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"It's so different today": Climate change and indigenous lifeways in British Columbia, Canada

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ABSTRACT

Indigenous Peoples of British Columbia have always had to accommodate and respond to environmental change. Oral histories, recollections of contemporary elders, and terms in indigenous languages all reflect peoples' responses to such change, especially since the coming of Europeans. Very recently, however, many people have noted signs of greater environmental change and challenges to their resilience than they have faced in the past: species declines and new appearances; anomalies in weather patterns; and declining health of forests and grasslands. These observations and perspectives are important to include in discussions and considerations of global climate change.

1. Introduction

> "People are saying they are seeing robins. They don't even know what to do with this weather!" (Helen Clifton, pers. comm., 2003).

All over the world, including across Canada, Indigenous and local peoples have noted recent changes in weather patterns and have observed their effects on species' life cycles, productivity and interrelationships. These changes are difficult to document systematically because they are diverse, and play out over different scales of time and space. Nevertheless, the general consensus is that change is occurring, and everywhere people are concerned and anxious about its effects on the plants and animals they continue to rely upon (Krupnik and Jolly, 2002; Ashford and Castleden, 2001; Anonymous, 2001; Prince Albert Grand Council, 2005; Spittlehouse, 2005; Harris et al., 2006). Global climate change is predicted to be most pronounced in far northern ecosystems (Maxwell, 1992; Oechel et al., 1997). However, British Columbia (BC), a temperate-to-northern region (latitude 49–60°N) with high climatic variability related to its coastline and its mountainous terrain, is also at considerable risk.

Indigenous Peoples have occupied what is now British Columbia and neighbouring areas for over 10,000 years, developing many distinctive and successful lifeways through use of local resources and adaptation to the landscapes and environments in which they have resided. Over 30 distinct language groups are recognized in British Columbia alone. Over the millennia, these people have developed special technologies, modes of transportation, lifestyles, social organization, and, notably, ways of modifying and managing their environments and populations of plant and animal species within their territories (Deur and Turner, 2005; Turner and Berkes, 2006). Although their lives changed dramatically with the arrival of the Europeans to the region in the late 1700s, many communities have continued a significant portion of their original food harvesting and other cultural practices up to the present. First Nations in British Columbia and Aboriginal peoples of Canada in general hold distinct Aboriginal and treaty rights protected by the Constitution Act of 1982, including an inherent, but relatively undefined, right to self-government (Canada, Government of 1982). Nevertheless, indigenous Canadians, like indigenous Australians and many other indigenous populations worldwide, remain vulnerable to poor socioeconomic conditions, with relatively poor health and nutritional status, high unemployment, cyclical poverty and low levels of education (Indian and Northern Affairs Canada, 1996). The Aboriginal population in Canada is approximately 3–4% of the total Canadian population.

BC Indigenous Peoples rely strongly on anticipated seasonal abundance of particular resources, and depend on predictable rainfall, snowpack and montane glaciers to maintain critical habitat for Pacific salmon and other important resource species. Along the coast, people travel by boat and rely on their generations-old knowledge of weather patterns, ocean currents and tides to keep them safe on the water. Now, these features are changing, becoming less predictable, and people feel more

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vulnerable and at greater risk today, despite modern weather prediction methods, improved communication, and enhanced technologies.

With growing global recognition of climate change as a real, ongoing and accelerating phenomenon (IPCC, 2007), there is a need to understand what effects are anticipated, and how human societies may be able to adapt, gain resilience, and ameliorate the impacts on other lifeforms, while we grapple with the overall issue of reducing our dependence on fossil fuels and heading off large-scale disaster in the coming years.

Turning for help and insight to Indigenous Peoples makes great sense. These are people who are long-term residents of a place, who have learned through systems of knowledge, practice and belief to conserve, maintain and promote their resources *in situ* (cf. Anderson, 2005; Deur and Turner, 2005; Turner and Berkes, 2006), and who have developed a capability for resilience (a capacity to absorb disturbance and reorganize while undergoing change). Notably, people who have lived for generations in constantly changing environments, such as along coastlines, or who venture into remote, diverse mountain habitats, are likely to have the most robust strategies for facing unusual circumstances, and, in the event that these occur, are less likely to be taken by surprise than those used to constancy and predictability in their lives.

This paper discusses adaptations to environmental change in the history of BC Indigenous Peoples, beginning with a brief note about the approach we take and the nature of Traditional Ecological Knowledge systems. It then examines indigenous knowledge relating to weather and environments. Thirdly, it addresses the importance of considering Traditional Ecological Knowledge and observations in assessing and coping with climate change, and finally, using three case examples, it suggests ways in which indigenous knowledge can be appropriately recognized and incorporated into strategies for adapting to and reversing climate change.

2. Our approach

In this paper we focus on personal experiences, knowledge and observations of Helen Clifton, an Elder of the Gitga'at (Coast Tsimshian) Nation of Hartley Bay, British Columbia (Fig. 1), and other members of the Gitga'at and neighbouring communities, as documented over the past 8 years of collaborative, participatory ethnoecological research on environments and indigenous knowledge conducted by Nancy Turner and colleagues (Turner and Thompson, 2006; Turner et al., 2008). Over this time, observing and living with anomalies in weather, animal behaviour and overall environmental health, and the impacts of these factors on her peoples' ability to harvest the food they need and to carry out cultural activities, have been primary and ongoing concerns of Helen Clifton. Here, we attempt to place her concerns in the broader context of resource use, and of Indigenous Peoples' knowledge and experience of environmental change – most notably climate change – in British Columbia and beyond.

Fig. 1. Gitga'at elder Helen Clifton, from Hartley Bay, British Columbia, hanging thin strips of halibut (*wooks*) to dry at the spring seaweed camp of K'yel, Princess Royal Island.

Helen Clifton's knowledge is part of a collective body of knowledge, or knowledge system known as Traditional Ecological Knowledge (TEK; also Indigenous Environmental Knowledge). TEK is defined by Berkes (2008) as: "a cumulative body of knowledge, practice and belief, evolving by adaptive processes and handed down through generations by cultural transmission" (see also Turner and Berkes, 2006; Turner et al., 2008). As well as specific and practical knowledge – for example of how to identify, harvest and process edible, medicinal and material plants – TEK embodies philosophical perspectives, as well as modes for transmission of information and worldviews. One can argue that TEK systems are value-laden, consisting of inextricably integrated observation, experience, beliefs and philosophies. In this sense they differ from scientific knowledge, for which striving for objectivity is a key element. Values and beliefs, however, can affect human behaviour, and hence, they may have a specific role to play in responses to climate change. For example, one concept that is widely recognized in indigenous worldviews has been termed "kincentric ecology" (Salmón, 2000; Senos et al., 2006). In this view, other lifeforms – both plant and animal – and even non-living entities such as the sun, mountains, waters and winds, are regarded as having human traits, and as being, in fact, our relatives: generous relatives who give of themselves so that humans may live. Such a concept can help human society in general to better understand the close connectivity between ourselves and the other lifeforms with whom we share the planet, and through this understanding may help shape our behaviour in a way that takes this other life and environmental entities essential to us into account. The concept of looking back and forward for seven generations in planning and decision-making, a practice widely accepted in the Mohawk TEK for example, is also a useful and relevant view in general considerations of climate change.

3. History of environmental change and resilience

Indigenous Peoples of northwestern North America have always had to accommodate and respond to environmental change. Archaeological and paleoecological records extending back over 10,000 years, as well as oral traditions, narratives, discourse and vocabulary, provide a picture of dynamic relationships between shifting ecosystems, human settlement, resource use and availability, and technological and social developments. For example, pollen records show that western red-cedar (*Thuja plicata*), the most important tree for coastal First Nations and a source of many key materials – wood for canoes, houses, totem poles, boxes; bark for roofing; inner bark for mats, baskets, clothing; and branches and roots for rope and baskets (Turner, 1998) – predominated in coastal forests only between 5000 and 2500 years ago, over 5000 years after people had settled in this region (Hebda and Mathewes, 1984). Sea level fluctuations are another example of major changes that Indigenous Peoples have endured and accommodated in the past millennia; from Haida Gwaii to Vancouver Island, populations have lived with sea levels that are both higher (by as much as 100 m in some places) and lower (by 100–125 m or more at some points) than at present (Ames and Maschner, 1999; Fedje and Mathewes, 2005; Hebda and Rouse, 1979; McMillan, 1999; Natural Resources Canada, 2005).