“It’s so different today”: Climate Change and Indigenous Lifeways in British Columbia, Canada

Ethnoecology and Climate Change (April 2007), Environmental Change Institute, University of Oxford, UK

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Helen Clifton, my co-author

- *“People are saying they are seeing robins. They don’t even know what to do with this weather!”* (Helen Clifton, pers. comm., February 5, 2003)

Robin photo by Glenn Bartley

Acknowledgements

- Chief Johnny Clifton, Belle Eaton, Tina Robinson, and Ernie Hill Jr. (Gitga'at Nation); Barbara Wilson (Haida); Deanna Nyce (Nisga'a); Cyril Carpenter, Pauline Waterfall (Heiltsuk); Kim Recalma-Clutesi (Ogwalogwa), Dr. Daisy Sewid-Smith (Mayanilth), Chief Adam Dick (Kwaxsistala) (Kwakwaka'wakw); Dr. Richard Atleo (Ahousaht, Nuu-chah-nulth); Chief Charlie Jones (Pacheedaht); Elsie Claxton, Earl Claxton Jr., and Philip Paul (Saanich); Annie York (Nlaka'pmx); Dr. Mary Thomas, Chief Ron Ignace (Secwepemc); and Ruth Welsh (Gwich'in).

Thanks to:

Cheryl Reece, Gitga'at

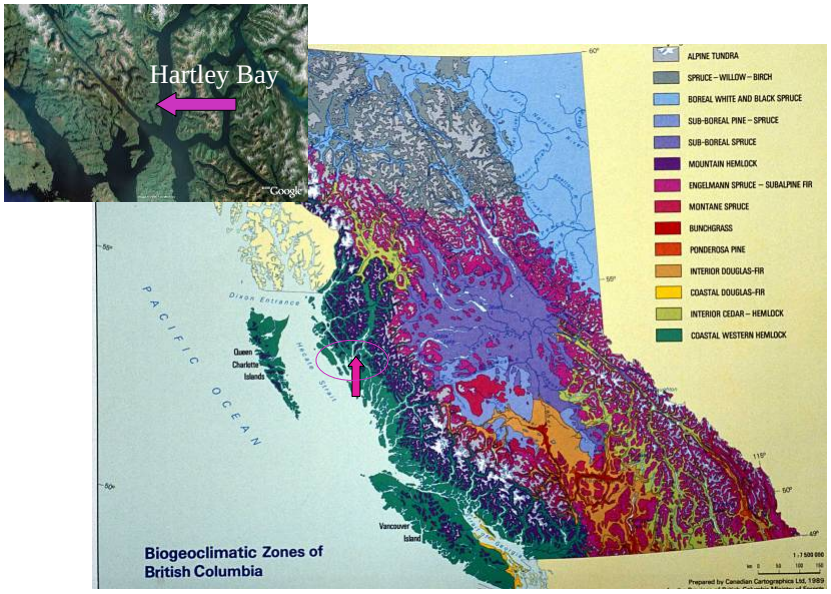
Thinking of the future…

- Dr. Jan Salick and Anja Byg; Environmental Change Institute, University of Oxford; and all my friends and colleagues who are participating and who have contributed to thinking about this topic
- Coasts Under Stress Research project (Rosemary Ommer, P.D.), National Science and Engineering and Social Sciences and Humanities Research Councils of Canada
- Robert D. Turner, photos

My talk today:

Nootka rose, late spring snowfall, Victoria

- **Environmental change** in the history of indigenous peoples of British Columbia
- **Indigenous knowledge** relating to weather and environments relevant to climate change
- **Importance of traditional knowledge** and observations in assessing climate change
- Ways for indigenous knowledge to be recognized and incorporated into **climate change strategies**



Biogeoclimatic Zones of British Columbia

In British Columbia alone, 30 distinct indigenous languages…

North Coast of British Columbia: homeland of the *other* white bear

Kermode Bear; Photo by Phil Burton

- Much important biodiversity, both terrestrial and marine

Indigenous peoples of British Columbia rely on:

- anticipated seasonal abundance of particular resources;
- predictable levels of rainfall, winter snowpack and montane glaciers to feed the lakes, creeks and rivers that are critical habitat for salmon and other important species

10,000 Years of Environmental Change in Western North America

- Sea level changes
- Earthquakes
- Tsunamis
- Floods
- Droughts
- Cold winters
- Resource scarcity and fluctuations
- Volcanic eruptions
- Advancing and retreating glaciers

Embedded in oral histories: Adaptations and transformations

"Lavaberries" (*Sedum divergens*), a popular Nisga'a food

- Nass Valley: massive volcanic eruption and lava flow about 350 years ago - said by Nisga'a to be caused by boys who treated salmon cruelly; villages were destroyed - used as a lesson for respecting the land and other species

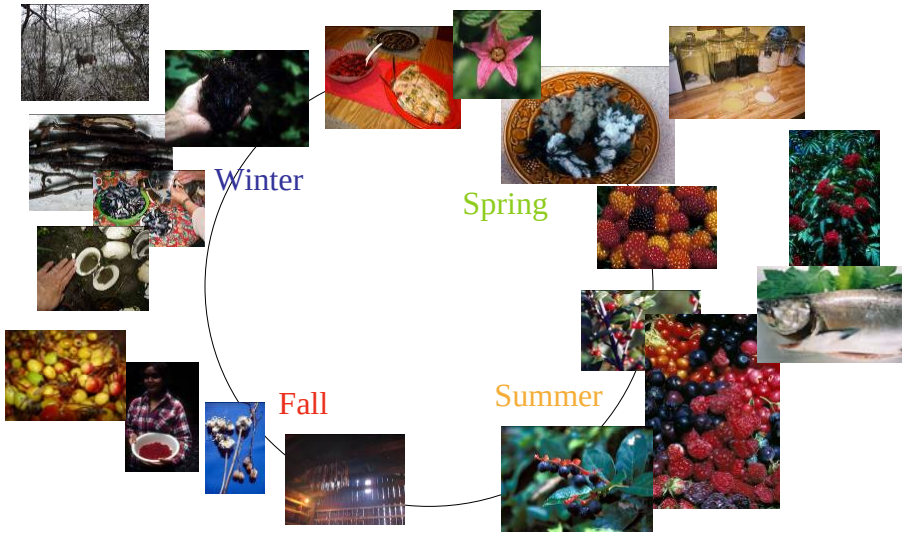
Gitga'at story of perpetual winter

- People in one village endured a time of cold - perpetual winter - until one day a robin flew in with a salmonberry blossom in its beak. Then they knew it was spring elsewhere, and the moved away from the wintry village.

Western red-cedar (*Thuja plicata*) - cornerstone of NW Coast Indigenous Technology

- Pollen records show that it has been predominant on the coast for only about 4,000 years (Hebda and Mathewes 1984) - long after people had settled this region.

Seasonal Rounds dependent on predictable weather patterns



Sinking of *Queen of the North*, March 22, 2006

- "The herring are on the move!… The whales will be following the herring, and the salmon are coming, and the seals. The oulachen are about to start too." "Fortunately, the weather has been really good since the spill… It's as if the May weather is here in late March." (Helen Clifton)

Traditional Phenological Knowledge (TPK)

- 84 words in 21 languages, which make reference to a range of phenological events and discrete seasonal time periods. Of these, 35 were related to the phenology of plant resources, 26 of which pertained to berries; and 49 were associated with animal phenology, 39 of which related to fish. (Lantz and Turner 2003)

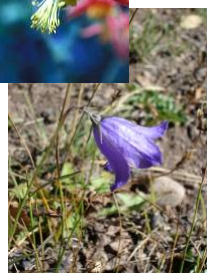
Traditional Phenological Knowledge

Holodiscus discolor

Butter clams and oulachen

- Many examples:
- e.g. “When the Oceanspray is in full blossom, it’s time to go out to get butter clams.” (Elizabeth Harry, Sliammon)
- Words of a Tlingit Chief: “This time we have hooligans [eulachon] in Dry Bay or Situk [and] when geese or swans going to come, he mentions the day. No mistake. He would say: ‘Tomorrow you will see the geese,’ and they would come” (De Laguna 1972:801)

Human’s influencing the weather



Children taught not to pick these flowers

- red columbine (*Aquilegia formosa*) and blue harebell (*Campanula rotundifolia*), known respectively as ***dall(-xil)-sgid*** (M) "red rain-flowers" and ***dall(-xíl)-guhlahl*** (M) “blue rain-flowers.”

Trillium ovatum, *Erythronium revolutum*

- called “sad flowers” in Ditidaht; if picked, it will cause fog and bad weather (John Thomas, pers. comm., 1979)

Other weather related taboos:

- Pointing a certain mountains
- Peeling cedarbark while people are picking seaweed
- Eating giant mussels while picking seaweed
- Lack of respect for wildlife or hunting out of season

Mount Tsylos, Nemiah Valley, Chilcotin

Taboos with Picking Seaweed

You see, with this rain…: we're not allowed to pick seaweed in the rain. …The reason they say you don't pick seaweed in the rain is the rocks become extra slippery. You won't be able to stand up. You're taking a real chance. [If] you will fall, …there's a lot of sheer drop-offs where we're picking seaweed. … When they have those taboos, it's because of your life, you're taking a chance. … [Also] it doesn't taste the same if it's washed by the rain. (Helen Clifton, May, 2001, Kiel)

"[Plants]…the Covering or Blanket of the Earth" (Nlaka'pmx)

"Flowers, plants & grass especially the latter are the covering or blanket of the earth. If too much plucked or ruthlessly destroyed [the] earth [is] sorry and weeps. It rains or is angry and makes rain, fog & bad weather." (ethnographer James Teit, unpublished notes, ca. 1900)

Gitga'at Spring Harvesting Camp

- Kiel ("Seaweed Camp"), Princess Royal Island

Offshore and onshore resources

Importance of the Weather

We don't have all our families down here that used to move to the seaweed camp. It's just [the older people]… our young people will try to come down for the weekends to help us… if the weather here is cooperative, if the sun is shining, the wind is right and the tides are right … *Whatever we're getting here depends on the tides and the weather*. …(Helen Clifton, May 2001, Kiel)

Seaweed gathering month

Ashley, Kayla and Tianna drying seaweed, May 2001

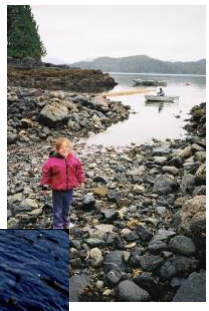
- May is called ***ha'li' làx là'àsk*** "the month for gathering seaweed"

Seaweed Growth

I've heard… The women from long ago said that they would … do the first picking of seaweed and then it would be a month, not even a month, that the second growth would be ready to pick again. And they liked to keep the second growth for themselves because it was a finer seaweed…, as compared to the first growth. (Helen Clifton, May, 2001, Kiel)

It's hard to say because the weather has changed *so* much, it's hard to say what's happening to the natural growth of whatever. (Helen Clifton, May, 2001 at Kiel)

Tides and Sun



"The tides have to be right too, … we like to have the low tides in the morning, early morning, so that we could get the seaweed, bring it back here, and pack it up on the rocks to dry before, we have to get them up before …noon…" (Helen Clifton, May 2001, Kiel)

Sun-drying halibut

"Back in the days when there was an Indian summer, they could dry the fish easily. Nowadays the fish get rancid and mouldy, or full of bugs because there is so much rain; it's so different today" (Helen Clifton, pers. comm., June 2003

June seaweed processing

- "You *have* to dry it in June, before the grasses really grow long. … they retain the dew of the evening…. you're putting your seaweed close to the ground…. So that takes all day to dry. About every two hours, you will go and… move the seaweed so that it's turning over… so that it all dries."

Colleen Robinson preparing to process her seaweed dried squares

Drying the seaweed at Hartley Bay: a new experiment…

Cardboard Overwaitea Grocery Boxes… along with other seaweed innovations

Expectations for variation

- Recognition of expected range of variation in weather and productivity of resources
- Institutions and knowledge systems accommodate and mitigate this variation

Soapberries (*Shepherdia canadensis*): good years and bad years

Anomalies

Highbush cranberry (*Viburnum edule*)

- "Everything is different now with the warmer weather; harvesting times are way, way different." (Dec. 6, 2002); no wild berries … "no salal, no pigeonberries, thimbleberries, crabapples, highbush cranberries, or wild currants, just none!" (October 2001)

Causes

- Unseasonably heavy rains that spring, the bees were affected and, ultimately, pollination of berry bushes or fruit trees
- rivers were “too full,” in flood condition, with trees and stumps washing down; the weather characterized as “out of the ordinary” (Helen Clifton, pers. comm. October 2001)

A completely new event: visit by *Naxnox* bird

- Strange bird: arrived in Hartley Bay, May, 2001; no one had seen one before
- *Naxnox* means “power” in Sm’algyax
- Seen as a sign of climate change

Glenn Bartley photo

Eelgrass meadows

Chief Adam Dick (Kwaxsistala), Severn Cullis-Suzuki, and Dr. Sandy Wyllie-Echeverria harvest eelgrass

- Eelgrass (*Zostera marina*) meadows have generally declined in extent almost everywhere, but, more than this, the eelgrass rhizomes are thinner and darker than the elders remembered, and there is more epiphytic growth on the leaves in May, at the time the plants are normally harvested as food. These changes may be due to warmer waters or to pollutants, or a combination of factors (Cullis-Suzuki 2007).

Global Climate Change is real

- "Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level" (IPCC 2007).

What we must expect:

- The projections of the IPCC report include reduced snow cover, more frequent hot extremes and changes in temperature patterns, changes in wind, heat waves, and heavy precipitation events: "Increases in the amount of precipitation are *very likely* in high-latitudes."

Current challenges

Chilcotin forests (mountain pine beetle damage), summer 2006

- Over exploitation of forests, fisheries
- Pine beetle and other insect infestations
- Loss of water in springs, creeks, rivers, lakes
- Loss of oulachens, salmon, etc.
- Major forest fires from decades of fire suppression

And… since March 22, 2006

After sinking of *Queen of the North*

- There have been oil slicks at the seaweed picking grounds and around the clam beds
- Portent of future disasters with oil tankers?

Importance of Traditional Ecological Knowledge & Indigenous Peoples

- Providing **direct knowledge and insights** relating to environment
- Contributing to **development of models** for accommodating and adapting to ongoing and imminent climate change
- Presenting **alternative pathways** and approaches to sustainable living for future generations

Now: more indoor food drying

- Not ideal, but sometimes necessary…

New ways for seaweed

"Some of our people have tried to experiment right now, and tried to put some into the deepfreeze to see [how it does]. And yet, some of our older people will taste it, and there's a difference." (Helen Clifton, May 2001, Kiel)

Providing direct knowledge and insights

- weather patterns,
- changes in abundance, distribution, seasonal development and interactions of plant and animal species,
- effects of these changes on soils, wetlands and other ecosystems (Krupnik and Jolly 2002)

TEK as complement to other sources of evidence

- Archaeological and paleoecological data,
- Weather and climate data, including climate modelling,
- Plant and animal physiology,
- Genetics,
- Phytochemistry, and
- Phytogeographical and ecological studies

Salmon hatchery, Hartley Bay

Complementing science

Gitga'at spring salmon and Pacific crabapple varieties

- basis for hypothesis formulation and more detailed experimentation (e.g. resistant local varieties, changing migration patterns, range and distributions of species, etc.)

Models for resilience: enduring and adapting to change

- disease epidemics;
- lost access & control of traditional lands and resources;
- erosion of languages,
- conversion to Christianity;
- transition to a monetary economic system;
- banning of the Potlatch
- reduced opportunities for intergenerational learning;
- increasing loss of food security

Gitga'at seaweed, halibut head soup, and "new food"

A rich social capital

Family and Community…

- despite having undergone immense changes and pressures, people have managed to retain their resilience, building on self-reliance, practicality, and a rich social capital.

e.g. Nlaka'pmx response to Fraser River landslide

1913 and 1914, when the Canadian Northern Railway was being built, and the Fraser River was blocked at one of its narrowest points, Hells Gate Canyon, by an immense landslide, impeding the biggest (fourth year) run of sockeye salmon migrating through to their spawning grounds upriver.

Robust strategies for facing unusual circumstances

- Relocating villages,
- restraints on harvesting certain resources,
- sharing resources
- seeking alternative resources,
- developing and using new technologies, and
- developing economic and social alliances

Adam Dick with oulachen grease; unloading computer, Hartley Bay

Pathways to changing paradigms

Richness beyond compare: Local berries for feast, Bella Coola

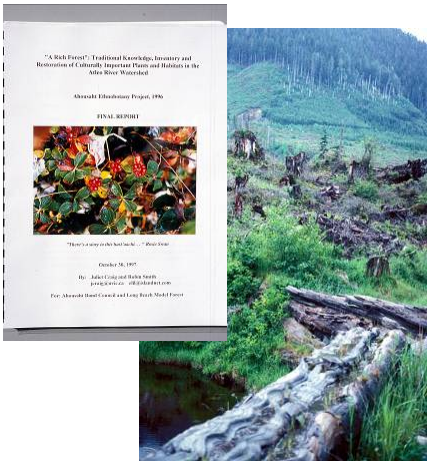
- Human technology and escalating human use of fossil fuels and industrial scale agricultural practices that are the main drivers of climate change

Alternative views of the world: "Seventh generation" thinking

- "kincentricity" or "kincentric ecology" (Salmón 2000
- prestige and satisfaction are gained through relationships and generosity rather than in accumulation of personal wealth.

Tom Child and Chief Umeek (Dr. Richard Atleo, author of *Tsawalk, A Nuu-Chah-Nulth Worldview*)

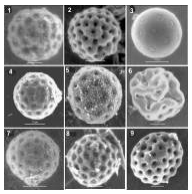
Needed: Effective and equitable ways of learning, sharing & incorporating Indigenous knowledge



- *Decolonizing Methodologies* (Linda Tuhiwai Smith 1999)
- Models like Scientific Panel for Sustainable Forest Practices in Clayoquot Sound

Kwäday Dän Ts'ìnchí ("Long Ago Person Found")

- Died on a British Columbia glacier ca. 550 years ago
- Consultations with the Champagne and Aishihik, Tagish, Gwitch'in, Tlingit and other Indigenous peoples in the vicinity



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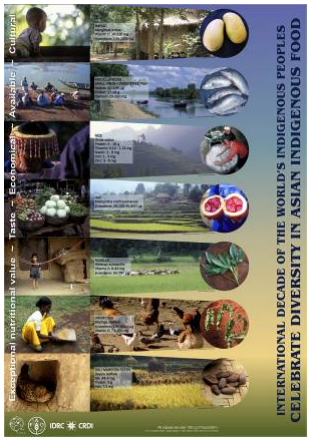
Centre for Indigenous Peoples' Nutrition and Environment at McGill (CINE)



- Indigenous Peoples' food systems for health: findings interventions that work
- Academic and community partners
- 11 case study areas: Dene, Inuit, Nuxalk, Aguaruna, Ingano, Maasai, Igbo, Karen, Dalit, Bhil, Ainu

In Conclusion

- Indigenous knowledge and perspectives - and the needs of Indigenous peoples - matter significantly in our considerations of what climate change is, its impacts and ways to adapt to and remediate its effects. We have only just begun what must surely be a critically important journey of research and learning.

Thank you