



The Impact of Social and Environmental Restructuring on Environmental and Human Health in Canada

Newsletter
June 2005

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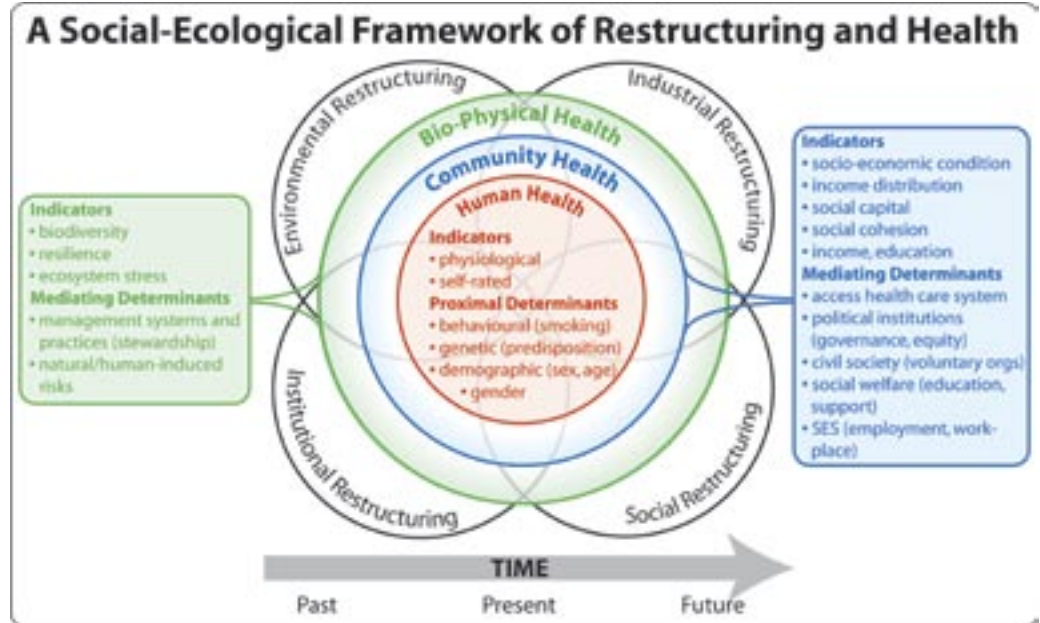
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Funded by SSHRC and NSERC, with additional support from participating universities and partners in government, business, non-governmental organizations and First Nation groups.



Social-Ecological Health:

A human, community and environmental condition that sustains quality of life (as considered acceptable by any given community) and environments and promotes resilience in response to stressors¹.



This definition recognizes that processes operating within social, environmental and cultural contexts have interdependent, reciprocal, non-linear relationships, feedback effects and complex causality (Chapter 1²).

When compared with national and provincial statistics, people on both coasts have poorer health status than that reported for Canada, BUT **stress levels are lower** than those reported for each province and for Canada (people in smaller communities do tend to report lower stress), **despite:**

- ★ recent severe negative experiences in economic restructuring
- ★ higher stress as a result of job losses, a locally unresponsive EI reviewing process (Ch. 8 and 9)
- ★ reported poorer health, limited health care (Ch. 8–11)

- ★ poorer nutrition (Ch. 10)
 - ★ shrinking educational services (Ch. 11).
- The fundamental social cohesion in communities still holds, and protects community and personal health, despite all the difficulties people face. There is lower reported stress on both coasts, because of:
- ★ strong social networks
 - ★ a strong sense of safety, absence of traffic and pollution
 - ★ easy access to wilderness areas, clean water and air
 - ★ although people worry about their financial situation and the future of their communities, they somehow put these concerns into perspective, which translates into lower perceived stress levels (Ch. 8 & 9).

continued on page 4

¹Dolan, A.H., S. M. Taylor, B. Neis, J. Eyles, W. Montevecchi, R. E. Ommer. In Review 2005. Restructuring and health in Canadian coastal communities: Introducing a social-ecosystem model of health. *EcoHealth*.
²Ommer, R. E., ed. In Prep. *Coasts Under Stress: Understanding Restructuring and the Social-Ecological Health of Coastal Communities*. McGill-Queen's Press.



Environmental Restructuring

Biodiversity: Developing and Moving Knowledge

Focus on the knowledge, practices and changes that affect and are affected by harvesting and use of edible seaweed (*Porphyra abbotiae*) by the Gitga'at (Coast Tsimshian) Nation of Hartley Bay (Northern BC Coast)



provides insights into overall change and community resilience in the face of social, economic and environmental restructuring.

Ecological edges and cultural edges are inextricably linked; they provide:

- ★ increased social-ecological resilience as they broaden the diversity of biological species
- ★ cultural knowledge that can be drawn upon for a livelihood.

Keystone species are not only ecologically vital, but also culturally vital (icons), and their loss is a loss of cultural bedrock. Knowledge of past and present environments and of past and present cultural practices come together in First Nations whose holistic view of social-ecological health sees human communities and the environments in which they are embedded as one entity which has to be stewarded so that inter-generational social-ecological health can be ensured (Ch 6).

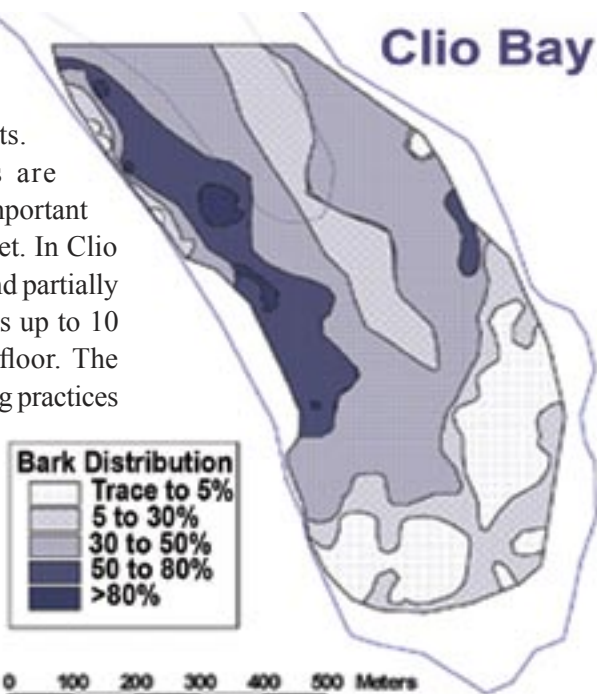
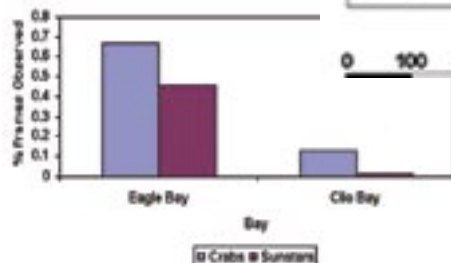


Helen Clifton and granddaughter pounding halibut at the Kiel Seaweed camp May '02. (N. Turner)

Wood Debris Impacts on Seabed Ecology

Wood debris left over from log booming on the West Coast has altered marine environments. Less commercial species are replacing those which are important for commerce and human diet. In Clio Bay, there are several thousand partially decomposed logs, sometimes up to 10 metres high above the sea floor. The impact of industrial log-storing practices is neither temporary nor trivial (Ch. 6).

Percentage of towed video frames where Dungeness crab and sunflower seastars were observed.

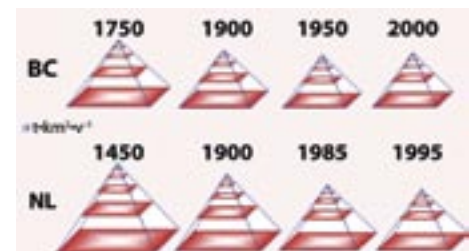


Map of wood debris concentrations from towed seabed video imagery.

Past Marine Ecosystem Reconstruction

Whole-ecosystem mass-balance and simulation models for marine ecosystems on each coast during similar historical periods were developed, along with computer models of past marine abundances, and food web analyses.

- ★ Traditional and local knowledge
- ★ Significant decline in abundance, diversity and trophic level over time, less severe in BC (Ch. 2).



Trophic flow pyramids. Height of pyramid indicates maximum trophic chain length, each level corresponds to a trophic level in the system, surface area of level indicates quantity of biomass flow between trophic levels ($t \cdot km^2 \cdot y^{-1}$).

Social-Ecological Footprint

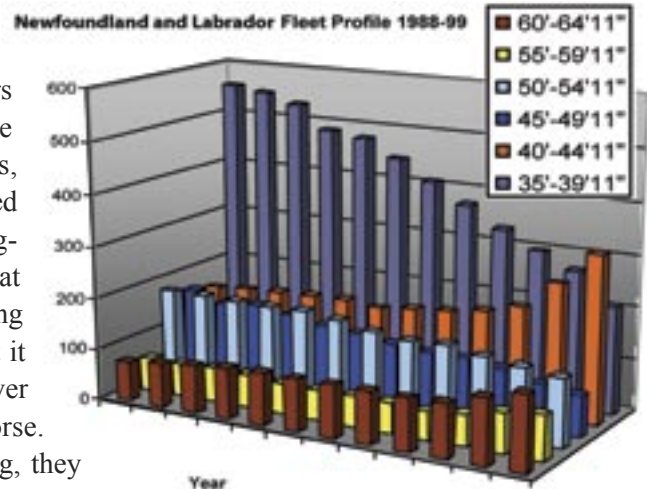


Smelter at Anyox Mining on the BC North Coast. (BC Archives G-06571)

“[our] town was booming, it was doing very well. We had a copper mine, the logging industry was up and running very well, the fishing industry was doing really well. Since then, the mine is shut down...and it was about at the same time that the fish industry was drastically cut back. And at the same time the logging industry took a bit of a beating, so it all kind of came at once.” (West Coast Informant) (Ch. 5 and 9)

Somewhat Fewer Fishermen But What has Happened to Effort?

“And family fishing, they had that big buy-out a few years ago when they started the conservation measures, which were really needed and most people recognize that, you know that if they don't start saving the salmon stocks, that it is going to be bad forever and get worse and worse. But it is the same thing, they kind of forced a lot of guys to sell their boats and so there are very few trawlers, there is more concentration in the big companies that own boats.” (West Coast Informant) (Ch. 9)



Ommer, R., B. Neis, R.I. Perry. Communities of Fish and Fishing Communities: Understanding human-ecosystem interactions in the Coastal Oceans. Joint CUS-GLOBEC presentation to the International Human Dimensions Program Conference, Montreal, October 2003.

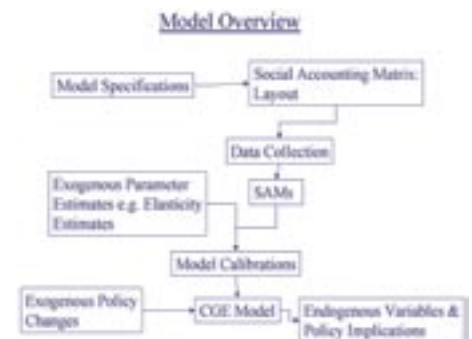
Marine Ecosystem Restoration

Whole-ecosystem dynamic simulation models tested net present value of 17 alternative restoration/harvest plans (trend shown by solid line).
 ★ Fast plans recover former levels of biomass quickly, but have higher short-term costs (lost revenue to the fishing industry)
 ★ Moderate restoration plans outperform bank interest (>16 yr under conventional Cost Benefit Analysis).

West Coast Offshore Oil and Gas Potential

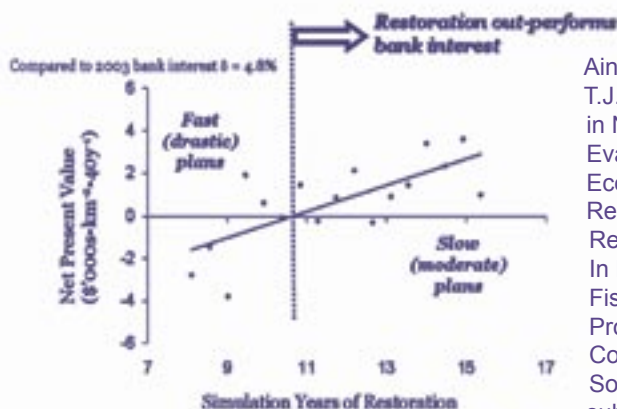
In 2001, the onshore revenue generated from oil and gas was \$1.7B, which could be substantially increased (up to \$6.4B/yr over a 50-year production period) with offshore potential.
 ★ A public information web site: www.EnergyBC.ca, a joint University of Victoria and CUS initiative to provide information regarding offshore petroleum activities

- ★ Analysis of petroleum potential in Queen Charlotte Basin
- ★ Phase I Report: Broad Scale Basin Characterization
- ★ Phase II Report: 2D Petroleum System Modelling



We are completing a prototype computable general equilibrium (CGE) model, at the regional level, for the regional districts (RD) of Mount Waddington (RD43), Central Coast (RD45), Skeena-Queen Charlotte (RD47) and Kitimat-Stikine (RD49) that surround the Queen Charlotte Basin, to assess socio-economic impacts of oil and gas development in the region (Ch. 13).

BTF restoration as an investment

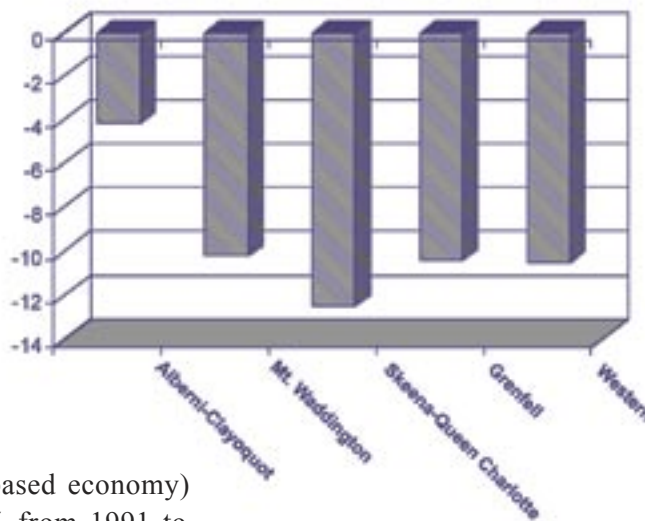


Ainsworth, C.H. and Pitcher, T.J. (2005) Back-to-the-Future in Northern British Columbia: Evaluating Historic Marine Ecosystems and Optimal Restorable Biomass as Restoration Goals for the Future. In Nielson J. (ed.) Reconciling Fisheries with Conservation: Proc. of the 4th World Fisheries Congress. American Fisheries Society, Bethesda, USA. submitted.

Population decline:

- ★ Prince Rupert decreased by 11.8% from 1991 to 2001, all of which came after 1996
- ★ Port Hardy declined by roughly 13.4 percent between 1996 and 2001 following an increase in the previous five years
- ★ Tofino (tourism-based economy) increased by 33% from 1991 to 2001
- ★ population of BC grew by 16% from 1991 to 2001
- ★ Newfoundland and Labrador had a 10% decline in population from 1991 to 2001
- ★ BUT our study area had an 18% decline, with out-migration of young

Percent Change in Population Change, Selected Regions, 1996-2001



people being a major component, while the percentage of the population aged 40 and over increased. The age differential, which is also true in BC, means that remaining inhabitants are less and less able to deal with ongoing change and (East Coast) the physical hardships of a harsh climate.

Youth and the Future of Coastal Communities

Youth are aware that they live in uncertain times, and are ambivalent about how to deal with this.

- ★ Some have decided to leave for a better chance elsewhere; they need support in transition
- ★ Others hope against hope that things will improve and they will be able to live in the places they deeply love

★ Those (majority) who wish to stay, need help also

These young people, and their communities, can be a great future strength, if they (and their communities) are given the help they need (Ch. 13).

We do not think Canada can afford to write off its coastal communities.



Books in Preparation by the CUS Team

Coasts Under Stress: Understanding Restructuring and the Social-Ecological Health of Coastal Communities. R. E. Ommer, editor.

Table of Contents

- Chapter 1: Introduction
- Section I: How We Got Here: Historical Restructuring and its Social-Ecological Legacy
- Chapter 2: Fisheries
- Chapter 3: Fisheries Management and Capture
- Chapter 4: Forest Products
- Chapter 5: Non-renewable Resources
- Chapter 6: Cross-scale, Cross-sector and Cross-purpose Issues—Overlap in the Coastal Zone
- Section II: The Human Impact of Restructuring and Social-Ecological Health
- Chapter 7: The Restructuring of Health Care—Coastal Trends
- Chapter 8: The Statistical Face of Restructuring and Health
- Chapter 9: The Human Voice of Social-Ecological Restructuring I: Jobs, Incomes and Livelihoods
- Chapter 10: The Human Voice of Social-Ecological Restructuring II: Nutrition and Diet
- Chapter 11: The Human Voice of Social-Ecological Restructuring III: Youth, Health and Education
- Section III: Towards Social-ecological Health: Coastal Problems and Potentials
- Chapter 12: Future Options I: Aquaculture, Hatcheries, Tourism, Transportation, and Local Initiatives.
- Chapter 13: Future Options II: Oil and Gas
- Chapter 14: New Options for Governance I: Marine and Coastal waters
- Chapter 15: New Options for Governance II: The Land and Sea/Land Interface
- Chapter 16: Conclusions: Social-ecological Health in the Future

Resetting the Kitchen Table: Food Security, Culture, Health and Resilience in Coastal Communities. C. Parrish, N. J. Turner, S. Solberg, editors.

Making and Moving Knowledge. B. Neis and J. Lutz, editors. In prep. for McGill-Queen's Press.

Power and Restructuring: Shaping Coastal Communities and Environment. P. Sinclair and R. E. Ommer, eds. In prep. for ISER Books.

Voices on the Edge. R. E. Ommer, ed., with R. J. Hood. A community-focused book with quotes and photographs, in prep. for ISER Books

Restructuring and Policy: A Bi-coastal Analysis. R. E. Ommer, ed. A policy book with recommendations, and references to the other volumes, in prep. for ISER Books