

Human Dimensions of Shellfish Aquaculture: Recommendations for Research and Practice

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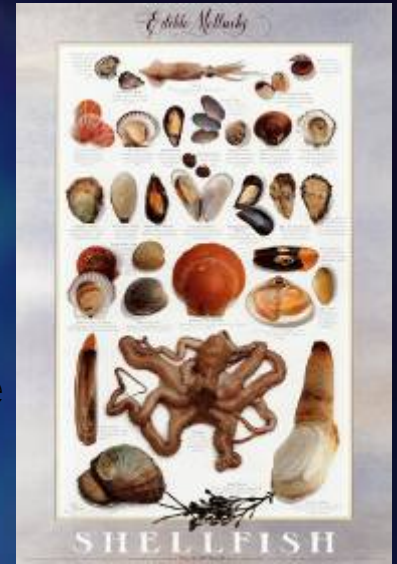
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Presentation Outline



- I am NOT an expert in **shellfish** aquaculture so these are my preliminary thoughts;
- My presentation is focused on the culture of molluscs (bivalves);
- My perspective on human dimensions of aquaculture;
- Current challenges to shellfish aquaculture that can be addressed by social science research and practice;
 1. Public (mis)Perceptions / Consumer knowledge;
 2. Growing social conflicts accompanying the expansion and intensification of shellfish aquaculture;
 3. Inadequate use of social sciences and lack of attention to, integration of, social dimensions of sustainability (sustaining lives, livelihoods, and communities) than to environmental and economic dimensions
 - A few positive examples
 4. Climate change;
- Recommendations for research and practice.

My Perspective / Approach to Aquaculture

- Most experience with shrimp farming in Latin America and Asia;
 - NGOs, globalization of resistance movements, funding from NSF, MacArthur Foundation, Rockefeller Bros Fund, UC Pacific Rim Research Program.
- Member, Science Advisory Board, AquaNet, Centre of Excellence in Aquaculture (major effort to enhance social science contributions)
- Participant in NOAA workshops to integrate social dimensions into designation, design and management of MPAs.
- Member, NAS/NRC, Committee on Human Dimensions of Global Change;
- Currently, Member, U.S. CCSP, Human Impacts of Climate Change Advisory Committee;
- Currently, Co-Directing, NOAA/Climate Change/SARP funded project in Mesoamerican Barrier Reef System (MBRS) (“From Vulnerability to Resilience: Helping People and Communities Cope with Crises”)
 - 3 research sites in Coastal Belize
 - Collaboration with MBRS Project (World Bank / GEF)
 - Interactions of international tourism, shrimp farming, agriculture and marine protected areas in a context of climate change are affecting local people and communities.
 - Objective to create community and household indicators of vulnerability and resilience and harmonize them with national, regional, and global indicators.

Current challenges to shellfish aquaculture that can be addressed by social science research and practice;

1. Public (mis)Perceptions / Consumer knowledge;
2. Growing social conflicts accompanying the expansion and intensification of shellfish aquaculture;
3. Relative lack of attention to, integration of, the social sciences and the social dimensions of sustainability (sustaining lives, livelihoods, and communities) than to environmental and economic dimensions and the
 - A few positive examples
4. Climate change (I won't be able to talk about this in this presentation but I certainly would like to – since climate change is one of the major forces/shocks that is and will continue to impact coastal and marine aquaculture.)

1. Public (mis)Perceptions and Consumer Knowledge

- Public confusion about aquaculture;
 - General Public
 - Public does not differentiate between wild capture and farmed species;
 - Are not aware of the extent to which cultured aquatic animals and plants already make up a high/growing % of available seafood;
 - Environmentally Aware Public (Santa Barbara / UCSB)
 - Perception that *farmed* is “bad” and *wild* is “good;” (Santa Barbara and UCSB studies);
 - Don’t differentiate shellfish from other species (salmon, shrimp) despite consumer guides include farmed mussels, oysters, and clams among their group of best consumer choices.
- Growing concerns about nutrition/food safety;
 - This audience is well aware of these issues
 - May not be aware that nutrition/food safety is only one dimension of food security.

1. Public (mis)Perceptions and Consumer Knowledge – Potential Social Science Contribution

- Enhancing Social Marketing and Education Efforts
 - Evaluations of Monterey Bay Aquarium's *Seafood Watch* concluded that the guide does increase consumer *awareness*
 - However, increasing *awareness* does not necessarily result in changing *behaviors*;
 - These efforts should be honest and not include unsubstantiated claims – which leave the industry open to criticism
 - I've read many claims promoting shellfish aquaculture that sound uncomfortably like those made for shrimp farming by the Global Aquaculture Alliance (GAA) and others.
 - E.g., my students trashed (laughed at) the 5 minute, GAA promotional video, "From Pachyderms to Panaeus."
 - From *Slow Food* to *Slow Fish (Slow Shellfish)*
 - Enhance connections with sustainable food networks
 - Slow Food Nation meeting in San Francisco over Labor Day
 - Marketplace; 15 Taste Pavillions (Fish Pavillion); Slow Dinners; Slow Journeys
 - Except for Hog Island Oysters, not much evidence of shellfish aquaculture.

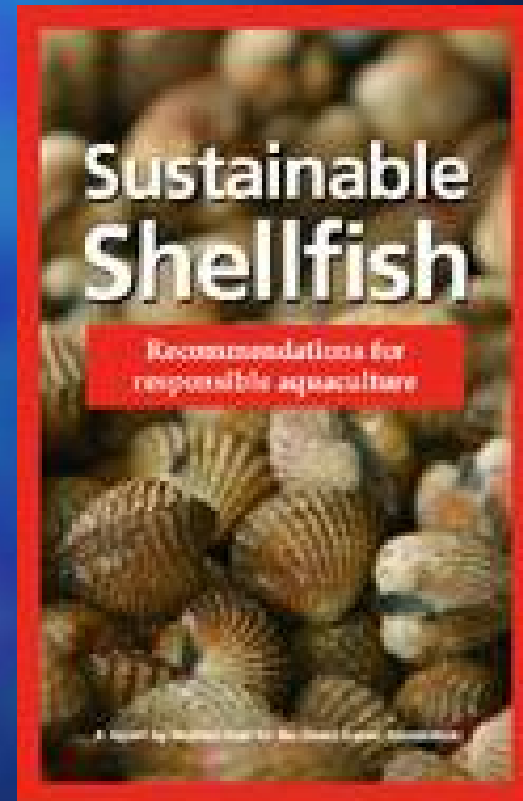
2. Growing criticism and local/regional conflicts accompanying the expansion and intensification of shellfish aquaculture

- Include both environmental and social issues;
 - Some based on sound environmental and social concerns others based on lack of knowledge
- Critics include community groups, nongovernmental organizations (NGOs), and Foundations;
- Criticism/conflicts may be greater in the U.S. Pacific Northwest and British Columbia, Canada but also growing on the East Coast of U.S. (e.g., expansion of oyster farming in Maine);
- Examples include;
 - The David Suzuki Foundation
 - The Georgia Strait Alliance (British Columbia)
 - Protect Our Shoreline (U.S. with Canadian partners) / Coalition to Protect Puget Sound Habitat

The David Suzuki Foundation

<http://www.davidsuzuki.org>

- Foundation efforts focus on salmon and shellfish farming;
- Focus primarily on environmental issues but also identify social/community issues – especially insufficient public consultation and public participation, precisely the areas in which the social sciences can make a significant contribution.



The Georgia Strait Alliance

<http://www.georgiastrait.org>

- Concerned with a number of driving forces affecting the environment/habitat of the Strait of Georgia (urbanization, development, pollution/toxics, climate change, coastal tourism, cruise ships, salmon farming)
- Shellfish farming is one of these issues;
 - Environmental and **social carrying capacity**
 - Enforcement of best management practices and regulations
 - **Growing conflicts with local communities and users (commercial fishers, recreational and commercial boaters, tourism industry)**
- Have used community mobilization, political action, and legalistic means to achieve their objectives.



Protect Our Shoreline (POS)

<http://www.protectourshoreline.org>

Member of the Coalition to Protect Puget Sound Habitat

Henderson Bay Shoreline Association *APHETI*

Mayo Cove Shoreline Association *Case Inlet Shoreline Association*

Canadian partners: Association for Responsible Shellfish Farming

Mission: To protect the habitat of Puget Sound tidelands in relation to expansion of new intensive shellfish aquaculture methods and practices. Shellfish aquaculture is converting beaches to agricultural use without shoreline permits, public comment or environmental review.

We share all Puget Sound Partnership goals. We support a requirement of peer reviewed science and environmental impact study evaluation prior to shellfish aquaculture expansion.

Concerned with the expansion and intensification of shellfish aquaculture (esp. Geoduck clams)

Industrial Shellfish Aquaculture is Converting Puget Sound Aquatic Habitat to Agricultural Use



How much expansion is good for Puget Sound?

Geoduck farm, Nisqually Reach, 6/30/07

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Protect Our Shoreline

Several Issues of Concern



Our concerns are: 2

Habitat degradation and fragmentation

The trend of converting natural ecosystems to agricultural use

The extent of expansion

Environmental impacts: unknown

Invasive species and disease

Interference with recreational and residential uses

Marine debris

Zangle Cove, 4/29/06

Approximately 43,500 tubes planted per acre (about 8 miles of PVC pipe) with either individual net tops or canopy nets that cover the entire installation;

Protect Our Shoreline Views Both the Federal government (NOAA) and NGOs like WWF with Suspicion

- NGOs come in all flavors (values, strategies, methods)
- NGOs like POS are much different than NGOs like WWF
- Strategies of mobilization and confrontation rather than sitting down at the table with diverse stakeholders and attempting to reach consensus.
- Support bring suit against shellfish firms;
- NGOs like POS view sitting down at the table with adversaries as cooption.
- Very similar to NGOs critical of shrimp farming.

Long term goals of Federal agencies and national environmental groups are to promote shellfish and finfish aquaculture in the waters of Puget Sound and the Straits of Juan de Fuca 54	
NOAA Aquaculture Program	World Wildlife Fund
Washington Aquaculture Opportunities for Growth Shellfish production, including oysters, mussels, Manila clams, and geoduck clams New finfish species such as black cod Culture of salmon and steelhead Open ocean aquaculture in the Strait of Juan de Fuca Production of submersible offshore fish cages www.aquaculture.noaa.gov 9/12/07	Draft Goals of the World Wildlife Fund Molluscan Dialog: Develop and implement performance-based, measurable standards that will minimize the potential negative effects of mollusc aquaculture, while permitting the shellfish farming industry to remain economically viable. Continue to promote the beneficial environmental and social aspects of shellfish cultivations. www.worldwildlife.org/cci/dialogues/mollusc.cfm 10/15/07
When Puget Sound is turned over to the aquaculture industry, will citizens have a say?	

3. Relative lack of attention to (integration of) the social dimensions of sustainability and to the social sciences

- Web of Science search of “aquacultur* AND shellfish” (829 hits)
 - > 90% of articles published in journals of fisheries, marine, and freshwater biology;
 - Human dimensions, most in human health and food safety issues some attention to public perceptions/risk;
- Little attention to 3rd dimension of sustainability: the social dimension - sustaining lives, livelihoods, communities; (similar to earlier lags in agriculture)
 - Made it very difficult to address growing conflicts related to shellfish aquaculture except through confrontational and/or legalistic means
 - Made it very difficult to address the expansion/intensification of industrial shellfish aquaculture comprehensively in the larger social, political, economic, environmental, climatic context.

Positive Examples of Efforts to Integrate Social Dimensions/Social Sciences into Understanding and Dealing with Issues Related to Shellfish Aquaculture

- AquaNet, the Centre of Excellence in Aquaculture (Canada) no longer funded;
 - Bring together industry, academics, government agencies, and communities (First Nations and non-First Nations)
- WWF Mollusc Dialogue;
 - Bring together diverse stakeholders to develop performance based, measurable standards to minimize negative environmental, economic, and social consequences (enhance benefits) of shellfish aquaculture
 - One of several aquaculture dialogues organized by WWF (shrimp, salmon, catfish, etc.)
- A limited number of other studies mostly concerned with risk, public perception, and public participation.

AquaNet

<http://www.aquanet.ca> (legacy site)

- Attempted to bring together diverse stakeholders (industry, government agencies, communities, academics);
- Over the years enhanced the social / cultural component of funded projects;
 - Increased the amount of funding for projects done within the socio-economic component (applied, policy oriented research);
 - Expanded the conceptual framework of the socio-economic component to include broader context and more comprehensive concerns.
 - Expanded conceptual framework to include humanities as well as social sciences;
 - Required that EVERY funded project, including those primarily concerned with production, management, and environment include a social component;
- Funded research efforts that have been integrated into longer term, existing institutional contexts;
 - The Centre for Shellfish Research, Vancouver Island University (formerly Malaspina University-College)
 - Three research programs (Ecological Interactions, Shellfish Health and Husbandry, Social Sciences Research Program)

Examples of Social Science Oriented Research Funded by AquaNet

- Attempts to promote sustainable aquaculture in coastal communities where other natural resource based industries had declined;
 - Most projects.
- Efforts to enhance aquaculture as a viable (and culturally appropriate) economic option in First Nations (and non-First Nations) communities;
 - “First Nations Involvement in Aquaculture in BC.” (Elliott, Matthews, Spence)
- Efforts to integrate aquaculture production in areas/communities with the tourism industry and Marine Protected Areas.
 - “Integrating Shellfish Aquaculture and Marine Protected Areas in BC: A Framework for Planning.” (Rollins, Rayner, and Tollefson)
- Efforts to understand the risks and benefits of aquaculture of diverse social/cultural/economic groups;
 - “The Social Construction of Aquaculture: Risks and Benefits, Work and Community.” (Matthews, Elliott, Elliott, Phyne)
- Efforts to understand and promote participation and stakeholder interaction;
 - “Network Governance and “Smart Regulation” for the Development of Sustainable Shellfish Aquaculture in Canada.” (Rayner, Rollins, Pennell, Tollefson, Howlett, Clancy).

Achievements and Limitations of AquaNet

- Much of the published literature on the social dimensions of shellfish and other kinds of aquaculture in Canada comes from the PIs and graduate students who were trained through Aquanet;
- Aquanet funded applied, policy oriented research, including supporting community workshops as part of the funded research;
- Aquanet no longer exists – so the lasting achievements of those efforts are unknown;
- Little evidence of comprehensive social science research from elsewhere (my opinion);
- Yet, in light of growing community, NGO, and consumer concerns, such research is badly needed.

WWF Mollusc Aquaculture Dialogue

- Many of you know more about the Mollusc Dialogue than I so I will limit my discussion to my concerns from a social science / society perspective;
 - The dialogue participants are impressive but there does not seem to be much social science input or expertise in the group;
 - Some NGOs (e.g., POS) consider the WWF dialogue as an adversary (if not an enemy);
 - The “main issues” include “multi-user cooperation” as the primary human dimension – although the human dimensions of shellfish aquaculture go far beyond this;
 - “Principles for shellfish aquaculture” include being a “good neighbor and conscientious coastal citizen” and “developing and operating farms in a socially, responsible manner.” What do these phrases mean? How do you measure them? What are the indicators?
 - The most important and stated goal of the dialogue is to develop measurable performance based, standards that minimize or eliminate the negative environmental and social impacts of shellfish aquaculture – this won’t (can’t) be done without the necessary social science expertise.
 - One of the concerns voiced in the dialogue meeting notes is the difficulty in creating standards for social impacts that are “measurable and science based.” Yet, the social sciences have developed research methodologies to do just that
 - The Mollusc Dialogue will never be able to achieve this major goal without making use of this expertise.

Suggestions for Research and Practice

- Increase the input of social sciences into discussions and collaborations – especially encourage interdisciplinary efforts;
- Emphasize applied, policy oriented social science;
- A few specific social science methodologies potentially of use;
 - Recent work on understanding complex human-environmental relationships (human-natural system dynamics) in order to account for the multiple driving forces (and diverse responses) operating in any locale.
 - Perception of risk studies (in collaboration with more science oriented risk assessments);
 - Enhancing community/multi-stakholder consultation and participation;
 - Risk-benefit analysis (that goes beyond monetary/economic risks – to include social, cultural, environmental, health, psychological, etc. dimensions);
 - Effectively integrating local and scientific knowledge;
 - Many more



Thank you