Report and Synthesis:

Special Session
on Identification of Social and Cultural Values
in Support of Integrated Ocean Management

(Held on Wednesday, October 21, 2009, at the Telfer School of Management, University of Ottawa, Ottawa, Ontario)

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1.0   Introduction

The objective of this report is to provide the Department of Fisheries and Oceans (DFO) with a summary of the proceedings of the Special Session on Identification of Social and Cultural Values in Support of Integrated Ocean Management, together with an overall assessment of the session. The day-long event was held at the University of Ottawa, preceding the 2009 Conference of the Ocean Management Research Network (OMRN). It began with a welcome from Dr. Dan Lane, Chairperson of the OMRN and faculty member at the University of Ottawa, and closed with thanks from Darren Williams of DFO to the presenters and all those attending. The event was chaired and facilitated by Dr. Anthony Charles (Saint Mary's University) with note-taking by Kate Bigney and Lisette Wilson (Dalhousie University). The various materials from the Special session are being made available by DFO on the OMRN website http://www.omrn-rrgo.ca/.

Following this brief introduction, the major part of the report, in section 2, consists of summaries of the seven presentations in the session, and of the discussion following each presentation. Section 3 reports on the integrative discussion held after all the presentations were completed. Finally, Section 4 of the report seeks to synthesize the major messages emerging from the material presented and the discussions at the Special Session.

2.0   Presentations

2.1   Presentation #1. Identification of social and cultural values in support of integrated oceans management.

Darren Williams *(DFO: Manager, Oceans Industries and Socio-Economics for Oceans Policy and Planning)*

This Special Session has as its goals to (1) Outline social, cultural and economic information needs; (2) Describe work underway; (3) Identify and discuss methodology for identifying social, cultural and economic values; (4) Develop recommendations and advice for DFO and others.

Social Economic Cultural Overview and Assessment (SECOA) reports are being developed for each Large Ocean Management Area (LOMA). They are the mirror image of Ecosystem Overview and Assessment (EOA) reports, on which the Department has focused more heavily. The SECOA reports focus on Economic (e.g., employment, income), Social (e.g., demographics, education and training), Cultural (e.g., indigenous traditions, rights and uses), and Governance (e.g., formal and informal, indigenous governance, enforcement) within the LOMA.

While useful, SECOA reports to date do not fully assess ocean planning needs: there are gaps, for example, when it comes to identifying activities, stressors and trends, in other words, answering whether we understand social, economic and cultural (SEC) consequences of new activities or the cumulative effects of oceans activities.

As part of the Government of Canada's Integrated Oceans Management responsibilities, DFO is charged with leading and facilitating the integration of all oceans activities. This in turn, guides the identification of the information needed. Information is needed for sustainable development of Canada's oceans, conservation and protection as well as regulatory purposes. For example, in marine protected area planning, we need to know the SEC impacts of selecting among different sites that may have similar biophysical characteristics.

Essentially, DFO would like to develop a geographic/spatial understanding of where and why different activities are taking place in each LOMA, to be able to address new activities as they arise, and make decisions about trade-offs between different activities (e.g., between an offshore wind farm, shipping, tourism and fishing activities).

The key questions are:

- How to identify SEC values to support decision making?
- Which stakeholders value what, where?
- What are key values we should be identifying first?
- What tools for what scales?
- Who should gather the data? Should it be DFO – many would say no.
- How do we ensure fair and equitable representation of values?
- What are the research gaps?
- What can we learn from the presentations today?

Discussion (Note: questions or comments from the audience are shown in bold)

What is the relationship between SEC overview and objectives and ecosystem overview and objectives? There are some lines we don't cross in terms of ecosystem objectives. We will set comfortable goals [for SEC objectives] within the [natural] system variability.

To me, decision making seems to be driven by big money. So which people, and at what level - regional, national, and individual – are we talking about? In terms of ocean management, the shipping industry for example holds a lot of power. With LOMAs, our goal is to set direction for an area, and then nest community approaches within, keeping the desires of the local area in a broader context. We want to set the rules of the game ecologically and to some degree economically - the problem is at a big scale we aren't addressing the needs of local communities. We should put resources at both levels, because we need to understand both.

We need to discuss the political process that determines how information is translated into decision making. There is a governance part of this too. We want to work with local, provincial and aboriginal governments, and have a body that is representative of the process.

2.2 Presentation #2. Theory, tools and techniques for the identification of social-ecological hotspots in support of land use planning.

Greg Brown *(Central Washington University)*

A number of problems arise with traditional land use planning. It is not place based, it faces an often disengaged and cynical public, there is an over-reliance on expert opinion, when we need to learn how to tap the "wisdom of the crowds" (since, while a single person may not be accurate, collective wisdom can be), and landscapes that are modified in a 'death by a thousand cuts' are disjointed, with ad hoc planning.

Methodology

It is the specific responsibility of governments to engage the silent majority, not just stakeholders. The research described here uses public participation GIS (PPGIS) for coastal and marine areas planning. As a methodology, this provides a scientific way of looking at the world spatially through human values. The 'values layer' is missing from typical maps, or those that only consider the physical world. Mapping is a powerful tool; citizen mapping is seen as dangerous to established processes and has been banned by some governments. Participatory GIS is not just data for data's sake, rather part of working toward making a better society by involving the public. The method is multidisciplinary, blending geography, planning and environmental management.

The method begins with landscape values typology. While inventories of biophysical attributes are standard practice, this approach adds what people value and where they value it. Tools such as hotspot mapping, gap analysis, and suitability analysis can be used to characterize the distribution of values, and

then examine what uses are compatible with those values. This way planners can focus on places with high human and high ecological value – i.e. coupled social-ecological systems.

Case studies/ Applications

- Lay – expert hotspot mapping can be used iteratively, discussing what differences arise (e.g., as with a deepwater area near Port of Valdez that marine biologists identified as important but the public did not). Values represented in dark blue on map.

- In resort development, this method can identify where communities feel development is appropriate (e.g., communities on Kangaroo Island, South Australia, identified sensitive and no-go areas in orange and red while green zones were acceptable for development).

- In site selection for a natural park, the park could be planned in a place where local people's values coincide with those held by people near another park (e.g., River Murray, Victoria Province, Australia). In park planning, visitors' survey data can be collected using Google maps and used to generate GIS layers of perceived environmental impact of park activities. (Parks Victoria used this method to help allocate priority zones.)

- Help direct priorities for climate change, e.g.,, using the website www.climatechangemap.net

- In zoning, e.g., Use-compatibility decision models with different activities, such as ATV use, by mapping different values, like aesthetics or recreation, to see where ATV use might be compatible.

- Values diversity (// species diversity) can be mapped to find values-rich landscapes and to generate maps by dominant values.

More on these examples and others can be found at the website of Dr. Brown and colleagues: http://www.landscapevalues.org/

Discussion

Communities matter. That is, values cluster around communities. We tend to value areas that are closest to us. Distance analysis uses a theory borrowed from island biogeography (species diversity is a function of size of island and distance from mainland). The argument is that people value landscapes that are closer to us, and to high density human populations. Breaking down data by demographics is also interesting.

Using "paper GIS", i.e. distributing paper maps and sticker dots and/or asking for written comments, can work, but is a nightmare to digitize. Creating polygons from densities (of dots) is possible but again is difficult to digitize. We can distribute maps by mail but a better way is to use a website and an access code.

Ultimately it is activities that matter on a political level, as opposed to values. The question is whose values count? Those of the local community, region, or country? Collecting the data is easy, but whose values count is a political question. We do know if you don't have the support of local communities, [an initiative] won't work.

This method does not work with indigenous communities. They have been burned in the past and are generally not willing to share some of this data. Different tools might work however, for example papier maché models have been used in developing countries. People might map existing land uses, reflecting existing planning, because that is what they know. Dr. Brown does not know of any cases where this work has influenced a final outcome.

2.3 Presentation #3. Pilot project for the identification of Socio-economic and Cultural Overview Values in the Northumberland Strait of the Gulf of St. Lawrence.

Roland Cormier (DFO Gulf); Brad Cross (History, St Thomas University); Robert Adlam (Anthropology, Mount Allison University); Irene Novaczek (Island Studies, UPEI), Ann Howatt (Island Studies and Environmental Studies, UPEI), Dr P. Nagarajan (Economics, UPEI), Chantal Gagnon (Southern Gulf Coalition on Sustainability) and Ray McIsaac (DFO Gulf).

Background

The current ocean and coastal management approach – based on natural sciences, overlaid by economics, and funnelled through politics – leads to management running into social and cultural realities on the ground as it is resisted at the local level. Meanwhile, coastal people have multigenerational experience of living and working in coastal areas. We need to develop synergies between our scientific knowledge base and the passions on the ground. Sustainability is a trans-disciplinary problem. Mapping has the potential to reframe understanding. We need to consider a 'socio-ecological' domestic product as opposed to only a GDP – to integrate environmental economics with mainstream economics.

Project

For this project, the team developed after DFO asked if a survey of socio-cultural values could be conducted parallel to an ongoing project updating an atlas of traditional fisheries. An academic advisory committee was formed and the draft survey presented. The advisory group suggested that a series of focus groups using a participatory GIS approach should be tested. A literature search into methods revealed the Brown methodology and a process to test at a focus group level was commenced. The Southern Gulf of St Lawrence Coalition on Sustainability has a 10 year relationship with both DFO and with the local communities, which has helped them foster a good relationship with both. For these reasons the Coalition become the bridge between the academic advisory group and DFO and the local communities engaged for the focus groups.

The timeline for data collection was three months. The project builds on Dr. Brown's methodology by using facilitated focus groups to collect data and from that, to develop maps. The team used large maps and an extensive symbol key, with adjusted typography. They aimed for a diverse group of participants who were active members in their communities. Participants were asked to identify as many special places as they liked, and to write margin notes if they so wished. Only 10% identified few or no points on the map.

The team found that the most prominently identified value was aesthetic, followed by recreational, and economic. Ten other values were identified, but far less frequently. One team member suggested that the near shore may be valued for aesthetic reasons, and then as you move offshore, recreation is more valued, and finally the offshore zone is valued for economic reasons. The team is still working with data – for example the qualitative data has not been incorporated, nor has there been reporting back to the communities. Methodological questions include whether the 10% who identified few or no points were not engaged, were not map literate, or were simply being selective. As well, the team acknowledged that their focus groups were not necessarily representative of the broader demographics, and that more extensive research would be necessary to obtain more representative information.

Recommendations

a) Recommend regional teams / Regional Advisory groups to develop locally appropriate approaches. Local knowledge is key.
b) National exchange forums to develop a national profile of land/sea attachment values for national planning and policy development.
c) Pilot studies within theoretical and actual areas of rapid change.
d) Rapid open dissemination of results, honouring ethical agreements and including methodology; this could include a citizen site for links.

e) Development of an on-line research node based in Canada to facilitate international exchanges in socio-cultural research, policy and practices, and to contribute to ecosystem management globally.

Discussion

Cultural values can be expressed in subconscious, symbolic or discursive ways. How might that bear on this methodology? We need to find ways other than dots on a map to represent experiences.

Comment: In a previous mapping project, certain participants didn't connect their experiences with a map. Finally they responded to the recommendation to 'close your eyes and start rowing', and through that, they could relate their world to the map.

As an economist, I'm always asking about dollar signs, which is essential if you want to make tradeoffs with industry. Do you have any plans to add the 'willingness to pay' methodology to this value exercise? This methodology is deliberately non-economic. Once you step on the economic playing field, the outcome is a given, and the choice will maximize dollars. This methodology tries to counter that deliberately.

Comment: In every EIA I've chaired the fight hasn't been about money, but about values. This methodology in an indication of what actual democratic pressure you will receive.

2.4 Presentation #4. Coastal CURA: building knowledge and capacity to support community involvement in managing our coasts and oceans in the Maritimes.

Maria Recchia *(Fundy North Fishermen's Association)* **& Melanie Wiber** *(Anthropology, UNB)*

We want to frame the problem differently – as an explicitly political problem. Integrated management (IM) consists of multiple parties with different values, which are contested at many different levels. IM is a process based on relationships. It is also a political process and that should follow from identification of values. We argued that what is needed is a rural policy for IM and to engage with grassroots more effectively.

The Coastal CURA project could be a lesson, a teachable moment, for IM. Coastal CURA has been a deeply participatory, co-learning process, which has not been easy. The CURA partners are fishermen's associations, First Nations, marine resource centres and universities from across the Maritimes (see www.coastalcura.ca). In our work, several cases demonstrate conflicts in valuation in action: St Mary's Bay (NS), Saint John Harbour (NB), Southwest NB Marine Resource Planning, and Malpeque Bay (PEI). We discuss a few of these in what follows.

Case study: Aquaculture and herring weir fishing

In Southwestern New Brunswick, the local inshore fishery consists primarily of herring weirs, lobster, scallops and groundfish. Herring weir fishing is one of the most traditional and sustainable fisheries, and is the most threatened by developing industries especially salmon aquaculture. Aerial photographs clearly demonstrate that herring weirs and salmon aquaculture cannot coexist. Herring weirs are only seen where there are no aquaculture sites and vice versa. There are several reasons for this phenomenon. Herring avoid the light, noise and smell from aquaculture sites. Although both Fundy North and the Fundy Weir Fishermen's Association have objected to the siting of aquaculture sites near existing and productive herring weirs, the fishermen have lost nearly every time. Recently DFO initiated a new process working closely with the inshore fishing industry in the site selection for 3 new salmon sites. For the first time, fishermen were asked where the new sites should be positioned to minimize the impact on the inshore fisheries. After negotiations with the aquaculture industry and several levels of government, 3 new sites were selected that minimized the impact on the inshore fisheries. This process has also opened the door to a new relationship between the two industries. There are times when one industry (in this case aquaculture) obstructs another industry (herring weir fishery). In these cases it is imperative that

government agencies take a lead in facilitating compromise and relationship building for wise development as DFO did in this case.

Case study: Saint John harbour

Saint John harbour is an industrial urban port with a historical inshore fishery that continues to be very lucrative today. In fact, much of the present day fishing effort of Fundy North, up to 40%, has shifted into this urban harbour. But the values of the inshore fishery are not reflected in current harbour management. Those values include history and fishing ancestry, flexibility to fish seasonally, independent family business, healthy fish stocks, space to fish, functional wharf, all of which are at risk. The lobster fishery, in particular, is being pushed out of the harbour with recent expansion of the shipping industry. It is another case where government intervention is imperative to produce sound development that does not severely reduce the revenue of one viable industry to increase the profits of another.

CURA research has shown that good relationships are key to producing sound management and planning. It is imperative that the right people lead and participate in the process. In the example of Saint John Harbour – how would an outsider know that over 40% of the lobster fleet in LFA 36 (75 boats) fish off Saint John Harbour in the spring season including boats from as far away as Campobello? Would an outsider know to talk to fishermen from Campobello about what they value in SJ Harbour? EIA's are the most common mechanism for valuation work, but project proponents usually want to use the smallest study area possible and the studies are most often conducted by consultants with little knowledge of the community.

Synthesis

Canada's rural policy is lacking. Although, we have a rural policy framework, it is nested within Agriculture and Agri-Food Canada. All of our policy is urban centric and geared toward centralization of the regulatory environment. It would be enlightening to compare the Italian approach to rural policy, where family farms and local food are valued first and foremost, to the Canadian approach.

Good relationships alone cannot guarantee sound planning and management. Access to information is at least as important. With respect to water quality data around aquaculture sites, the data is ostensibly available – it's on the government website, but in a format that is not useful: water quality is given with respect to sites but then sites are just given a number, without any geographic coordinates. We have found many instances where the information needed is just not available. These are some of the challenges we face in our pursuit of integrated marine management.

Discussion

Comment: Proprietary information is guarded, which is a huge problem within our LOMAs. As it is in our communities, for example with respect to new chemicals intended for use against sea lice.

Comment: Relationship building is essential to information sharing, whether it be trade secrets or aboriginal knowledge.

2.5   Presentation #5. Identification of socio-economic and cultural values in support of integrated marine planning and management in the Beaufort Sea.

Adrienne Paylor and Leah Hartwig *(Central & Arctic Region, Dept. of Fisheries and Oceans)*
Contact information: http://www.beaufortseapartnership.ca/

This presentation concerns ocean management involving the Inuvialuit ('the real people') Inuit people who live in the western Canadian Arctic region. The Inuvialuit Final Agreement, established in 1984, is a comprehensive land claim agreement, leading to the Inuvialuit Settlement Region that includes 91,000

square kilometres and the towns and hamlets of Tuktoyaktuk, Sachs Harbour, Paulatuk, Inuvik, Aklavik and Ulukhaktok.

The relevant governance bodies for ocean management include (1) the Beaufort Sea Partnership (BSP), with broad stakeholder representation to provide input and for coordination (82 members from 37 organizations), and (2) the Regional Coordination Committee (RCC), a senior group responsible for decision-making, direction and ensuring the development of an Integrated Management Plan.

The Social-Cultural-Economic (SCE) Working Group has as its role to (a) provide guidance on SCE components of the IOM Plan; (b) develop SCEOAR baseline data, conditions, issues, trends and assessment and (c) identify SCE objectives. Its membership includes Inuvialuit Regional Corporation (IRC); Inuvialuit Joint Secretariat (JS); Government of the Northwest Territories (GNWT); Yukon Government (YG); Indian and Northern Affairs Canada (INAC); Fisheries and Oceans Canada (DFO); Parks Canada (PC) and; Canadian Association of Petroleum Producers (CAPP). This presentation explores two major approaches used by the SCE Working Group.

Methods/Process: #1. Identifying SCE Values

- Research literature review, assessment of data sources, gap analysis, and current issues;
- Pre-planning surveys to assess community and regional priorities;
- A selection of statistical indicators were used to establish baseline data on SCE wellbeing;
- Engagement/consultation - community workshops; issue scan to identify priorities & objectives.

Meaningful Engagement. Community Workshops: (including representation from Social Services (NWT); Regional Heath Authorities; Justice Committees; Elder Committees, Youth Committee; Community Corporations; Mayor / Hamlet Reps; Hunters & Trappers Committees; General Public).

Communities planning objectives. (Communities identified 5 categories of impacts and objectives - (a) Education and training (b) Health and wellness; (c) Capacity and infrastructure; (d) Culture and environment and (e) Traditional economy.

Indicators approach. The Community Well-Being Index combines into a single score the following four components: income per capita by total population, education, housing (quantity and quality), and labour force (participation and employment). Examples of indicators include:
   o Social/cultural/economic assessment: sharing of food is a culturally-important activity, and its practice can be a proxy measure of the importance of cultural and social connections to the environment amongst the people of the region.
   o Cultural Continuity – level of ability to understand and speak indigenous language.
   o Social capital: control of destiny: (e.g., participation in elections, in civic activities, community events, community meetings, volunteering for local organization/group). Other measures of "social capital", or the degree to which people are engaged in their communities, can be shown through participation in local events and meetings.

Aspirations. Well-being is finding a balance between maintaining cultural traditions while attaining modern wants and needs. Infrastructure reflects the capacity of communities to function, develop and serve their residents' needs. Infrastructure can be a key limiter to economic development, and is also critical to community health and wellness. Examples of goals include: (a) economic goals (to foster sustainable economic opportunities and options for Canadians, northerners and coastal communities) and cultural goals (to maintain and increase peoples' sense of place, and preserve cultural identity and spiritual connections as they relate to oceans and coastal areas).

Lessons Learned. There is a need to build trust and relationships first, therefore need adequate time and opportunities. Preventing negative social outcomes requires serviceable understanding of what caused the situation in the first place. One must look at what communities are good at, not just the problems, and also need to record strengths. It is difficult to express complex social-cultural-economic (SCE) dynamics.

Need new methods and tools to accurately reflect and communicate SCE interactions and influences to decision makers.

Methods/Process: #2. Geospatial analysis
(Using GIS and risk analysis to synthesis social, cultural and economic information)

Based on data collected from the SCEOAR for the Beaufort Sea LOMA, hot spot maps have been developed. For example: (1) an overlay map for social and cultural information: e.g., traditional beluga harvesting areas and whale camps (overlay of social and cultural important areas-based on number of activities); (2) an overlay map for economic information e.g., ports and refueling stations (overlay of economic areas-based on number of activities); (3) an overlay of these two maps for example could include tourism and oil & gas activities in beluga harvesting areas and archaeological sites; (4) integration of ecological and biodiversity sensitive areas (EBSAs) shows areas where these three components overlap (may be ranked according to level of interactions-high and low).

Proposed next steps in this process include (a) moving toward spatial delineation of marine use activities; (b) approval and ensuring that the information is received accurately; (c) exploring new opportunities for information sharing, display and analyses (e.g., GOOGLE, etc.); (d) targeting key social, cultural and economic data sets; (e) further designing Pathway of Effect models and impact assessment tools to assist in the analysis of social, cultural and economic dynamics and production decision support tools.

Discussion

How do you manage for expectations? Always cognizant of this and try to manage expectations by being fairly honest about what we can and cannot do – 'this is a process and something that you are welcome to be part of but it may or may not do what you want, but so long as you are engaged it has higher potential'. We try to communicate that to keep expectations up. For the most part people have fairly low expectations of us.

What was the process for developing the scores/approach? A process for engagement and talking. Measuring things that are not measurable, e.g., 'happy meter', and building consensus. Measuring all the different opinions… at the end of the day, what keeps coming back, what stays; talking to people and then hopefully agreeing to a number.

Were there any particular universities that you are working with? The consultant that we were working with has just retired from UNBC (Northern BC), Heather Myers. We see a strong need for more academic support for the work that we do. We are trying to develop more in-house capacity. Conferences like OMRN are incredibly helpful, it's all about the networking and all the work that we are doing is not just being done by DFO. DFO set up a table and invited others, allowing this to come together.

With large scale developments (e. g., oil and gas) coming into the region, how do you prepare for these? Being prepared for sustainable large scale development… so oil and gas is coming, mining is coming, shipping, so it's not about everybody staying out, but more about how can we be prepared.

Are there objectives for communities to be able to create a balance? There are 12 objectives for social-cultural, economic planning; this was just one example, there are a whole series of other ones that are about capacity building, training, etc. and these are all in management plan (see: http://www.beaufortseapartnership.ca/).

Trying to identify new transportation routes, would this change the hotspots? No, it would not change the hotspots as they were all overlaid with each other, but it would change the interactions between the two.

To what extent does the Beaufort Sea Partnership take into account other indigenous groups that spend time in the Arctic as well as the United States? Yes, it does take other indigenous and local

groups into account. We tend to speak of the Inuvialuit all the time, but the Gwich'in, are at our meetings and so too are other northern culture groups (from Alaska) so we try to be inclusive with all.

How does ocean management proceed when it is still not determined what is part of Canada and what is US? We drew a line on a map and then proceeded with planning. We know that the next step will be to have national engagement, participating in some of the large ecosystem management work that the Americans are involved with, through the Arctic council. Now the focus is on building here, but that will be the next step, such as connecting to land-based planning and other countries.

Regarding relationship building, how long do you intend to stay in your current position and is there any discussion within DFO regarding the desirability to maintain relationships, which are built with significant dedication of resources as so often people move on into new areas and the process has to start again? Excellent points and questions and these are some things we struggle with all the time. While there is staff turn-over, long term commitment is critical. Within our program, some of the values that we have spent many years and resources building (e.g., relationships) – how do you measure that? There are the relationships that we have built, healthy ones. Starting to recognize these other values might be the first step to bring management on board. It is important that communities know that their information has been used.

2.6   Presentation #6. A review of the state of the knowledge of marine and shoreline areas in the Queen Charlotte Basin.

Robert Bocking *(LGL Limited) -* **Contact**: www.offshoreoilandgas.gov.bc.ca

This study is based on a report commission by the BC Department of Energy and Mines. The objectives of the study were to (a) impart, to interested parties, a better understanding of what is known about valued marine areas in the Queen Charlotte Basin and the main sources of that knowledge and (b) provide direction as to the most critical areas of further research to fill knowledge gaps.

The key questions addressed were as follows:
1. What are the known categories of Valued Marine and Shoreline Areas (VMSAs) within the Queen Charlotte Basin? Why are these areas valued and by whom?
2. Where, as far is presently known, are these VMSAs located?
3. What is the status of knowledge about known VMSAs?
4. What are the apparent gaps in knowledge about known VMSAs and about the existence of other, as yet unrecorded, VMSAs?
5. What initiatives are underway (or imminent) that will contribute further to knowledge about VMSAs in the Basin?

The study area comprised Dixon Entrance; Hecate Strait; Queen Charlotte Sound; Queen Charlotte Strait and West Coast of Haida Gwaii. The approach included defining values (Themes, Criteria, Ratings), defining the spatial scale (large regional areas); identifying existing information sources (mainly secondary literature and electronic-databases - mostly government), Research and data, (previous marine plans), incorporating local knowledge and other paper sources. This information was then valuated and synthesized.

Seven defining themes were identified. Social-cultural themes included fisheries, tourism and recreation; archaeology and heritage and areas of special significance. Ecological themes included marine mammals, marine birds, fish and marine habitats. For the social-cultural themes, 25 secondary themes were identified, e.g., Fisheries (commercial, recreation and First Nation); Tourism and recreation (ocean kayaking, scuba diving, coastal cruising, shore-based activities, wildlife viewing, cultural heritage activities); Archaeology and heritage (archaeological sites, special values, underwater potential, shipwrecks); Areas of special significance (marine parks, marine conservation areas, ecological reserves, wildlife resources, sponge reef protection areas, rockfish conservation areas).

Two approaches used for criteria and value rating: (1) equal value across themes, (2) unequal value across themes. All themes were rated as high, medium, low, or unknown value. Value criteria varied for each secondary theme with some being more 'quantitative' than others (e.g., 'Professional' opinion/interpretation or previous valuations (e.g., relative importance values)).

Themes were compiled at varying spatial scales and it was not practical to recompile at a single scale. Therefore the work had to adopt a base layer suitable for presentation at a regional scale: Provincial Eco-units (Depth, Relief, Substrate, Exposure, and Current), with 413 units ranging from 15 km^2 to 4500 km^2. The shoreline was buffered by 10 km to separate nearshore from offshore.

A key step was to identify information sources. The criteria for doing so included being spatially representative and having broad coverage, and being readily and publicly available. The sources included (a) Government data (Pacific Coastal Resource Inventory, Tourism Resource Inventory, DFO data; Coastal plans: NISCP, CSCP, CCPI, other paper data), (b) recent academic reports (e.g., Back to the Future) and (c) local knowledge.

For the valuation, the work started with values for each theme, created buffers as necessary, overlaid themes on eco-units, determined the relative contribution of a theme to eco-units (to determine the value of the theme within that eco-unit). Values were initially assigned using agency 'expert' opinion. Buffering of eco-units was required in some cases to capture shore-based themes (e.g., hiking, archaeological sites). The weighted valuations used collective expert opinion to assign weightings across themes, with interviews used to validate theme ratings using local knowledge and a Delphi approach. In total, 42 people completed the evaluation matrix; these were mostly local First Nations and heavily weighted to fisheries themes.

To incorporate local knowledge, the project asked local respondents if they agreed with the theme values assigned to eco-units from existing databases. Of the 314 persons contacted, 68 interviews were conducted through First Nation study partners in five regions of study area. The process included in-person approaches, e-mails, and use of a website. The interviewees consisted of: scientists, resource managers, fishers, First Nation community members, community groups, and government representatives. Individuals provided their own value ratings for themes in geographic areas, which allowed comparison of ratings with and without local knowledge. There was a change in the overall assessment of values observed after incorporating local knowledge.

In summary:
o   Approach used was successful at identifying knowledge areas and gaps within the study area.
o   Showed spatial extent of values with much more known in nearshore areas than offshore areas.
o   Accessibility of existing knowledge was found to be a significant issue (particularly for tourism and sub-surface archaeology data).
o   Able to examine the role of expert opinion and local knowledge on the outcomes.
o   Significantly more resources would be required to enhance the Delphi approach to incorporating local values.
o   Gaps remain, particularly for mammals, non commercial fish species, cultural tourism, traditional knowledge.
o   Need to do a sensitivity analysis.

Discussion

The defining of principle no-go zones for gas development… was that ever used, did it ever enter any planning or decision making process? No, never used in any planning. It can be found at www.offshoreoilandgas.gov.bc.ca Moratorium is in place so the whole area is a no-go. Provincial BC government has shifted its focus, so there is no more funding going into this issue, it is all onshore.

Where are there any other social-cultural activities taking place, like jet skiing? One that comes to mind is whale watching. There is not much going on in the Queen Charlotte Basin, but the study touches

on northern Vancouver Islands, touches into the straits. However this would not be captured in any kind of database, so this is an example of what we may have overlooked.

Cultural values end just in the coastal areas, although there are a lot of synergies between conservation and cultural values which could provide a stronger argument for conservation as opposed to economic development. In offshore area, where conservation is not a focus, when seeking cultural values, is it fair play or strategic to sensitize people to aesthetics that they possibility have never seen? How do you get a set of cultural values for the offshore area? Comments from the floor:

   o I feel very uncomfortable with the attempt to provide hard boundaries around systems of values, it is like the fishermen who was told to close his eyes and row in order to evoke all the values that are attached to a place and if you said the same thing to a lot of people who work out at sea or in the middle of the ocean, if you gave them an opportunity to talk about their daily experiences, their spiritual experience then they can talk about these ocean values.
   o There are heaps of cultural values attached to those remote offshore areas and it struck me when I saw this list about e.g., the herring fishery (economic value), herring fish (critically important food source/food chain) and a hugely culturally important fish for aboriginal people. Everywhere these fish swim, and they are all around the coast, this is a culturally significant area, as the herring take their cultural importance with them where they swim.
   o Iconic species - some philosophers on public governance have done a kind of learning circle around iconic species, on what people don't know, and try and build their knowledge up before these surveys.
   o Salmon - coastal and inland people did learning exercises and then did the ranking and values. Helped change approach and values.

Difference in scale: in seeking to capture values over a large area, was there an attempt to tie it to the ecosystems, to lay it on an ecosystem based framework? What was the process? We tried through an internet approach; which did not go very well. There was supposed to be a much larger outreach program through UNBC and we were trying to piggy back onto that with our questionnaire, going into communities, but that never happened, so we were left with a small sample. Need to view this project not as an end point but as a methodology that could easily be repeated. Five years makes a difference in terms of maps and technology.

2.7   Presentation #7. Generating spatial information to support integrated marine planning: advantages and challenges of a collaborative approach.

Dave Nicolson *(BC Marine Conservation Analysis) www.bcmca.ca*

The British Columbia Marine Conservation Analysis (BCMCA) is a collaborative project designed to provide resource managers, scientists, decision-makers, and those with an interest in the marine environment with better information to have discussions and/or make decisions about the ocean along the BC coast. The overall purpose of the BCMCA is to identify areas of high conservation utility and human use in BC's marine waters. The BCMCA does not advocate any particular position or conservation outcome; rather it will generate a number of products that collaborating organizations can make use of, for example to produce an atlas of ecological values and human use. In addition, the spatial planning tool Marxan is used to identify areas of high conservation utility and areas important to human users on a coast wide scale. Outputs from the BCMCA may be useful in planning processes because they are scientifically defensible and collaboratively developed. The BCMCA process and outputs are NOT intended to replace marine planning and decision-making processes.

The study area of the BCMCA is all of Canada's Pacific Waters. It covers the area from the Washington-BC border to the Alaska-BC border and from the shoreline to the 200 nautical mile EEZ. The work is being conducted outside of a government-led planning process, but may inform planning processes. The intent of the BCMCA is to help move the discussion from a debate on data (sources/quality) to a discussion on marine planning objectives for sustainable use.

BCMCA participants on the Project Team and Human Use Data Working Group include federal and provincial government agencies, an academic researcher, aboriginal organizations, ENGOs a regional multi-sectoral management board and marine user groups (including commercial and recreational fishing, tourism, ocean energy, marine transportation and aquaculture and other marine tenure holders).

This initiative links with ecosystem based management processes by helping to develop a common information base, exploring spatial relationships between features, considering a wide variety of conservation scenarios (objectives) while recognizing socio-economic value, and helping to develop the inter-personal and organizational relationships necessary for EBM discussions to take place. A November 2005 workshop was a key to the establishment of the BCMCA. The workshop identified barriers to the uptake of the original Marxan spatial analysis work known as the Conservation Utility Analysis (CUA) done by the Living Oceans Society (LOS). At the time, governments were not as comfortable with a Marxan approach as they are now. This new approach to developing products that will support marine spatial planning in BC (the BCMCA) focuses on inclusiveness and transparency to allow users to gain greater comfort in use of the products to support marine planning on the BC Coast.

Method/Process

The approach begins with collecting and reviewing the best available data to represent ecological features and human uses. Then data analyses are carried out using Marxan to identify: (a) areas of high conservation value; (b) areas that maximise conservation value while minimising overlap with areas important to human use (c) how well Marxan can incorporate marine reserve design principles. Products are made available as a hardcopy and digital (PDF) atlas, reports and downloadable spatial data (downloadable data where allowed), with significant effort on metadata documentation, which will be available regardless of whether the actual data can be downloaded.

The steps in the work include: identify marine features and supporting data through workshops that focus on ecological elements; engage human users of the marine environment to identify the best way to spatially represent their interest in the marine environment; collect, assemble and have experts review data; prepare for Marxan; analysis using Marxan / Marxan with Zones; prepare an atlas with descriptive facing pages for each map and reporting / communicating the project, with an atlas, website, online repository and other communication products.. The project is roughly divided into 4 components (ecological, human use, Marxan, communication/atlas). Progress to date on the human use component has led to six sectors identified (1) commercial fisheries, (2) recreational fisheries, (3) energy (wind, wave, tidal, oil and gas) (4) Shipping and marine transportation; (5) Foreshore tenures and (6) Recreation and tourism.

There are over 100 human use features and over 200 ecological features. The data is quantified into planning units that consist of 2x2 km squares between the coast and toe of the continental shelf and 4x4 km squares between the toe of the continental shelf and the 200 mile EEZ. Human Use datasets were identified through sector by sector engagement. A Human Use Data Working group provides advice to the BCMCA on how best to incorporate human uses in the work.

Transparency and rigor for both ecological and human use data have led to input and review steps that have taken different forms. Examples include, i) co-hosting a workshop with the Ocean Renewable Energy Group (OREG) to create maps of renewable ocean energy interests; ii) Hiring an advisor to update maps of sport fish areas; iii). Coordinating online circulation of data for review by aquaculture, forestry, oil and gas sectors; and, iv) attending dive sector trade show to solicit dive map reviews. In some cases there is a single source of data so no review is required. In other cases there is no central review body (sea kayak and scuba are examples of such activities).

Some key challenges are: i) Managing communication among project team members, their constituencies, project staff, user groups, contractors; ii) Maintaining processes for transparency and inclusiveness; iii) Building understanding of a complicated analysis tool; iv) User group engagement; v)

Working far upstream of decision points; v) Maintaining project scope and timelines with so many collaborators and interests involved in the project; and, vi) Working outside a formal planning mandate.

Potential applications of BCMCA products include (1) First Nations, provincial, and federal marine planning; (2) marine protected area analyses; (3) identifying areas of overlapping human use; (4) habitat referrals for foreshore leases; (5) oil spill response; (6) identifying economic development opportunities; (6) habitat analyses for commercial species.

Discussion

When you said you are evaluating the life span of each dataset, so far what is the average life? It really varies from dataset to dataset and who you talk to. If you talk to some commercial fishermen, the lifespan is one year, and you can do 5 year compilations of the commercial fisheries data, but they say anything over 5 years is irrelevant. However if you look at the 50 year trend, areas that were hot then are hot again now. So I would say 3-5 years on average, but it depends. The tourism datasets (e.g., cruise ship use) change from year to year and use (volumes) can be very trendy. Sea kayaking seems to be steady over a 10 year period. Good dive sites don't change; you just find more of them.

On the other side of the coin sometimes there is a lot of value in historical information. Even though the dataset might be out of date from a usage perspective, it might still be valuable from a historical perspective. The historical data is very difficult to come by – for instance the BC provincial government maintains and provides current data, with historical data generally not available. I know DFO has some good historical records of fishing use and the T. Buck Suzuki Foundation on the west coast has a project ongoing looking at historical fishing data, so they are talking to fishermen as to where they used to go 40-50 years ago. That information has been largely lost but it is good historical knowledge. Another set of information is whales, which were decimated 100 years ago through hunting but they have a record of this information and this gives you historical information on potential whale habitat so this is important.

Did you attempt to talk to other fishermen groups other then the ones that you have identified? Yes, there is a long list of groups that we did talk to and we are still in communication with many of them. The groups that are on the slides are the groups that are actively participating with our working groups and they communicate with their constituency groups. For example, BC Seafood Alliance is an organization that covers a large number of fishermen groups.

In the human use categories, I saw tourism there but not cultural or heritage sites. I assume that they are covered off in tourism? No, that is a really interesting point. On the project team, we have three First Nation groups represented and when we started working on the project, one of the first questions we posed was what about culturally significant sites and information, and they recommended that we not include this in this particular study. The First Nations TEK is sensitive, and also not consistent on a coast-wide basis, which is one of the criteria for the BCMCA. It is best applied at a more local level. We do have information on ship wrecks.

Considering the idea of an 'expert' approach challenged by local knowledge, what are your experiences with this? I think local knowledge is great at the local level but falls down at a provincial scale that we are working on. Very few people have knowledge on a coast wide basis; they know their fishing area, bay or the west coast of Vancouver Island, but they don't know what is going on along the Queen Charlottes or how the two relate. It's a question of scale.

Alternatively, large scale knowledge misses very critical knowledge of processes that are going on. Yes, critiques of our work recognized that this is one of the limitations of the process, but we are trying to put this into a coast wide study (with 2kmx2km grids) so it is not going to capture that local flavour, so it is not intended to inform decisions made on this local basis.

3. Integrative Discussion

This part of the Special Session sought to highlight lessons learned and recommendations for accurate and representative identification of social, cultural and economic values at multiple scales. (Chair: Anthony Charles, Saint Mary's University)

3.1 Key lessons on different scales and approaches

Greg Brown's comments:
- o Any methodology needs to involve systematic data collection. Government needs to prove that its lessons are science based, replicable and reviewable. We have heard lots of different methodologies today and the bottom line is that each one represents a unique approach. Ultimately the approach needs to be systematic and partially standardized.
- o Has to be highly inclusive, but may not have to include scientific public sampling as I indicated, but it does need to be inclusive. Could be focus groups, but the bottom line is that how inclusive it is affects the implementation of the plan, i.e., the buy-in.
- o Trust and relationships are essential for success. In the forest project, where we mapped the values, we tested the final decisions of the plan and it was not consistent with what the people had mapped. The forest supervisor went in a different direction from what people mapped in their landscape and there goes all trust, the process, and people feel bad.
- o False sense of precision with expert data: Values get criticized for being funky but let's face it that with the expert data, maps are old, based on unknown methodologies… they are almost as fuzzy as for values data.
- o Sensitivity analysis is essential. There are error bars around any data including values data. Need to recognize that and see how much assumptions change by shifting the data. Base decisions on what you know, rather than what you don't know. If you have a map without the values in place, that does not mean that there are no values. Intrinsic values and existence values are out there… we have just not mapped them.
- o Ranking of values is important because there are conflicts between values and what we have found (ranking in many different ways… can ask people after mapping which is most important). The reality is that what people map is a good proxy for importance; don't really need more sophisticated ranking techniques. If they put more aesthetic dots on the map, then that is more important.

Other Comments:
- o Need for flexibility: I agree with these conclusions, government needs to prove methodologies, and for the first step we should share, but should keep flexibility. In dealing with different people and issues, we should not be too rigid. What methodology is right will depend on the criteria and location.
- o Skills: Do we have the right sets of skills and experiences within government, whether the federal or provincial level, to actually do this work? Biologists have different skills sets. Do we have them but are simply not seeing them? Or do we need to bring these people into government? Skills are present in civil society, non-profit organizations, GOSL coalition. The trust aspect is very important as people put a lot of effort into these initiatives and for communities it is a time issue. It is certainly discouraging when things don't happened, and a struggle to keep people involved. So there are the brain-skills within the government but there is also the potential to work with other organizations that have these skills and also have relationships with the people.

3.2 Data: availability, collection, quality and communication

(i) Data availability: Are we looking for maintaining more data? Is it data that is the missing link for successful management?

- Not so much to maintain more data, as this exists in other places. Perhaps we are not tapping in successfully and partnering with other institutions to bring in this information. What exactly are the barriers for us to do this in better ways? What do we need to address to reach out to NGOs and wherever that expertise lies, to generate what we don't have? Do we need supportive policies?

- Political will is the limiting factor and politically constructed barriers constrain doing anything. We are awash with data and have never had enough data to push over that barrier of political resistance. What we are doing here is being very averse to jumping over our own institutionally constructed barriers and talking to each other.

- I find that only certain people have access to this information, which is fair as it costs money to obtain. However, when you know that the information is there, but it is only available to one small group of people, there is frustration. We need to make it accessible, and yes we have to collect more, aggregate it but we have much out there and we need to push for this information to be available.

- We have a lot of data, but it can be a black box where the data is processed; good data goes in, a bad decision comes out. Why? So it seems to me that we should be focusing a little more on how data is used or ignored by decision makers? How do they get away with this for so long? This part of the discussion has not been touched on. People have mentioned the road blocks, but it would not be lack or quality of data, or methodology, it would be what decision makers are doing with this information as it is not making any difference to the threats we face.

- The data gaps on the ecology side still vastly outweigh the gaps on the human use side. The only reason we don't know about the human use side is because we don't have the will to do it. Most of the activities that I talked about, certainly on the west coast are regulated. In groundfish management, the users pay for monitoring and collecting large amounts of data and in turn they have a role in the use of that data. It is easier to figure out what humans are doing than the ecology side. Collapses in stocks still show what little we know about the environment and ecology factors.

(ii) Data quality

Government has the responsibility to keep updating information, and there are some challenges with working with outside partners. We need to build capacity in house and ensure continuity. Not to give the impression that everything is whole… values will change over time. How can we be confident that the quality of the data is good and thus reduce the error? How do we know when we have achieved this point? When do you know that you have the trust and relationships to ensure that the quality of data around values is there?

- Dealing with traditional knowledge or local knowledge, there will never be 100% complete data/information. Traditions are adapting to the environment, information is not static. The key is the relationship with the people. Credibility comes from being known through relationships. Traditional knowledge changes for environmental reasons.

- Knowledge is dynamic. Following a systematic approach to gathering information and knowing who you collected information from, there will eventually be data saturation. So even if you add further resources, you will not get new information, so will have some certainty that you have a good picture for now. May have to repeat in 5 years, but have some confidence in the present.

- Data quality control is going to be very dependent upon our relationships and trust. The comment about the black box, I am not sure if it is based on lack of political will but lack of ability to communicate. How do we communicate the people… that is where I find we have the break down. How do we communicate our message?

- It is a Catch 22, talking about doing the values work. When there is no specific context, it is very theoretical. Based on my experience there is a real participation problem if trying to do value based work when there is no crisis issue. The people who will participate are retired people and people with time and not the inshore fishermen. However, if a tidal energy structure is proposed to go in their area, you will get lots of participation, but at that point, the proponent has usually already put the money in and there is little chance that the project will be stopped. So it's a real catch 22 and I am not sure what the solution is. We may be getting information that may not represent the core values and / or not from all. There are also

perceptions that there is a NIMBY syndrome, as well as a problem with fishermen having the time to attend meetings during peak season or given other commitments.

(iii) Data collection vs. knowledge generation; communication with decision makers

- Need to move from data software systems to knowledge and analysis methodologies. This is where the hold up is and the key question is how to turn this data into knowledge, risk based decision making and systems. How to identify the parts of the ecosystem that people value? How do people classify that? We are not going to do that with a project in mind, because if you put aquaculture there then that would be the lens.

- Disconnect between turning information to knowledge and what knowledge decision makers need. Decision makers, planners, analysts and policy people are providing different sets of information. I don't see a bridge between the two… not sure if dialogue is happening. GeoConnections are concerned and have done a study to assess what decision makers need to make decisions.

- Research priorities may not incorporate a sense of who the decision makers are. We are producing all this information, whether it is a formal survey, interview or mining brains, but we really need to know what information they need, what form and when we should present this information. I think this will greatly inform what we are collecting and how to present it to decision makers, i.e., whether as a two page briefing note or by sitting in front of a GIS map. I think being able to understand what their needs are (once we identify who they are) might be a useful research process.

- There is a need for good case examples and educating the decision makers. There is a little bit of an educational process that needs to go on within the department (DFO). We need to make people aware that these values exist but we do not normally address/bring up these values until an issue emerges. So one of the things that I am looking for is good examples of how this information has been used to support better decision making. What I have heard around the room a little bit are some examples of how a lot of good work was done but was thrown out anyway. So I do share that concern, but finding some good examples of how that information was used to support some good decisions in more sustainable ecosystem ways is something that I would be interested in putting before decision makers.

3.3 Research Gaps

- There is an important difference between 'human values' and 'human use values'. Consider the value of what people have in living on the coast… how is that incorporated into decision making? In some cases the issue is the value of human uses while in other situations it is the human values that are underlying the different impacts on the coast. That difference is something that could be explored and talked about more. Also the idea of cultural values and sustainability values.

- Everyone notes the importance of culture and wants culture to be represented in the criteria. We are getting better at collecting this data, but still huge research gaps in interpreting it and using it to manage ocean areas.

- Is there any way that we can systematically collect data that is not tied into academia and government? Is there another way that we can go about getting it and creating systemic data, from a local or traditional perspective? Why do we always have to constantly tie it into a model? Or if we just let it happen though community consultation, will it just naturally fall into some type of model?

- If conventional science, following WWII, and control-oriented models, had been effective, we would not be in the position we are now. Economics have been an over riding value in the west, so what is missing? Not just data, for we know very little about why humans behave the way they do, i.e., human understanding. Why do we have these values, why do we favour some knowledge over others? Having more of the humanities in government and more integrated departments would help, so that you do not have isolated teams but have people working together, including aspects of ethics, social behaviour, ecology. Also needs focus in the universities besides government. People going into sciences should also

get humanities courses, be better managers, scientists. Within educational institutions and working environments, there are gaps in the humanities and subjects that relate to values, ethics and human ecology. For example, consider the approach of mobile lab services where scientists were sent out into the field with people who had little resources but were working with communities, then in turn there were interns that came from the field to work with the scientists so that there was an exchange and each could learn the others' language. Perhaps this could still be done, so that both parties know what they are up against and you have a common language.

3.4 Challenges and Opportunities

- No one department has the mandate or authority to make overall decisions. The problem is where to put this information, as there is no authority for receiving and making these decisions. Without a decision making base there is no process for taking these initiatives forward.

- Just because someone tells you that a certain aspect is important, this may not be statistically significant, as this is only one comment. There is a conflict between cultural values and values of goods and services versus economics, project deadlines and financial years – a focus on the latter aspects does not sit well with collaboration and create false boundaries.

- Government is in a powerful position to be a catalyst, for example government could give communities the "heads up" if a development is being planned for their area and this could greatly facilitate a discussion between industry and communities, such as where does the project fit, how best to incorporate all stakeholder values.

- Integrated management initiatives such as the Eastern Scotian Shelf Integrated Management area (ESSIM) are broader than past processes, and this is an advantage to small communities in that it includes us in the planning process. However, it has not made a difference yet, and I think one of the reasons is that data has not been shared. Politicians move on things that the voters care about and one of the disadvantages of ocean management is that the ocean is big, few Canadians are out there seeing the ocean. The ecosystem approach links the big ocean to all that concerns us on the values map in the coast, for people who live there. As a community group if we see things are going amiss, by understanding and data sharing we can write letters and tell the politicians – "Canadians do care about that issue and here is the data to show this". Data can make a difference, but people need to have access to it to show decision makers that people care about these things.

- Adaptations of methodology in the Beaufort Sea (community social-cultural and economic profiles) could be applicable to not only First Nations but other remote communities that rely on the natural environment.

- Greg Brown: It may appear natural for the group to berate ourselves because the data that we have collected has not been used. Ethically, as planners and professionals, we have an obligation to speak truth to power, but there is no responsibility for power to respond to your truth. That is the political reality and we should still use the best methodologies and ways to generate that truth to speak to power. Having said that, the more information that you present to power, in the form that you think power will respond to, the more they have the opportunity to listen. So the more that you start to collect data that is truly representative of the values of the constituency, there may be a higher probability that they will listen and respond.

4.   Synthesis

The Special Session on Identification of Social and Cultural Values in Support of Integrated Ocean Management covered very extensive ground in exploring existing methods to identify and assess social and cultural values. Table 1, below, attempts to place the six case studies presented in the Special Session within a common framework, one based on assessing each case in terms of (1) objectives being pursued, (2) structure and/or lead agency, (3) analytical framework utilized, (4) main themes being examined, (5) scale at which the method is applied, (6) actual methodologies involved, (7) types or styles of analysis and types of knowledge generated, and (8) comments on funding, extent of adoption of the approach, and other aspects.

Perhaps the clearest differences arose between local-scale and large-scale methods, and between what might be called 'people-centred' and 'technology-centred' methods. With respect to the first of these (see "scale" column in Table 1), some presentations focused on specific coastal communities or small stretches of coastline, while others covered large areas, such as the Beaufort Sea and the entire coast of British Columbia. Others covered modest areas, but with the aim of testing a method for wider application.

With respect to the methods themselves (see "methodologies" column in Table 1), some studies took participatory (Coastal CURA, Beaufort Sea) or focus group -oriented participatory GIS (Northumberland Strait) approaches, while others – generally the larger-scale methods – focused on compiling data and/or using various technologies, such as geographic information systems (GIS), to analyse data over a wide spatial area. However, there are interactions between these approaches, as with technologies that can be used in a participatory and community-oriented manner, as Greg Brown described with respect to "public participation GIS", an approach being tested now in the Northumberland Strait example. Interestingly, most approaches were interdisciplinary in nature, recognizing that even if the focus lies on social and cultural values, these relate closely to the state of marine ecosystems and of their management.

The discussions held in the Special Session in relation to each of the case studies, as well as the integrative discussion later in the meeting, proved very enlightening. Debates emerged in a number of areas. First, questions arose over the need for new data, versus the need to make existing data more available. The latter has elements of data format and distribution (e.g., how easily it is brought together for specific purposes) but also of power and policy issues (e.g., who can access data and who acts as 'gate-keeper' to that data).

Second, while the discussion of needs in relation to large-scale initiatives tended to emphasize data access and technological tools for multi-stakeholder analyses, those focusing on local-level efforts focused more on relationship-building and the need for trust in carrying out assessments of social and cultural values. This presumably relates somewhat to the level of aggregation involved in the analysis and in the data – with compilation of data at a local level raising real issues of data ownership, potential for mis-use leading to negative impacts, etc. Certainly such issues can arise at a larger scale as well (for example in connection with First Nations), but would seem to be omnipresent at a community scale.

Finally, a key element that arose in the Special Session was the difference, in some case studies, between the success in carrying out a study of social and cultural values, and the actual use of that information in policy-making or management decision-making. Specifically, some presenters noted that their work, although completed successfully, was never used in practice. This led participants to explore what ingredients are involved in achieving practical usefulness of the assessments, whether within government or in civil society. The answers may be complex, but certainly it is clear that, as noted above for the process of carrying out analyses, the presence and cultivation of close working relationships, trust, and responsiveness, between the 'analysts' and those who could be using the results (again, whether governments or civil society), is a crucial component in achieving success.

Objectives/Title	Lead Agency / structure	Framework	Themes	Scale	Methodologies	Analysis / knowledge generation	Comments
Theory, tools and techniques for the identification of social-ecological hotspots in support of land use planning	Various agencies and Central Washington University	Landscape values typology	Values diversity, human and overlaid with other types of values	Various scales: Local & national, e.g., site selection for a natural park; resort , in-zoning, development; international e.g., climate change	Public participation GIS (PPGIS) for coastal and marine areas planning; Use of websites, paper GIS	Hotspot mapping, gap analysis, and suitability analysis can be used to characterize the distribution of values, and then examine what uses are compatible with those values	No knowledge of cases where this work influenced decisions.
Identification of Socio-economic and Cultural Overview Values in Northumberland Strait of the Gulf of St. Lawrence	DFO in collaboration with UPEI, Mount Alison University, St. Thomas University, St. Francis Xavier University and Gulf of Saint Lawrence Coalition	Public participation GIS approach with natural science, social, cultural and economic aspects.	Need to consider the social and cultural values attached to places in the coastal zone when making decisions affecting resource use and management, and infrastructure development.	Medium scale: Northumberland Strait of the Gulf of St. Lawrence	Public participation GIS (PPGIS) for coastal and marine areas identification to support planning; Six focus groups in 3 Maritime Provinces to map social and cultural values along the shores of the Northumberland Strait.	Adapted the values mapping approach described above	Mapping has the potential to reframe understanding of human values. 3 months project, need further work to explore data for demographic trends, refine the research instrument, and test other approaches (mail survey, online mapping).
Coastal CURA: building knowledge and capacity to support community involvement in managing our coasts and oceans in the Maritimes	Fundy North Fishermen's Association; University of New Brunswick, Coastal CURA partners	Case studies describing community driven initiatives in the coastal areas	Values based e.g.,, history and fishing ancestry, flexibility to fish seasonally, independent family business, healthy fish stocks	Community basis of analysis, with application to a medium scale; Southwest New Brunswick marine Planning area, and Saint John Harbour	Dialogue, community participation, IM is a process based on relationships. It is also a political process and that should follow from identification of values.	Participatory, co-learning process; importance of relationships and understanding power realities	What is needed is a rural policy for IM and to engage with grassroots more effectively

Objectives	Lead Agency / structure	Framework	Themes	Scale	Methodologies	Analysis / knowledge generation	Comments
Identification of social, economic and cultural values in support of Integrated Marine Planning Beaufort Sea	DFO, Beaufort Sea Partnership (BSP); Regional Coordination Committee; SCE Working Group	Integrated Oceans Management: Framework Community Well-Being Index	(a) Education and training (b) Health and wellness (c) Capacity and infrastructure (d) Culture and environment (e) Traditional economy	Large scale, in Beaufort Sea: 91,000 km^2 (communities of Tuktoyaktuk, Sachs Harbour, Paulatuk, Inuvik, Aklavik and Ulukhaktok)	Community meetings, pilot study, interviews, Lit reviews, SEC indicators (income per capita by total population, education, housing (quantity and quality), and labour force (participation and employment).	GIS & risk assessment (Pathways of effects)	ICO plan being developed, with funding provided by DFO.
A review of the state of knowledge of marine and shoreline areas in the Queen Charlotte Basin	LGL Limited, study commissioned by BC Energy and Mines	Valued Marine and Shoreline Areas (VMSAs)	(a) Fisheries, (b) tourism and recreation; (c) archaeology and heritage (d) Areas of special significance. 3 ecological themes (marine birds and mammals, fish and fish habitats)	Large scale: Queen Charlotte Basin, (413 eco-units ranging from 15 km^2 to 4500 km^2	Defining values (Themes, Criteria, Ratings), spatial scale (large regional areas); identifying existing information sources (mainly secondary literature, databases, local knowledge, and surveys	Valuation with equal or unequal weighting across themes; expert opinion and local input - Delphi. Need to do sensitivity analysis	Report not used in any management decision making. Gaps remain for mammals, non commercial fish species, cultural tourism, traditional knowledge.
The British Columbia Marine Conservation Analysis (BCMCA)	Non-Government Organization, multi-stakeholder engagement	Defining areas of conservation value using Marxan, ecosystem based management approach	Human use: (1) Commercial fisheries, (2) recreational fisheries, (3) energy (wind, wave, tidal, oil and gas) (4) Shipping, marine transport; (5) Foreshore tenures and (6) Recreation and tourism	Very large scale: all of Canada's Pacific Waters; grids 2x2 km^2 between the coast and toe of the continental shelf and 4x4 km^2 between the toe of the continental shelf and the EEZ	4 phases: ecological, human use identification through workshops, interviews with member representatives, First Nation groups, Marxan analysis and , communication of results e.g., atlas of conservation value	Marxan software analysis, GIS	Funding is provided by charitable foundations and in-kind contributions of project team partners. Started in 2006, on-going process until 2010.

Table 1: Summary of key features noted in these presentations

Appendix 1: Participant List

Wednesday 21-10-09
Room 4170, Telfer School of Management
Desmarais Multidisciplinary Building
55 Laurier Avenue,
University of Ottawa, Ottawa, Ontario.

Name	Affiliation
Mark Waddell	DFO
Greg Brown	Central Washington University
Richard P. Rodericks	Transport Canada Marine Environment Protection
Bob Bocking	LGL Limited
Maria Healy	DFO-Oceans-MPA network
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