriated as parks and protected areas, such as in the case of Discovery Island at *Tl'chés*, with high tourism values, but without recognition of their sacred nature to the original occupants. Today, with the rights of Indigenous Peoples becoming more widely recognized, efforts are underway in many parts of the world to re-claim and re-indigenize places by re-applying their traditional names and making claims for special areas that had been taken from them in the past (Mameamskum et al. 2010; Ruru et al. 2011).

The linkages between and among Cultural Keystone Places should also be considered in the landscape; often CKPs occur in constellations or groupings of sites and features: multi-scalar locales that reinforce each other ecologically and culturally and are often linked by transportation corridors – trails, lakes, and rivers, for example (having their own biocultural importance). Thus, a corollary to Cultural Keystone Places would be the recognition of complexes or mosaics of linked CKPs over an entire territory or region (as in the case of the Albnel-Témiscamie-Otish Park), calling for recognition and protection at broader scales. Nor should it be assumed that the only culturally important places and landscapes are those that fit under the CKP designation. Recognizing that *all* features and locales within a people's traditional territory have significance is essential; otherwise we approach a situation commonly seen in western society, in which a few places are set aside as parks and conservation areas while the rest of the landscape is open to damage and destruction. Following a widespread Indigenous perspective, *all* species and *all* habitats need to be respected and deserve special care (Clayoquot Scientific Panel 1995). Therefore, the designation of Cultural Keystone Places is not enough on its own without the input and decision-making power of First Nations being part of the equation in land use planning practices.

Conclusion

In sum, we need to recognize the close and inextricable relationship between biological diversity and cultural diversity and that there are deep threats to both in the modern world. Combating biodiversity loss cannot be undertaken effectively without addressing losses to cultural diversity, because in many cases, cultural knowledge and wisdom, if applied in locally relevant contexts and scales, can actually sustain and promote biological diversity (Anderson 2005; Berkes 2012; Minnis and Elisens 2000). Nor can losses to language and cultural diversity be addressed without addressing environmental deterioration and loss of species and habitats, since these are so integral to all aspects of Indigenous and local societies (Maffi and Woodley 2010). Both places and the peoples who have developed detailed place-based knowledge systems must be thoroughly supported if humans are to avoid a continued downward-spiraling of social and environmental well-being. The Cultural Keystone Place concept can help in these efforts.

A CKP as proposed here is not only a locale where cultural keystone species may occur, but also a place that carries a sense of homeland, the *oikos* (house) in the

landscape (Johnson and Hunn 2010), encompassing cultural, historical, social, ecological and economic values. Because of this role, it has a disproportionate or irreplaceable effect on the continuation of a people's culture and, ultimately, on their social-ecological resilience. Therefore, a CKP is a place that is central to the safeguarding of the cultural identity of a people, generally for representing a locale with vital historical and cultural roles, where cultural memory and practices can be accessed, allowing for renewal of cultural, ecological, and socioeconomic processes.

Balancing economic development and conservation over vast areas is not simple and would gain much from knowing where CKPs are situated, since they touch all of us, and especially Indigenous and local peoples throughout the world. The three case examples provided show commonalities in their biocultural values, and they exemplify how such special places may be identified and labeled to promote their conservation, cooperative management, and experiential, culturally guided place-based education for younger generations of indigenous and local communities. In short, the concept of CKP heightens conservation and restoration values of these particular places, especially for its focus on long-standing, situated social-ecological processes.

Acknowledgments

We are grateful to our Indigenous colleagues and cultural specialists for sharing their insights with us over many years of collaboration; particular thanks to Lekwungen elder Joan Morris (*Sellemah*), Eeyouch elders Emma and René Coon Come as well as Charlotte and Johnny Husky Swallow, and numerous Fort McKay elders and youth who have shared their stories of the significance of Moose Lake. Alain Cuerrier wishes to acknowledge Alain Hébert and Jean Gagnon (ministère du Développement durable, de l'Environnement, de la Faune et des Parcs [MDDEFP]) for their support and openness. He also wishes to thank Alain Hébert for providing the picture of Témiscamie River. Thank you to Pamela Spalding for editorial contributions. Turner's work was supported by grants from the Social Sciences and Humanities Research Council of Canada (SSHRC), and the Tula Foundation, with special thanks to Dr. Eric Peterson and Christina Munck. Cuerrier's projects were supported by the Canadian Institutes of Health Research (CIHR) and the MDDEFP.

References Cited

- Anderson, M. K. 2005. *Tending the Wild: Native American Knowledge and the Management of California's Natural Resources*. University of California Press, Berkeley.
- BAPE. 2006. *Projet de création du parc national Albanel-Témiscamie-Otish*. Bureau d'audiences publiques sur l'environnement (BAPE), Québec.
- Basso, K. 1996. *Wisdom Sits in Places: Landscape and Language among the Western Apache*. University of New Mexico Press, Albuquerque.
- BC Parks. 2010. Discovery Island Marine Provincial Park. British Columbia Ministry of Environment. [Web page]. http://www.env.gov.bc.ca/bcparks/explore/parkpgs/discovery_is/. Accessed 05/03/13.
- Beckwith, B. 2004. "The Queen Root of This Clime": Ethnoecological Investigations of Blue Camas (*Camassia leichtlinii* (Baker) Wats., *C. quamash* (Pursh) Greene; Liliaceae) and its Landscapes on Southern Vancouver Island, British Columbia. PhD Thesis. University of Victoria, Victoria.
- Berger, T. R. 1999. *Long and Terrible Shadow. White Values, Native Rights in the Americas, 1492-1992*. Douglas & McIntyre, Vancouver, British Columbia.
- Berkes, F. 2012. *Sacred Ecology: Traditional Ecological Knowledge and Resource Management*. 3rd Edition. Taylor & Francis, Philadelphia, PA.
- Berkes, F., J. Colding and C. Folke, eds. 2003. *Navigating Social-Ecological Systems: Building*

- Resilience for Complexity and Change*. Cambridge University Press, Cambridge, UK.
- Berkes, F., and C. Folke, eds. 1998. *Linking Social and Ecological Systems: Management Practices and Social Mechanisms for Building Resilience*. Cambridge University Press, Cambridge, UK.
- Berkes, F., and N. J. Turner. 2006. Knowledge, Learning and the Evolution of Conservation Practice for Social-Ecological System Resilience. *Human Ecology* 34:479–494.
- Berryman, S., A. Garibaldi, J. Straker, J. Nishi, and B. Stelfox. March 2013. *A Community Approach for Landscape Planning*. Integral Ecology Group and ALCES. Prepared for the Fort McKay Sustainability Department.
- Booth, A. L., and N. W. Skelton. 2011. "You Spoil Everything!" Indigenous Peoples and the Consequences of Industrial Development in British Columbia. *Environment, Development and Sustainability* 13:685–702. DOI:10.1007/s10668-011-9284-x
- Brown, F., and K. Brown, and compilers. 2009. *Staying the Course, Staying Alive. Coastal First Nations Fundamental Truths: Biodiversity, Stewardship and Sustainability*. Biodiversity BC, Victoria.
- Cariboo Chilcotin Conservation Society. 2013. Concerns About the New Prosperity Mine Proposal. Letter to the Editor, Williams Lake News, 19 February 2013. [web page]. <http://welcometowilliamslake.ca/index.php/letters/89-letter-to-the-editor/6706-new-properity-mine.html> Accessed on 04/25/13.
- Clayoquot Scientific Panel. 1995. First Nations' Perspectives on Forest Practices in Clayoquot Sound. Report 3 (with Appendices). Cortex Consulting and Government of British Columbia, Victoria, BC.
- Clinton, W. J. 1996. Presidential Documents: Indian Sacred Sites. *Federal Register* 61: 1–2. [web page]. <http://www.gpo.gov/fdsys/pkg/FR-1996-05-29/pdf/96-13597.pdf> Accessed on 12/15/14.
- COSEWIC. 2009. Assessment and Status on the California Buttercup *Ranunculus californicus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. [web page]. <http://www.worldcat.org/title/cosewic-assessment-and-update-status-report-on-the-california-buttercup-ranunculus-californicus-in-canada/oclc/489951877>. Accessed on 10/16/13.
- Cuerrier, A., A. Downing, J. Johnstone, L. Hermanutz, L. Siegwart Collier, and Elders and Youth Participants of Nain and Old Crow. 2012a. Our Plants, Our Land: Bridging Aboriginal Generations Through Cross-Cultural Plant Workshops. *Polar Geography* 35:195–210.
- Cuerrier, A., A. Downing, E. Patterson, and P. S. Haddad. 2012b. Aboriginal Antidiabetic Plant Project with the James Bay Cree of Québec: An Insightful Collaboration. *Journal of Enterprising Communities: People and Places in the Global Economy* 6:251–270.
- Davis, W. 2011. *The Sacred Headwaters. The Fight to Save the Stikine, Skeena, and Nass*. Greystone Books, Vancouver, BC.
- Deur, D., and N. J. Turner, eds. 2005. *Keeping It Living: Traditions of Plant Use and Cultivation on the Northwestern Coast of North America*. University of Washington Press, Seattle and UBC Press, Vancouver.
- Downing, A., A. Cuerrier, L. Hermanutz, C. Clark, A. Fells, and L. Siegwart Collier. 2013. *Community of Nain, Labrador: Plant Uses Booklet*. Institut de recherche en biologie végétale, Montréal, QC.
- Fort McKay First Nation (FMFN). 1994. *There is Still Survival Out There*. The Arctic Institute of North America, Calgary.
- Garibaldi, A. 2009. Moving from Model to Application: Cultural Keystone Species and Reclamation in Fort McKay, Alberta. *Journal of Ethnobiology* 29:323–338.
- Garibaldi, A., and T. Behr. 2013. Dover Commercial Project Traditional Use Update Report. Prepared for the ERCB on behalf of the Community of Fort McKay. ERCB application No. 16736282. March 2013.
- Garibaldi, A., and N. J. Turner. 2004. Cultural Keystone Species: Implications for Ecological Conservation and Restoration. *Ecology and Society* 9(3). [online]. URL: <http://www.ecologyandsociety.org/vol9/iss3/>
- Gitga'at Nation and Coasts Under Stress. 2003. Gitga'ata Spring Harvest - Traditional Knowledge of Kiel. Gitga'at Nation, Hartley Bay; Coasts Under Stress, University of Victoria; and Sierra Club of British Columbia, Victoria. Directed by Robin June Hood, filmed by Ben Fox. Distributed by McNabb Connolly, Mississauga, ON.
- Gomes, T. C. 2012. Restoring Tl'chés: An Ethnoecological Restoration Study in Chatham Island, British Columbia, Canada. Unpublished Masters Thesis. University of Victoria, Victoria, BC.
- Gomes, T. C. 2013. Novel Ecosystems in the Restoration of Cultural Landscapes of Tl'chés, West Chatham Island, British Co-

- lumbia, Canada. *Ecological Processes* 2:15. DOI:10.1186/2192-1709-2-15.
- Harris, C. S., J. Lambert, A. Saleem, L. Martineau, A. Cuerrier, P. S. Haddad, J. T. Arnason, and S. A. L. Bennett. 2008. Anti-Diabetic Activity of Extracts from Needle, Bark, and Cone of *Picea glauca* (Minhikw): Organ Specific Protection from Glucose Toxicity and Glucose Deprivation. *Pharmaceutical Biology* 46:126–134. DOI:10.1080/13380200701735080
- Hébert, A., and J. Gagnon. 2005. *E'weewach, là d'ou' originent les eaux: projet de parc Albanel-Témiscamie-Otish*. Gouvernement du Québec, Québec.
- Higgs, E. S. 2003. *Nature by Design: People, Natural Process and Ecological Restoration*. MIT Press, Cambridge, Massachusetts.
- Hobbs, R., E. Higgs, and A. Harris. 2009. Novel Ecosystems: Implications for Conservation and Restoration. *Trends in Ecology and Evolution* 24:500–605. DOI:10.1016/j.tree.2009.05.012
- Hobbs, R., E. Higgs, and C. Hall, eds. 2013. *Novel Ecosystems: Intervening in the New Ecological World Order*. Wiley-Blackwell, New York.
- Hunn, E. S., and B. A. Meilleur. 2010. Toward a theory of landscape ethnoecological classification. In *Landscape Ethnoecology. Concepts of Biotic and Physical Space*, edited by L. M. Johnson and E. S. Hunn,, pp. 15–26. Volume 14. Studies in Environmental Anthropology and Ethnobiology. Berghahn Books, New York and Oxford.
- Ingold, T. 2000. *The Perception of the Environment: Essays in Livelihood, Dwelling and Skill*. Routledge Press, New York.
- Ignace, R. E. (Stsmé'ecqen). 2008. Our Oral Histories are Our Iron Posts: Secwepemc Stories and Historical Consciousness. Unpublished Doctoral Dissertation, Department of Sociology and Anthropology, Simon Fraser University, Burnaby, BC.
- Jenness, D. n.d. [ca. 1930]. *The Saanich Indians of Vancouver Island*. Unpublished manuscript, Royal British Columbia Museum, pp. 1–10.
- Johnson, L. M. 2010. *Trail of Story, Traveller's Path: Reflections on Ethnoecology and Landscape*. Athabasca University Press, Edmonton, AB.
- Johnson, L. M., and E. S. Hunn, eds. 2010. *Landscape Ethnoecology. Concepts of Biotic and Physical Space*. Volume 14. Studies in Environmental Anthropology and Ethnobiology. Berghahn Books, New York and Oxford.
- Joint Review Panel, and New Prosperity Mine. 2013. Report on New Prosperity Mine Application, October 31, 2013.
- Lea, T. 2006. Historical Garry Oak Ecosystems of Vancouver Island, British Columbia, Pre-European Contact to the Present. *Davidsonia* 17:34–50.
- Leduc, C., J. Coonishish, P. Haddad, and A. Cuerrier. 2006. Plants used by the Cree Nation of Eeyou Istchee (Quebec, Canada) for the Treatment of Diabetes: A Novel Approach in Quantitative Ethnobotany. *Journal of Ethnopharmacology* 105:55–63. DOI:10.1016/j.jep.2005.09.038
- Lutz J. S. 2009. *Makúk: A New History about Aboriginal-White Relations*. UBC Press, Vancouver.
- Maffi, L. 2005. Linguistic, Cultural, and Biological Diversity. *Annual Review of Anthropology* 34:599–617. DOI:10.1146/annurev.anthro.34.081804.120437
- Maffi, L. 2012. *Biocultural Diversity Conservation*. Earthscan, London, UK.
- Maffi, L., and E. Woodley. 2010. *Biocultural Diversity Conservation: A Global Sourcebook*. Earthscan and IUCN, London, UK.
- Mameamskum, J., T. M. Herrmann, and B. Füleki. 2010. The “Caribou Heaven”: Recognizing a Sacred Site and Integrating Naskapi Ecological Knowledge in the Management of the Proposed Kuururjuaq National Park (Nunavik, Canada). *Policy Matters* 17:120–126.
- Martijn, C. A., and E. S. Rogers. 1969. *Mistassini-Albanel: Contributions to the Prehistory of Québec*. Centre d'études Nordiques, Université Laval (Series Travaux divers, No. 25), Québec.
- McCormack, P. 2013. The Treaty Rights of Fort McKay First Nation, with Special Reference to the Moose Lake Area. Research Report. Prepared for the ERCB on behalf of the Community of Fort McKay. ERCB Application No. 1673682. March 22, 2013.
- MDDEFP. 2002. Parc national Albanel-Témiscamie-Otish project. [web page]. http://www.mddep.gouv.qc.ca/parcs/ato/con-ato_en.htm. Accessed 10/16/13.
- Middleton, B. R. 2011. *Trust in the Land: New Directions in Tribal Conservation*. The University of Arizona Press, Tucson.
- Mills, L. S., M. E. Soule, and D. F. Doak. 1993. The Keystone Species Concept in Ecology and Conservation. *BioScience* 43:219–224.
- Minnis, P. E., and W. J. Elisens, eds. 2000. *Biodiversity and Native America*. University of Oklahoma Press, Norman, OK.

- Nabhan, G. P. 1997. *Cultures of Habitat: On Nature, Culture and Story*. Counterpoint, Washington, DC.
- Nazarea, V. D., ed. 1999. *Ethnoecology. Situated Knowledge/Located Lives*. University of Arizona Press, Tucson, AZ.
- Paine, R. 1969. A Note on the Trophic Complexity and Community Stability. *The American Naturalist* 103:91–93.
- Platten, S., and T. Henfrey, T. 2009. The Cultural Keystone Concept: Insights from Ecological Anthropology. *Human Ecology* 37:491–500.
- Posey, D. A. 1988. The Declaration of Belém. In *Proceedings of the First International Congress of Ethnobiology*, edited by D. A. Posey and W. Overal. Museu Paraense Goeldi, Belém, Brazil.
- Posey, D. A. 1999. Cultural and Spiritual Values of Biodiversity. A Complementary Contribution to the Global Biodiversity Assessment. In *Cultural and Spiritual Values of Biodiversity* edited by D. A. Posey, pp. 1–19. UNEP and Intermediate Technology Publications, London, UK.
- Raymond, C. M., K. Benessaiah, J. Bernhardt, G. Singh, J. Y. Tam, J. Levine, N. J. Turner, H. Nelson, B. Norton, and K. Chan. 2013. Ecosystem Services and Beyond: Using Multiple Metaphors to Understand Human-Environment Relationships. *BioScience* 63:536–546. DOI:<http://dx.doi.org/10.1525/bio.2013.63.7.7>
- Ross, M. L. 2005. *First Nations Sacred Sites in Canada's Courts*. UBC Press, Vancouver.
- Ruru, J., J. Stephenson, and M. Abbott, eds. 2011. *Making Our Place: Exploring Land-Use Tensions in Aotearoa New Zealand*. Otago University Press, Dunedin, New Zealand.
- Salmón, E. 2000. Kincentric Ecology: Indigenous Perceptions of the Human-Nature Relationship. *Ecological Applications* 10:1327–1332.
- Senos, R., F. Lake, N. J. Turner, and D. Martinez. 2006. Traditional Ecological Knowledge And Restoration Practice in the Pacific Northwest. In *Encyclopedia for Restoration of Pacific Northwest Ecosystems* edited by D. Apostol, pp. 393–426. Island Press, Washington, DC.
- Society for Ecological Restoration International (SER). 2004. *The SER International Primer on Ecological Restoration*. Science & Policy Working Group. Version 2. [web page]. <http://www.ser.org/resources/resources-detail-view/ser-international-primer-on-ecological-restoration>. Accessed 01/10/15.
- Stedman, R. C. 2013. Is it Really Just a Social Construction?: The Contribution of the Physical Environment to Sense of Place. *Society & Natural Resources: An International Journal* 16:671–685. DOI:10.1080/08941920309189
- Thom, B. 2005. *Coast Salish Senses of Place: Dwelling, Meaning, Power, Property and Territory in the Coast Salish World*. PhD Dissertation, Department of Anthropology, McGill University, Montreal, QC.
- Thornton, T. F. 2008. *Being and Place Among the Tlingit*. University of Washington Press, Seattle.
- Tobias, T. 2010. *Living Proof: The Essential Data-Collection Guide for Indigenous Use-and-Occupancy Map Surveys*. Union of BC Indian Chiefs and Ecotrust, Vancouver.
- Turner, N. J. 1999. "Time to Burn": Traditional Use of Fire to Enhance Resource Production by Aboriginal Peoples in British Columbia. In *Indians, Fire and the Land in the Pacific Northwest* edited by R. Boyd, pp. 185–218. Oregon State University Press, Corvallis.
- Turner, N. J. 2005. *The Earth's Blanket. Traditional Teachings for Sustainable Living*. Douglas & McIntyre, Vancouver, BC and University of Washington Press, Seattle.
- Turner, N. J. 2012. Cultural Keystone Places: Implications for Ecological Conservation and Cultural Renewal. Presentation to Society of Ethnobiology Annual meetings, Denver, Colorado.
- Turner, N. J. 2014. *Ancient Pathways, Ancestral Knowledge: Ethnobotany and Ecological Wisdom of Indigenous Peoples of Northwestern North America*. McGill-Queen's Native and Northern Series Number 74 McGill-Queens University Press, Montreal, Québec.
- Turner, N. J., and F. Berkes. 2006. Coming to Understanding: Developing Conservation Through Incremental Learning in the Pacific Northwest. *Human Ecology* 34:495–513.
- Turner, N. J., I. J. Davidson-Hunt, and M. O'Flaherty. 2003. Living on the Edge: Ecological and Cultural Edges as Sources of Diversity for Social-Ecological Resilience. *Human Ecology* 31(3):439–463.
- Turner, N. J., M. B. Ignace, and R. Ignace. 2000. Traditional Ecological Knowledge and Wisdom of Aboriginal Peoples in British Columbia. *Ecological Applications* 10:1275–1287.
- Turner, N. J., R. Gregory, C. Brooks, L. Failing, and T. Satterfield. 2008. From Invisibility to Transparency: Identifying the Implications (of invisible losses to First Nations Communities). *Ecology and Society* 13(2): 7. [online]

- URL:<http://www.ecologyandsociety.org/vol13/iss2/art7/>
- Turner, N. J., D. Deur, and D. Lepofsky. 2013a. Plant Management Systems of British Columbia First Peoples. *BC Studies* 179:107–134. Special Issue.
- Turner, N. J., D. Deur, and C. Mellott. 2011. “Up on the Mountain”: Ethnobotanical Importance of Montane Ecosystems in Pacific Coastal North America. *Journal of Ethnobiology* 31:4–43.
- Turner, N. J., M. Plotkin, and H. V. Kuhnlein. 2013b. Global Environmental Challenges to the Integrity of Indigenous Peoples’ Food Systems. In *Indigenous Peoples’ Food Systems & Well-Being: Interventions & Policies for Healthy Communities* edited by H. V. Kuhnlein, B. Erasmus, D. Spigelski and B. Burlingame, pp. 23–38. Food and Agricultural Organization of the United Nations, Rome, Italy and Centre for Indigenous Peoples’ Nutrition and Environment, Montreal, QC.
- Turner, N. J., and K. L. Turner. 2008. “Where Our Women Used to Get the Food”: Cumulative Effects and Loss of Ethnobotanical Knowledge and Practice: Case Studies From Coastal British Columbia. *Botany* 86:103–115. DOI:10.1139/B07-020
- UNEP. 2007. Global Environment Outlook: Environment for Development, Nairobi. [web page]. http://www.unep.org/geo/geo4/report/GEO-4_Report_Full_en.pdf. Accessed 10/16/13.
- UNESCO. 2010. World Heritage Convention. [web page]. <http://whc.unesco.org/en/culturallandscape/> Accessed 10/16/13.