Report of the Joint HZG/LOICZ/ICES Workshop: Mapping Cultural Dimensions of Marine Ecosystem Services (WKCES)

17-21 June 2013

Geesthacht, Germany

International Council for the Exploration of the Sea
Conseil International pour l'Exploration de la Mer

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Executive summary

Joint HZG/LOICZ/ICES Workshop: Mapping Cultural Dimensions of Ecosystem Services (WKCES), Geesthacht, Germany, 17 – 21 June 2013 Chaired by Andreas Kannen and Kira Gee, brought together 13 participants from 5 nations to discuss ways of increasing the visibility of cultural values in the MSP planning process. The workshop was organised along four main issues which are reflected in the chapters of the report.

a)   Codifying and collecting cultural values for MSP purposes

There are various problems with collecting and describing cultural values. One is the absence of universally valid classifications. The word "connection" was used by the workshop as an inclusive descriptor of the many ways that people relate to and value ecosystems. Given the wide range of cultural contexts, and focusing on indigenous cultures as a specific example, a key conclusion is that cultural values cannot be defined through pre-set criteria. "What is a cultural value" needs to be defined by the stakeholders, rightsholders and communities of interest within the planning area and in those spatial areas that will experience the impacts of a planned project. This has implications for the planning process.

b)   Methods for identifying marine places of socio-cultural importance

"Culturally significant areas" are proposed in analogy to "ecologically significant areas". To identify an area as culturally significant is to conclude that the area provides cultural services that are critical to the wellbeing and identity of the given community. Criteria for identifying cultural significance include cultural uniqueness, broad cultural/community reliance, importance of the feature to the resilience of the social-ecological system, degree of tradition, and dramatic cultural change. Location/spatial extent, temporal scale, and the environmental quality required for the cultural feature or practice in question should also be determined. A baseline of cultural features or practices of importance is suggested as a basis for planning.

c)   Rating impacts on cultural places of importance

Risk assessment identifies vulnerable ecosystem services based on existing and future pressures in the planning area and ascertains the potential of losing a given cultural ecosystem service. The tolerability of the risks in terms of the potential consequence to cultural integrity should be evaluated in collaboration with the community of interest. The workshop used pre-agreed risk criteria to draw up a classification of risks as extreme, very high, medium, low and negligible.

d)   Mapping spatially relevant information

Mapping cultural ecosystem services is challenging due to their often intangible and varied character. As such there is limited existing evidence of significance and spatial and temporal extent of cultural ecosystem services. However, mapping cultural ecosystem services is a powerful tool for grasping the socio-cultural realities of communities, regions, landscapes and ecosystems. Mapping enables localization of critical areas for cultural services management, facilitates better comparison to provisioning and regulating services, and allows consideration of place-based ecological knowledge. The workshop brought together a range of methods that have been used to map cultural ecosystem services and some of the challenges associated with mapping.

Next steps

Results will be published as a Cooperative Research Report setting out 'good practice' suggestions for identifying and mapping culturally significant marine areas. A key recommendation is to expand WGMPCZM to offer a platform for the continued exploration of CES in MSP.

1   Opening of the meeting

The Chairs, Andreas Kannen and Kira Gee, opened the meeting at 10.30 hrs on Monday, 17 June 2013 and welcomed the participants to Geesthacht. Hartwig Krämer representing LOICZ and Beate Ratter representing HZG also welcomed the participants and briefly introduced their respective organizations. Christian Fischer from HZG provided information on housekeeping and technical facilities. Andreas Kannen set out the background to the workshop and explained its relationship with WGMP-CZM; he also referred to the expected outcomes (see ToR e). A brief introduction of the participants followed. A list of participants is provided in annex 1.

2 Adoption of the agenda

A workshop agenda had been circulated in advance of the meeting which was adopted without changes (annex 2). Kira Gee was appointed as rapporteur.

3   Terms of Reference

WKCES was guided by the following terms of reference (ToRs) (2012/2/SSGHIE11):

a) Review and develop criteria and approaches that can codify existing cultural values concepts (such as Cultural Ecosystem Services, CES) in order to make them amenable to mapping of marine and coastal areas (e.g. examples of cultural values classifications). This extends the discussion of two case studies presented to WGMPCZM at the 2012 meeting (see WGMPCZM 2012 report, annex 8 and text on ToR c);

b) Collate methods and criteria used in various contexts (e.g. anthropology, tourism management, visual assessments of landscape impacts) to identify marine places of particular socio-cultural importance; this includes analysing the degree to which methods and criteria applied in terrestrial systems can be used for marine areas;

c) Collate methods and criteria for measuring impacts on culturally important marine areas. This includes developing criteria and indicators which can be used when carrying out impact assessments.

The key question throughout will be to ask whether these techniques are capable of delivering cultural values information in the marine context, and assessment of this information (e.g. in the form of vulnerability maps), in the spatial format required by planners. Based on this, the workshop seeks to:

d) Establish links to the Quality Assurance process in MSP and also to processes of risk assessment in MSP (see WKQAMSP 2012 report);

e) Work towards a manual for marine and coastal planners setting out 'good practise' methods for mapping culturally important marine areas and including cultural information in the MSP process to be published in an ICES Cooperative Research Report (see separate category 1 resolution in annex 12 of WGMPCZM 2012).

The report is due by 2 August 2013 (via SSGHIE) for the attention of SCICOM.

4   Introduction: CES and MSP

MSP identifies which areas of the ocean are suitable for particular uses and activities; the objective is to reduce conflicts of interest and to achieve ecological, social and economic objectives (Douvere and Ehler 2008). From an ecosystem services point of view, MSP can be understood as an attempt to allocate space to the full range of ecosystem services provided by coasts and oceans (Lester et al. 2013). The challenge inherent in this is that ecosystem services are not independent of each other and that trade-offs are required (Lange et al. 2010). Since not all services can be maximized simultaneously, society must make decisions about their relative preferences for different services to be provided by the ocean (Lester et al. 2013).

Presently we still have insufficient knowledge of the entire range of values the sea provides. It is not always clear which marine goods, services and benefits are actually valued, by whom they are valued, where these values are located in space, and what conflicts exist between different types of values. While it is common to focus on the economic values provided by the sea (such as fishing, shipping, offshore wind farming), it is less common to regard the sea as a place defined by cultural meanings. For example, what is the value of recreational, aesthetic or spiritual services provided by the sea? How can we measure the benefits arising from an aesthetic or spiritual experience of the coast, and how are these experiences linked to particular spaces, places and settings?

For planners and managers, the key question in this context is how MSP can take account of these immaterial values in risk assessments in a way that is commensurate with ecological or economic values. This is important for MSP on several accounts:

- Cultural values associated with the sea are very important in generating sense of place and identity for the people living on the coast.
- Cultural values make an important contribution to delivering high level objectives for the sea, in particular social objectives related to human well-being and quality of life.
- Cultural values cover a broad range of elements from very specific areas to broader sustainability needs.
- Just like ecological values, cultural values can be threatened by changing marine activities.
- Cultural values are largely neglected in vulnerability and risk assessment.

To enable MSP to take account of intangible values, their visibility needs to be increased. This requires (1) methods for identifying and specifying cultural values, and (2) mapping of those areas that are of particular importance for cultural reasons. Mapping is also a prerequisite for achieving comparability with other (e.g. economic) values and for identifying the vulnerability of the values and places identified. Places with high aesthetic value, for example, will be more vulnerable to visually intrusive impacts, while places with high spiritual value may be more vulnerable to noise etc. Added understanding of the constituency associated with particular values is also important for understanding the repercussions that might arise from not properly taking these values into account in the planning process (expressed as different forms of risk for example, including political risks).

The concept of Cultural Ecosystem Services (Millennium Ecosystem Assessment 2005) was selected as a useful framework to capture a broad range of intangible values associated with the sea, such as aesthetic values, cultural heritage, recreational

values, or habitat and species values. There may also be other frameworks for capturing intangible values that could be adapted to the marine environment. Ecosystem services generally have gained considerable attention recently, not least at the level of the European Commission who have published a technical report on "Mapping and Assessment of Ecosystems and their Services" (Maes et al. 2013). A wide range of literature deals with various aspects of CES, ranging from aspects such as place attachment to evaluations of individual categories to the question of value classifications and bundled services. Most studies deal with a mix of benefits, services and values, with many also taking a methodological focus attempting to find ways of eliciting intangible values. However, few studies so far specifically focus on the marine environment, or explicitly deal with the link between CES and MSP.

On the basis of the existing literature, and in the specific context of MSP, the following open questions are presenting themselves for working with CES:

- a) What exactly are the CES in the area in question?
- b) Where are CES located?
- c) What are the benefits of CES to different stakeholders and who does the valuing?
- d) How valuable are CES compared to other more tangible values and benefits?

These are the issues the workshop sought to address.

5   Structure of the workshop

The workshop began with a series of presentations which were selected to reflect the
ToRs set out above. The programme contained presentations from both practical and
theoretical perspectives and drew on marine and terrestrial examples (annex 2).

In order to better structure the discussion, the ToRs were broken down into four cen-
tral topics to be tackled by the workshop. These related back to the main purpose of
the workshop, which was to discuss ways of increasing the visibility of intangible
cultural values in order to facilitate their inclusion in marine spatial planning process.

a) Codifying cultural values for MSP purposes

- What formats exist for codifying cultural values in the context of
  spatial planning?
- What limits are placed on such concepts by the need to show cul-
  tural values in a spatial format?
- Does MSP really need cultural values to be shown in a spatial
  format or not?
- What are the strengths and limits of concepts such as Cultural
  Ecosystem Services (CES), and what other examples of cultural
  value classifications can conceivably be useful?

b) Methods for identifying marine places of socio-cultural importance

- Use case study examples to collate methods used in various con-
  texts (e.g. anthropology, tourism management, visual assessments
  of landscape impacts)
- Discuss the best use of these methods in marine spatial planning

c) Rating impacts on cultural places of importance

- Use case study examples to identify methods available for rating
  different influences and impacts on cultural places of importance.

d) Mapping spatially relevant information

- Use case study examples to identify techniques that are capable of
  delivering cultural values information and assessment (e.g. in the
  form of vulnerability maps) in the spatial format required by
  planners.

6 Codifying cultural values for MSP purposes: What do we mean by cultural values and what are the issues?

Defining cultural values

In the context of this workshop values are understood as preference-based values rather than social norms. Cultural values have been defined as "those values that are shared by a group or community, or are given legitimacy through a socially accepted way of assigning value" (Stephenson 2008, p. 126). They include not only typically 'cultural' attributes such as stories and myths but also attributes that form part of nature but are valued culturally (Stephenson 2008). Cultural values therefore have a close relationship with place attachment and sense of place. Importantly, cultural values are social constructs which arise from the specific cultural context of time and place.

In the context of MSP and CES, a specific definition of cultural values is the non-material benefits people obtain from the marine environment, such as personal, emotional and spiritual enrichment, recreation, and aesthetic experience. Other definitions emphasize the interactions between people and ecosystems as key to the production of CES; for example Chan, Satterfield and Goldstein (2012) define CES as "ecosystems' contributions to the non-material benefits (e.g. capabilities and experiences) that arise from human–ecosystem relationships" (p. 9).

The workshop participants did not seek to reach consensus on one definition of CES, acknowledging that different definitions might be appropriate to different contexts. However, general resonance occurred around the word "connection" as an inclusive descriptor of the many ways that people relate to and value ecosystems. This word was considered to be meaningful and understandable to a wide variety of marine area users. So without offering a specific definition, the participants suggest that cultural values or CES for MSP purposes are about the connections that people have with marine, ocean or coastal areas.

Relevance to MSP

While these values and intangible benefits are difficult to evaluate, the social impacts from any development are a key consideration in any decision-making process. Development can have social implications for the local community and impacts on these services can be diverse and complex in their nature, but are more likely to affect individuals and communities, at a local rather than regional or national level. For example, development can restrict the choices available to communities reducing their safe access and enjoyment of recreational or cultural significant locations. Development therefore has the potential to affect the wellbeing of individuals and groups who value their use of the marine environment as integral to their 'way of life' and social identity. The ability and/or willingness of local communities to absorb these impacts can, and does, directly affect the success or failure of marine developments.

Working with cultural values in practise

Most workshop participants found that the cultural values used in their particular studies were adapted from versions found in the broader literature (e.g. Brown and Reed, 2007). A wide range of classification systems exist, such as the Millennium Assessment categorization of Cultural Ecosystem Services (MA 2005) or the classification of services, benefits and values by Chan, Satterfield and Goldstein (2012).

Within the VALMER project and others projects undertaken within the Centre for Marine and Coastal Policy, Plymouth University, an adapted version of the ecosystem service classification developed by The Economics of Ecosystems and Biodiversity (TEEB; see: www.teebweb.org) has been used to codify marine ecosystem services. A key benefit of the TEEB classification is that is enables the separation of ecosystem processes from ecosystem services, which from an accounting perspective avoids the risk of double-counting. Adaptations were necessary to tailor the classification to a marine and coastal context.

The importance of adaptation to local context

In practise however, value categories cannot only be drawn up on paper. An important aspect is adaptation to the local context and allowing the process of adaptation to lead to locally specific categories. Participation is essential in this context as it allows stakeholders or communities of interest to define what categories are important to them. Participatory processes can also help to identify ways that allow for respectful participation and for the knowledge to define whatever method can be used. "What is a cultural value" ultimately has to be defined by the people within the planning area and in those spatial areas that will experience the impacts of a planned project.

In this context, translating existing categories into simpler language, choosing a structured set of categories or creating categories of relevance to a particular society or culture makes the most sense. At the same time, there may be a natural connection between or among categories leading to a 'bundling' of what is seen as closely related cultural information. Such information may include, but is not limited to:

- descriptions of activities (fishing, hunting, gathering),
- accounts about specific events recounted in legends, stories or narratives,
- rituals,
- belief practises.

As Rachel Shucksmith suggests,

"Understanding what people value about their environment, and why they care about a particular place or region, can lead to a deeper understanding of potential conflicts that might be negated if addressed at an early stage of any development proposal."

Strengths of Cultural Ecosystem Services (CES) concept

The main reason for using a concept such as CES in MSP is to assure that the important non-material values that people have around ecosystems are included in decision-making. Further strengths of the CES concept include:

- serving as a motivator for conservation,
- when presented in a spatial format, to identify threats to cultural benefits from ecosystem services and identify areas of synergy and trade-offs,
- enabling the separation of ecosystem processes from ecosystem services, which from an accounting perspective, avoids the risk of double-counting.

Weaknesses of the CES concept

At the same time, there are a number of limits to CES and other value classification systems. Some challenges are related to how value information is gathered, others to challenges in the value information itself. In the context of MSP, an important limita-

tion is the reliance on spatial data. If CES or cultural values are not presented in a spatial format there is the risk they will not be considered on the same level as other, spatially explicit values. At the same time, not all values can be appropriately expressed spatially and/or that there may be important challenges in doing so. These issues are presented briefly below; for a more detailed discussion see Annex 6: Spatially Explicit Expression of CES.

1)   The bundled nature of CES experiences

People often experience CES as bundles of services, benefits and different types of values. The experience of CES is not as discrete elements in a classification system, but as tangled whole capabilities and experiences.

2)   Spatial interconnectiveness

A related aspect is spatial interconnectiveness. Separating which areas contribute exactly to which type of value, benefit or service may not only be difficult but inappropriate or even disrespectful to the way the person values them. (see presentations by Mollie Chapman and Tobias Plieninger).

3)   Process dependence

Transparency and participation in the process of MSP may also be important and not just the extent to which various preferences are met. Some types of values are focused on the way decisions are made, e.g. fairness. Another reason for including a participatory process is that some types of values are group based while others are individual (Sagoff 1998). Citizen or group values reflect what we believe society should do, which may be different from what we want as individuals.

4)   Valuation for others

Valuation for others expresses that certain types of values are not about what we want as individuals or even as groups but for other groups entirely. These include other-oriented values, existence and bequest values as well as biocentric values. Determining the people who value a place for existence or bequest value may prove challenging as many may live far away and have no contact with the actual place.

5)   Other types of values as facilitators of experience

Some CES or CES benefits may be valued for the contribution towards another benefit. They can therefore vary with changes in substitutes available to and resources and capabilities of the one valuing (Chan, Satterfield and Goldstein 2012}.

6)   The dynamic nature of values

In addition, many values are not static and dynamic data may be needed.

7)   Objections to defining areas as more important than others

Finally, there are some objections to defining certain areas as more important than others. In research in Northern Vancouver Island (B.C., Canada), research participants gave the following reasons for refusing to spatially identify important areas: importance could not be pegged to specific places, the information was sensitive, the exercise implies that other areas are unimportant, marine ecosystems are interconnected and emphasis should be on the whole, and finally that nature has gradients and not hard boundaries (Klain, Presentation at Ecological Society of America, 2012).

8)   Dis-services

Concepts such as CES also need to take into consideration dis-services (loss of use).

7   Methods for identifying marine places of socio-cultural importance

The concept of culturally significant areas

The workshop did not set out to produce a consensus definition of Cultural ES or cultural values. Instead, it focused on defining criteria that could help define significance for MSP. Relevant questions include:

- What makes a feature culturally significant?
- What sets culturally significant features apart from culturally less significant features?
- What is the process for identifying culturally significant areas or features?
- How resilient is a culturally significant area, and/or how adaptable is it to change?

Definitions

Features in the biophysical world

We use the term "feature" to mean elements in the landscape, places or activities.

Not all cultural features are reliant on the ecosystem. Many important aspects of culture may have minimal relation to the biophysical world. In order to ensure relevance to MSP, the following focuses on cultural features that DO rely on the biophysical world. A Culturally Significant Area is an area containing a culturally significant feature or a feature in its own right.

Connection

The term "connection" is used to characterize a broad spectrum of intangible values that people hold related to ecosystems, landscapes and places. This term is well placed to encompass the bundled natures of values, services and benefits. The EU Commission Technical Report on Mapping and Assessment of Ecosystems and their Services (Maes et al. 2013) describes these connections as physical, intellectual, spiritual, emblematic or symbolic or other interactions with biota, ecosystems, and land/seascapes, or environmental settings (p. 57). However, we would emphasize the constructed nature of these connections. The ways in which we view the biophysical world are culturally mediated and subject to not only changes in the ecosystem or landscape, but also socio-cultural changes.

Significance

Significance arises out of connectedness, which can be described as convergence of place, practises and social factors. "Significance" thus refers to areas where communities have connectedness based on cultural values and traditions related to the identity of the community. To identify an area "significant" is to conclude that the area has cultural services that are critical to the wellbeing and identity of that given community. High cultural significance therefore implies high priority to the community concerned.

Community

Community in the present context can mean a local residential community or a wider community of interest such as tourists, seasonal residents, or recreational groups. A community of interest is a gathering of people assembled around a topic of common interest (Henri and Pudelko 2003). In contrast to a spatial community, a 'community

of interest' is thus defined not by space, but by some common bond (e.g. feeling of attachment) or entity (e.g. farming, church group) (Ramsey and Beesley 2007). Rightholders are groups with special legal rights, e.g. in the specific case of First Nations in Canada[1].

Societal vs. community significance

A distinction must be drawn between societal and community significance. Societal significance is expressed in national or global priorities, laws and statutes, or land or seascape designations (e.g. World Heritage sites, protected areas); it can also be expressed in national or regional policy, such as promoting offshore wind energy for renewable goals within designated priority areas, biodiversity policy, etc. Difficulties arise when societal and community interpretations of significance differ, leading to different interpretations of what should be given priority. A national park in a remote rural location for example may be highly important to society at large and to visitors seeking a particular experience, but the area may be much less important to local people. Conversely, local residents may identify an area as highly culturally significant that is not covered by any designation at all.

Currently, local significance tends to be neglected in favour of (easier to measure) societal significance. MSP will need to strike a balance between societal and local definitions of cultural significance. Different methods of analysis will need to be employed for defining societal significance.

Creating a baseline for identifying Culturally Significant Areas

Decision-makers and risk managers need evidence to justify their decisions. In this section our goal is to offer guidance to identifying culturally significant areas as one of many forms of input in decision-making processes.

Evidence on culturally significant areas needs to be structured and organized in a way that it will be considered on a par with other types of evidence such as ecological or economic evidence. We therefore focus on creating a baseline of cultural features of importance in order to allow cultural concerns to be heard in decision-making. A second aspect is that collecting cultural data can be a lengthy process, so having a baseline is helpful given limited periods for considering new projects or developments. Finally, if planners have a baseline of cultural data to work with they can work with developers early in the process to find areas of least conflict, rather than developers picking in the dark and potentially facing high conflict areas.

The key baseline questions are:

- What is it?
- Where is it?
- When is it?
- To whom is it important?
- What qualities are needed to sustain it?

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[1] Section 35 of the Canadian *Constitution Act, 1982* gives constitutional protection to existing Aboriginal and treaty rights as well as to rights that are acquired through treaty and land claim negotiations.
https://www.cba.org/BC/public_media/rights/237.aspx,
http://laws-lois.justice.gc.ca/eng/Const/page-16.html#docCont

The role of classification systems such as CES

A classification system such as Cultural Ecosystem Services (MA 2005) can facilitate many aspects of spatial management as the literature and case studies demonstrate. However, a classification system of ecosystem services is not the same as the identification of areas of cultural significance since significance is based on the cultural connection of a community to a given area. Culturally Significant Areas should therefore be identified by the knowledge holders in the community and determined in a participative process which includes an intercultural translation of values and connections. This implies locally distinct categories of classification which arise from the participative process itself. Hence, the role of pre-existing classifications such as CES is not as a checklist to be ticked off, or as a way of unbundling CES and totalling them up. Their role is to act as a backdrop, ensuring that all culturally significant features have been collected and that all user groups have been included.

Periodically and when an important decision needs to be made, the continued significance of these areas and the possibility of new areas of significance should be reviewed.

Criteria of cultural significance

A key task for the workshop was to develop criteria to better characterize culturally significant features. The Canadian criteria of ecological significance were used as a starting point (DFO 2004, 2006), followed by a lively debate on definitions and names of criteria for cultural significance. The initial ecological criteria were uniqueness, aggregation and fitness consequences with the two additional attributes of resilience and naturalness. We first 'translated' these as: uniqueness, community relevance, diversity, resilience of socio-ecological systems, and state of originality or designation. Uniqueness was easily translated and agreed upon but defining the second and third qualities was more difficult. For the second (community relevance) several terms were suggested including congregation and community reliance. For the third criteria, suggestions included: consequences of loss, cultural integrity and depth of tradition. The distinction between the second and third categories was difficult to define.

The following were agreed upon as useful definitions to explore (see also Table1). These criteria are not intended to be prescriptive, but are high level on purpose to allow for different expressions of values and "translation" from different cultural contexts.

- **Cultural Uniqueness:** areas, activities or features having cultural characteristics that are held to be unique, rare, distinct, and for which alternatives do not exist. Uniqueness may be considered in local, regional, national or global cultural context.
- **Broad Cultural/Community Reliance**: a) an area, activity or feature which is important to many different communities or to a very large community/large number of people; b) an area or feature which is essential to sustaining many other important activities; c) an area of feature which holds importance for a given group for many different reasons, or supports many aspects of their culture or traditions.
- **Importance of the feature to the resilience of the social-ecological system:** a) impact of losing one service on other services, b) impact of losing one service on user groups (e.g. user group can no longer perform this and / or other activities in the region), c) consequences of loss for the local

community / region (e.g. losing a type of fisheries can increase unemploy-ment because no alternatives exist and people move out of the region)

- **Degree of tradition:** The feature has a long or deep tradition of importance to the culture.
- **Dramatic cultural change:** The feature has importance in consideration of agents of Change or the historical context of change; loss of essential eco-system function; invasion or conquest; severe changes on the culture, out-side normal cultural change.

Cultural integrity was discussed as another category but is now used in the context of risk assessment as a way of describing desirable/undesirable impacts on the cultural feature.

Table 1: Criteria for determining significance for Cultural Features for a Risk Assessment Process

	Definition	Examples
Cultural Feature	Significance of a particular cultural service/value in a particular area to a community or group of users (scale dependent)	Area (sacred place, historical site, landscape), activity (ceremony, bird watching, hiking), ecosystem property (migration of species, connectedness of landscape), object of importance (monument, heritage site), species (salmon, redwoods)
Cultural Uniqueness (Do we have many or few?)	Extent to which the feature/place/ activity is unique within the region or to which the same or similar features exist in the same region	1) Each instance of it is irreplaceable and distinct (e.g. burial ground, sacred site, historical or archeological site); 2) It belongs to a culture that is distinct/cultural diversity (unique historical sub-cultures, indigenous cultures in most places); 3) It is unique in a global context though abundant locally (e.g. special type of landscape), or unique in a local context though abundant globally (e.g. a city park or recreation area)
Broad Cultural Reliance (How many people or groups rely on it? How many functions does it fulfill?)	an area, activity or feature which is important to many different communities or to a very large community/large number of people; an area or feature which is essential to sustaining many other important activities; an area of feature which holds importance for a given group for many different reasons, or supports many aspects of their culture or traditions.	Proportion of the total population using the feature/place, Number of human communities using it (e.g. sport anglers and bird watchers), Type (e.g. indigenous groups, ethnic minorities) of human communities using it.

Importance to Resilience (How essential is it to cultural integrity or to the group of users? What would happen if it was lost, changed or degraded?)	impact of losing one service on other services, impact of losing one service on user groups (e.g. user group can no longer perform this and / or other activities in the region), consequences of loss for the local community / region role in adaptive capacity	Loss of this feature will affect the benefits from many other features (e.g. salmon fishing which has material, activity, recreation, spiritual, heritage/traditional, artistic, ceremonial benefits); The feature is essential to the cultural integrity of a community or user group and plays a central role in the groups' identity, function or performance of essential activities (e.g. an important ceremonial site); Loss of the feature would have irreversible consequences (e.g. losing a type of fisheries can increase unemployment because no alternatives exist and people move out of the region); The feature allows the community to better adapt to changes (e.g. a place people go to recuperate from stress, a prayer site for difficult times, an alternative species that has similar cultural functions to an endangered one)
Degree of Tradition (How long has the culture valued the feature?)	The feature has a long or deep tradition of importance to the culture	The feature has a long history of importance (many generations of a ceremony or activity); The feature has a strong commitment from the user group or very high participation rates
Dramatic Cultural Change (Does the unique context of the culture that values the feature give it special importance?)	The feature has importance in consideration of agents of Change or the historical context of change; loss of essential ecosystem function; invasion or conquest; severe changes on the culture, outside normal cultural change	Many indigenous groups around the world have been subjected to attempts at cultural extermination through not only colonialism, but also the policies and actions that followed (such as forced removal of children and their "education" in Western norms, language and religion). This situation may justify special consideration of features associated with these cultures. Other unique cultures also face extreme pressures from internal and external forces (e.g. collapse of a fishery).

The purpose of the criteria is to inspire thinking on the reasons for significance. Not all criteria need be met. One may be sufficient.

In addition to these criteria for significance, the cultural and historical context and process of cultural change is very important and should be included in the narrative of why a feature is important. The same cultural context should also be studied before engaging in data collection (process issue, see below).

Significant Attribute Considerations

In order to translate the above criteria into "culturally significant areas" as an equivalent of ecologically significant area, the following attributes should be determined:

Location/spatial extent is important in determining the appropriate boundaries of areas of cultural significance, and will always be a source of uncertainty. Spatial extent should always be considered explicitly in all four dimensions. Spatial extent cannot simply be determined by a reductionist evaluation of the spatial distribution of the community population, but should be determined by considering the spatial relationships of the community to the feature in question (e.g. traditional routes to reach a place of significance). In some cases the extent of a structure maybe unknown, e.g. for archaeological features. In this case it may make sense to apply a precautionary buffer, as in the example of the Shetland MSP where it is thought there are likely to be archaeological features. Buffers can also be this around recreational features where the exact extent is unclear or in cases where the participant does not wish to release detailed information, e.g. climbing routes on a particular cliff, surfing areas, or burial grounds.

Temporal scale is relevant to determining the boundaries of a Culturally Significant Area. Except for fixed structural features, community traditional and cultural activities and functions do not necessarily take place at a specified place all the time. When a Culturally Significant Area is justified by a seasonal activities or functions, the temporal scale of the area should be described in terms of its significance. However, the area is still considered Culturally Significant in all seasons to ensure that it is not altered in ways that the seasonal activity can no longer take place.

The **environmental quality** of a Cultural Significant Area is also relevant in terms of describing its significance. External actors of development can bring changes outside the Culturally Significant Area that can influence or impact the connectedness, access or intrinsic value of the area. These are the essential qualities of the environment needed to sustain the activity, site or feature, such as viewsheds, water quality, essential habitat for a species. [This blends into risk assessment]. This aspect allows the data to capture people's values of interconnectedness and wholeness in ecosystems that may not be well expressed spatially.

Caveats

The criteria suggested here are not meant to be used in a rating form, but rather serve as a starting point for a narrative that describes the context of the cultural feature of importance and why it holds importance. One example of a specific historical context is colonialism and its effect on cultural integrity.

Part of the challenge is that we come from different areas and thus define the same term in different ways. Since this is new reaching agreement will require more discussion and research.

8   Towards risk assessment: Rating impacts on cultural places of importance

Methods for assessing and rating risk to cultural places of importance

The primary challenge of assessing risk to cultural places of importance that depend on ecosystem services is not related to having risk assessment methods per say. Currently, risk assessment approaches tend to assess ecological constraints in relation to socio-economic and regulatory requirements. Few, fully integrate the subsequent assessment of risks to cultural repercussions and socio-economic consequences that arise in the event that a dependant ecosystem service is hampered or lost. The challenge is in assessing the risks to cultural ecosystem services in terms of potential impacts and ultimately of risks to cultural benefits and integrity. It is the later that plays an important role in decision-making processes during the marine spatial planning process. In addition to protecting the significant ecological components, the planning process must ensure adequate spatial management requirements to culturally significant areas. Not only must the planning process manage the risks to the most vulnerable ecological and socio economic aspects, it must also address the risks to the most vulnerable cultural ecosystem services that support significant cultural values identified by the community.

As discussed in previous sections of this report, identifying Culturally Significant Areas is not a general strategy of recording any cultural area or feature. Rather, it is a tool for calling attention to an area that has particularly high cultural significance providing the cultural baseline for marine spatial planning activities at the same level playing field as ecological and socio-economic baselines. The word "significance" refers to areas where communities have identified high levels of connectedness between traditional and cultural values and one or several ecosystem service. To identify an area as "significant" is to conclude that the area has cultural ecosystem services that are critical to the cultural integrity of the community, forming the cultural basis for the risk assessment.

Several risk assessment frameworks can be used for assessing risk to cultural ecosystem services resulting from pressures generated by drivers of human activities. The rating of such risks would, however, rely on standardized risk management frameworks and risk criteria. While a risk assessment is generally a description of the likelihoods and magnitude of ecosystem services impacts, risk criteria, as part of a risk management strategy, provide the basis for evaluating the severity of the impacts in terms of cultural repercussions. Integrative in nature, ISO 31000 risk assessment and management framework (ISO 2009a), technics (ISO 2009b) and definitions (ISO 2009c) have been bridged to ecosystem approaches to management (Cormier et al. 2013). These frameworks include classical risk assessment technics with a focus on cause and effect pathway analysis linking the pressures to potential ecosystem services impacts and consequences to the cultural benefits and integrity. The approach involves the identification of culturally significant areas as well as the ecosystem services that the significant area depends on. A vulnerability assessment is then conducted via conducting a cause and effect pathways analysis (Bowtie ISO 2009c) between the cultural ecosystem service and the relevant pressures occurring in the planning area.

Having identified the Culturally Significant Areas and their dependant ecosystem services, the risk assessment would identify vulnerable ecosystem services based on the pressures occurring in the planning area. Based on the current public policy agenda, future development policies and objectives would also be included in the

assessment. As mentioned earlier, the risk assessment would ascertain the potential of losing a given ecosystem service in contrast to other ecological and socio-economic impacts. Once completed, the risk management function of evaluating the tolerability of the risks in terms of the potential consequence to cultural integrity would be conducted in collaboration with the community of interest. Pre-agreed upon risk criteria would be used to classify the severity of the risks (Table 1).

Table 2. Examples of cultural ecosystem services management risk criteria.

Severity	Criteria
Extreme	A permanent or long-term damage to a cultural ecosystem service that would undermine the cultural integrity of the community.
	The result of which would create long-term loss of trust accompanied by a significant unwillingness to cooperate on marine planning issues.
Very High	An impact to a cultural ecosystem service that would require extensive additional management measures to mitigate the consequences to the cultural integrity of the community.
	The result of which would create significant loss of trust and strong resistance to collaborate. Agreements would not be achievable and negative impacts on other marine planning activities.
Medium	An impact to a cultural ecosystem service where existing management measures can control the consequences to the cultural integrity of the community.
	The result of which would create some loss of trust and resistance to collaborate in the marine planning activity. Agreement would not be achievable.
Low	An impact to a cultural ecosystem service where existing management measures can avoid any consequence to the cultural integrity of the community.
	Agreements on approaches can be achieved in collaboration with the community of interest with specified additional management measures.
Negligible	Impacts to a cultural ecosystem service are at a level that does not hamper the capacity of the service to its cultural functions without any potential consequence to the cultural integrity of the community.
	An agreement is achieved with all participants without any further management measures.

With such criteria, the evaluation would then be based on the relative level of risk for each ecosystem service in support of the decision-making process. Having similar risk criteria to evaluate the severity of ecological and socio-economic impacts would create a level playing field of the risks and severity during the planning process and development of marine spatial management measures.

9   Mapping spatially relevant information

Introduction

Mapping cultural ecosystem services is challenging due to their often intangible and varied character. Furthermore, the values placed on cultural ecosystem services may be personal to individuals and groups, and can change relatively quickly. As such there is limited existing evidence of significance and spatial and temporal extent of cultural ecosystem services.

However, mapping cultural ecosystem services is a powerful tool for grasping the socio-cultural realities of communities, regions, landscapes and ecosystems. Mapping enables localization of critical areas for cultural services management, facilitates better comparison to provisioning and regulating services, and allows consideration of place-based ecological knowledge. To date, there have been relatively few examples of methods to identify and map cultural ecosystem services. In the workshop, we discussed a range of methods that have been used to map cultural ecosystem services.

Examples of methods to map cultural ecosystem services

Seascape assessment

Seascape assessment draws on terrestrial landscape assessment to identify areas "as perceived by people, whose character is the result of the action and interaction of natural and/or human factors" (European Landscape Convention, 2000). Seascape character assessment was applied to a section of the Dorset coast (UK) to identify coherent areas of marine space with broadly common use patterns and visual characteristics. This information was expressed spatially in order to inform the development of the Dorset Marine Plan. Through the application of the objective seascape assessment method, areas of high use and aesthetic value were identified (which also characterized areas in which cultural ecosystem services were concentrated), for which specific policies were developed that respected this character. More information is available from http://www.dorsetcoastalplanning.co.uk. This approach did not prioritize *significant* cultural ecosystem services, although the method could be adapted to do so.

Assessing, mapping and quantifying cultural ecosystem services at landscape level in the Upper Lusatia Biosphere Reserve, Germany

Plieninger, *et.al*. (2013) identified cultural ecosystem services in the Upper Lusatia Biosphere Reserve, Germany using a combination of mapping and structured face-to-face interviews with 93 people (see appendix). Cultural ecosystem services were translated into meaningful questions to allow interviewees to express their answers spatially (for example: "Where in your community do you enjoy the beauty of the landscape?"). Plieninger, *et.al*. (2013) sought to map the spatial distribution of cultural ecosystem services, how cultural ecosystem services relate to land use, and what bundles of cultural ecosystem services could be identified. Spatial analysis of responses in GIS showed that respondents related multiple types of cultural ecosystem services and sites to their individual well-being, that waterbodies and settlements are hot spots of cultural ecosystem services and that croplands and quarries are cold-spots. It was further found that cultural ecosystem services were often bundled into recreational services and intangible values but that the spatial boundaries of cultural ecosystem services were often blurred.

Participatory mapping and GIS

Greg Brown provided a presentation via AdobeConnect on participatory mapping (PPGIS) case studies for coastal and marine planning in several sites in Australia and elsewhere. Beside general uses of the sea landscape values, special places, experiences, perceived environmental impacts and ecosystem/landscape services have been mapped. Participatory mapping is useful for the following application areas:

- supports decisions made for management plans
- makes these decisions stronger as they have the support of the community
- helps to identify coupled social ecological systems (SES) hot spots

Although, there are some challenges and future research needs. There is a lack of specific directives and incentives to engage the public. Furthermore the field of PPGIS is quite new and needs to be developed as agencies lack of experience at the moment. More of Greg Brown's work can be found at http://www.landscapevalues.org/.

First Nations and Cultural Values Mapping in Canada

In a First Nations project from Canada presented by Michael Cox, mapping techniques were applied at a large, non geo-referenced scale. This technique was used because images at a polygon scale were appropriate. Maps for three parcels of First Nation lands were used at a 1: 250,000 scale. Initially, coloured stickers representing the different values were used and each participant was asked to populate each map. Due to complications with understanding the values used and the tedious process of sorting the different coloured stickers, markers of different colours were used to draw the areas on each map by one person while the knowledge holders shared their information. Although preliminary, at a stage further in the process plans are to use 1:50,000 scale base maps using plastic Mylar overlays to record the specific information. The overlays will then be digitized and specific areas will be recorded in ArcView GIS for storage and protection. This is further described in a publication titled Chief Kerry's Moose by Terry Tobias (available at: http://www.ecotrust.org/publications/chiefkerrysmoose.html, 20-06-2013). This shares methods applied in the UK by Pike, et.al, (2010; 2011) who used participatory mapping to identify the social value and tranquility of coastal protected areas.

Shetland Marine Plan

The Shetland Marine Spatial Plan has collected and mapped cultural data for the purpose of incorporating baseline spatial data into a regional marine spatial plan. This has been linked to a policy framework, as well as specific sectoral guidance for marine renewables. Participator surveying, collation and assessment of existing datasets (local datasets and locally amended national datasets) have been used to map the intensity, spatial and temporal extents of a range of cultural features and activities. Mapping local data values and uses forms an important element the mapping process where datasets are normally dominated by assets which are of national, rather than local value. Through local consultation these data has been incorporated in sectoral guidance, weighting the relative importance of each layer based on local values and determining appropriate developmental buffers from features and activities. Cultural mapping has however primarily focused on more tangible elements of cultural ecosystem service, including recreation, historic and aesthetic appreciation of high value areas. Collating more detailed information on cultural ecosystem values could be addressed through larger scale participatory surveying of the community,

however this could be time consuming. As different elements of a community may value ecosystem services differently it is important to ensure that any survey effort would cover a broad spectrum of the community and any results are fully and publically consulted on. The Shetland Marine Spatial Plan can be accessed at www.nafc.ac.uk/smsp.aspx

Mapping ecosystem services for marine planning in Scotland

The Scottish Government has set a target of achieving 100% of Scotland's energy needs from renewable energy by 2020. Marine renewables will help to meet this target. In order to guide the placement of these devices Marine Scotland Science has developed a spatial model incorporating cultural, environmental and industry considerations.

The project brought together a number of aspects of cultural ecosystem services from exiting datasets, new data collection and computer modelling. Datasets included cultural heritage- World heritage sites, Scheduled monuments, wrecks, marine archaeological potential (modelled); aesthetic- National scenic areas, local landscape designations, Heritage areas, world heritage sites, Scheduled monuments; recreation- data collection on spatial extent and intensity of sea kayaking, sailing, dinghies racing and surfing and windsurfing. The model introduced industry specific buffers (wave, wind, tide) of varying size around features or activities based on the likely level of interaction between them. The use of computer modelling to identify potential cultural important areas helped to increase knowledge where existing datasets were limited. This method has linked cultural ecosystem service into national decision-making processes.

http://www.scotland.gov.uk/Topics/marine/marineenergy/Planning

The specific nature of Indigenous Knowledge

Cecelia Brooks and Michael Cox

The interconnectivity of all things on mother earth and beyond is the basis of our spirituality and worldview. It is this interconnectedness that makes it difficult to codify our cultural values in the context of spatial planning. This nature of Indigenous Spirituality includes humans as part of the ecosystem so to remove us from the system and then look at it from the outside that ecosystem in order to classify and categorize values is a foreign concept. The collection of Indigenous Knowledge is not done by asking questions and rating the answers or categorizing the responses but by asking more broad open-ended questions then teasing out the bits from the story that emerges. The nature of our oral history method of sharing information makes it challenging to codify our "data". The overarching principle of our spirituality in mapping our cultural values is that we must take into consideration the collective values of the people. When we map cultural values of individuals it does not wholly represent all the people, as it will only give a snap shot of the individuals involved in the study. This interconnectedness makes it necessary for us to consider the needs of all our people respectfully. The four pillars of sustainable development: economic, social, environmental and cultural all need to be considered when we are contemplating development to ensure that the benefits of these resources are managed carefully so as to provide benefits today while guaranteeing the rights and needs of future generations.

Indigenous Knowledge is a body of knowledge our ancestors used to inform the decisions they made for all aspects of daily living. This knowledge has been passed on

through oral traditions and the passing on of this knowledge is an important part of ensuring cultural security. We cannot simply have weighted values of areas of land and sea placed into categories. Maliseet and Mi'gmag have learned through the passing on of the oral traditions that the interconnectedness of all ecosystems makes it necessary to consider the impacts of areas outside the footprint of a particular ecosystem when making decisions about landscapes and seascapes.

When mapping indigenous knowledge it is important to ensure that the technique is to be chosen by the knowledge holder in the community of interest in collaboration with the planners. Mapping techniques may include large-scale paper maps, GIS base layers with lines, points and polygons as well as ground-truthing early in the process because the experience of being on the land has the ability to bring forgotten memory to the surface.

Discussion themes

Discussion during the workshop revolved around a number of themes related to mapping cultural ecosystem services.

- It was evident that some cultural ecosystem services were easier to compile a spatial dataset about than others. Services such as recreation are relatively easy to map, whereas services such as spiritual well-being are more difficult. The significance of the service is not related to the ease with which a service can be mapped.

- Temporal change was identified as a key issue to capture when mapping cultural ecosystem services. Here two points are key: 1) It was recognized that cultural values may vary over short time-scales. This necessitates regular updated of data and revisiting of "baseline" data when important decisions are made. The other issue of temporality, (2) is the frequency of the activity, e.g. the seasonality of recreational or sporting activities or timing of a ceremony or event. It was clear from the discussion that the integration of cultural ecosystem services with dynamic ecosystem processes is critical. This suggests that spatial data representation for marine spatial planning requires greater capacity for temporal mapping to capture complex spatial and functional interactions between ecosystem functions, cultural ecosystem services, and other ecosystem services. The result may resemble animations, or could be included in the meta data.

- The spatial interdependence between cultural ecosystem services and the elements of the ecosystem upon which they rely need to be identified and mapped. The interconnections may extend over significant areas, for example related to the life cycle of a culturally significant species. The spatial representation of the cultural ecosystem services should reflect this interdependence as management measures may be required to be implemented a considerable distance from where the cultural ecosystem service benefit is received.

- A focus of discussion in the workshop was the varying scales at which cultural ecosystem services exist. It was discussed that some cultural ecosystem services are national or international in importance and are therefore their significance is at a societal scale. In contrast there are local cultural ecosystem services which are primarily significant to local communities at the local scale. This presents challenges for mapping as multiple-scaled values need to be represented together. This supports the need to view the spatial plan through an interactive system such as a GIS interface rather

than a static map, (although to an extent this can be shown in a layered PDF).

- The use of participatory mapping within the identification and mapping of cultural ecosystem services was identified as carrying potential wider benefits. Examples of benefits included the generation of trust between policy-makers and knowledge holders, and strengthening management plans through the inclusion of community held knowledge and through generating support for management from the community.

- It is necessary to be very clear about the purpose of the mapping, the data required and how it will be presented and used. This is because of the considerable burden placed on local communities to provide information to support the mapping of cultural ecosystem services. There are also issues of knowledge ownership and ethical use which need to be considered within the data collection and presentation process.

- The rigorous collection and recording of metadata are important to ensuring the quality of the spatial data. Metadata standards could be established to ensure that the collection of cultural data are adequate.

- A final observation was to recognize that marine spatial planning is not reliant only on spatial data but upon the contextual policy framework, and some means of representing, or including this context, in a marine spatial planning process is important.

Lessons for including indigenous knowledge:

- The interconnectivity of all things is the basis of indigenous spirituality and worldview. It is this interconnectedness that makes it difficult to codify and hence map indigenous cultural values in the context of spatial planning.

- The collection of Indigenous Knowledge is not done by asking questions and rating the answers or categorizing the responses but by first asking more broad open-ended questions and then teasing out the bits from the story that emerges.

- When mapping cultural values of individuals it does not wholly represent all the people, as it will only give a snap shot of the individuals involved in the study. The overarching principle of spirituality in mapping indigenous cultural values is that the collective values of the people must be taken into consideration.

- A paramount principle is to respect the knowledge holders. In collecting indigenous knowledge, it is important to ensure that the technique is chosen by the knowledge holder in the community of interest in collaboration with the planners.

- Mapping techniques may include large-scale paper maps, GIS base layers with lines, points and polygons as well as ground-truthing early in the process because the experience of being on the land has the ability to bring forgotten memory to the surface.

10   The process of data collection

Process is important in many planning contexts and at different stages of MSP. In this context, process specifically refers to the process of collecting baseline data on culturally significant features, although the same applies to identifying risks to cultural values. The collection and subsequent use of "baseline" data must be embedded in a culturally sensitive process.

Important issues to consider when engaging in data collection

Process recognizes the importance of communities setting their own rules for engaging in collecting baseline data. It also recognizes the importance of specific value sets which may differ from those of other communities or the values held by planners.

1) *Including the community of interest, stakeholders and rightholders*

A very important part of process is to be clear about whom to include. Who is the community in each instance? (e.g. local residents, recreational groups, the general public?) We suggest the following should be included: The community of interest (those who have something to lose), stakeholders (those who must manage the risk) and (especially in the case of indigenous groups) rightholders.

2) *Community engagement*

Defining the nature of connections (between cultural features) and connectedness (to a feature/place) should be done with or by those with the connection. This implies that communities should be able to develop their own criteria and definitions around areas/features of cultural significance. "Uniqueness" for example can be expressed in many different ways depending on the community, its context, its culture etc.

Once the baseline data has been collected, the community should receive feedback on what has been done with these data and be able to verify/change it (e.g. spatial representation of baseline data on maps etc.)

It is also important to work with those providing data to determine how to handle sensitive data.

Several case studies discuss ways of mapping CES (Canada, Scotland). It is important to recognize that the process of mapping CES and that of identifying which areas are really significant are separate. The latter should feed into risk assessment.

3) *Understanding and recognizing different value sets*

Right from the very beginning, practitioners engaging in processes should seek to understand the cultural context of the community, the role and relevance of change and the history of the community. This is essential to understanding the specific value sets of the community.

4) *The importance of language/a "translator"*

Translating the importance of something from one culture to another can be very difficult. This needs people of the right skills who are able to interpret between the two cultures. Anthropologists would not be asked to collect species abundance data; in the same way a biologist with no special training should not be sent to collect social or cultural data.

5) *Taking time to prepare and build trust*

Good preparation is essential and may involve special training for those engaging in data collection. Culturally sensitive processes require a high level of trust between the partners engaged in it. Trust is built over time and will involve an investment in building relationships (which may take the form of drinking lots of tea).

6) *Compensation of research participants*

It may be appropriate to compensate research participants. Their contribution may require a big time investment from them. Forms of compensation can include gifts (monetary or other). Compensation may yield better results, especially from the "silent majority" (see Greg Brown).

7) *Taking account of indigenous knowledge*

Special consideration is necessary when working with indigenous groups and when collecting indigenous knowledge (see above section on mapping).

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Annex 1. List of Participants

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Annex 2: Agenda

Monday, 17th June

10.00   Depart from hotel

10.30   Introduction to the workshop (*Andreas Kannen, Kira Gee* / Workshop Chairs) Welcome (*Beate Ratter* / Head of Department, *Hartwig Kremer* / LOICZ) Organizational information (*Christian Fischer*)   Getting to know each other (*all*)

Block 1: The challenge of including culturally valued areas in MSP

11.30   MSP and the challenges of identifying culturally valued areas (*Kira Gee, Andreas Kannen*)

12.00   The practitioners view: Experiences from Shetland (*Rachel Shucksmith*)

        Discussion: Identifying current shortcomings and specific MSP needs

13.00   Lunch

14.00   Discussion continued and writing up: MSP needs

Block 2: Criteria and methods for identifying culturally important places

15.30   Use of socio-cultural spatial data in marine planning for offshore renewable energy (*Matt Gubbins)*

16.00   The limitations of spatial expression of CES (*Mollie Chapman)*

16.30   Discussion: Criteria and methods for identifying culturally important places: What works, what doesn't work, what criteria are missing?

Tuesday, 18th June

8.30   Depart from hotel

9.00   Summary of the previous day

9.15   Participatory mapping for coastal and marine planning: Rhetoric and reality (*Greg Brown via AdobeConnect*)

9.45   The Canadian experience: A cultural values mapping exercise from a First Nations perspective (*Robert Adlam and Michael Cox)*

10.15   A First Nations perspective on values and value mapping (*Cecelia Brooks)*

10.45   Mapping cultural values: The SECOA project from a planners' perspective (*Roland Cormier)*

        Discussion: What criteria and methods are available for identifying culturally important areas, how can culturally important areas be mapped?

13.00   Lunch

14.30   Assessing, mapping and quantifying cultural ecosystem services at community level (*Tobias Plieninger via AdobeConnect)*

        Discussion continued: What criteria and methods are available for identifying culturally important areas? Developing a roster of methods and tools

Wednesday, 19th June

8.30   Depart from hotel

9.00   Summary of the previous day

Block 3: Measuring impacts on important cultural areas and assessing their relative value

9.30   Discussion: MSP needs with respect to impact assessment on important cultural areas (*Led by Roland Cormier*)

10.30   Experiences and tools from the VALMER project (*Steve Fletcher*)

Discussion: Measuring impacts on important areas identified. What works, what doesn't work, what is missing?

13.00   Lunch

Discussion continued and writing up: What criteria are available for measuring impacts on culturally important areas? Developing a roster of methods, indicators and tools for impact assessment

Thursday, 20th June

8.30   Depart from hotel

9.00   Summary of the previous day's work

All day: Discussion as needed and writing up results for workshop report

19.30   Conference dinner sponsored by HZG

Friday, 21st June

8.30   Depart from hotel

9.00   Finish writing, summary of what has been achieved and next steps

13.00   Depart

Annex 3: Incorporating social-cultural dimensions of ecosystem services in MSP

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1. Problem context for MSP

MSP identifies which areas of the ocean are suitable for particular uses and activities. From an ecosystem services point of view, MSP can also be understood as an attempt to allocate space to the full range of ecosystem services provided by the oceans (Lester et al. 2013). The current context for MSP is dynamic as there is a growing range of demands placed on the sea. Since not all sea uses can be maximized simultaneously, decisions must be taken about the relative preferences for different services and benefits to be realized (Lester et al. 2013). This leads to three key requirements for MSP:

1) A good knowledge and database (resources, ecology, goods and services)

2) Means for establishing risks that new uses or cumulative impacts might bring to goods and services,

3) Means for setting priorities for sea use.

An important prerequisite is thus that the entire range of services and benefits is taken into account in assessment and decision-making processes.

2. Intangible values and immaterial benefits

Usually there is reasonably good knowledge of the marine ecology and the various uses competing for space in a particular sea area. It is also possible to estimate the economic value or expected economic value that may be generated from the sea. In contrast, Intangible values and the immaterial benefits derived from sea use are underrepresented in value assessments. One reason is that intangible values are difficult to elicit. For example, what is the value of recreational, aesthetic or spiritual services provided by the sea, and who does the valuing? How can we measure the benefits arising from an aesthetic or spiritual experience of the coast, and how are these experiences linked to particular spaces, places and settings? For planners and managers, the key question in this context is how MSP can take account of these immaterial values in risk assessments in a way that is commensurate with ecological or economic values.

3. The concept of Cultural Ecosystem Services

Cultural Ecosystem Services offer a framework for capturing immaterial values associated with the sea. The Millennium Ecosystem Assessment (MA 2005) defines the following categories of cultural ecosystem services:

- Aesthetics
- Beauty of landscape
- Sense of place
- Cultural heritage
- Habitat and species value
- Regional image
- Inspiration
- Informal education
- Knowledge systems
- Recreation

A wide range of literature deals with various aspects of CES. Place attachment is one focal point of the literature, as are the categories of aesthetics, recreation and wilderness. Most studies deal with a mix of benefits, services and values, with many also taking a methodological focus attempting to find ways of eliciting intangible values. However, few studies so far specifically focus on the marine environment, or explicitly deal with the link between CES and MSP.

On the basis of the existing literature, and in the specific context of MSP, the following open questions are presenting themselves for working with CES:

a)   **What exactly are the CES in the area in question?**

Although the above categories go some way towards describing intangible values, careful consideration must be given to what exactly is being described in each case. There is a difference between "the thing itself", appreciation of the thing and knowledge of the thing (Brown 1984), each of which is expressed in different value categories. Appreciation of the thing for example can be expressed as aesthetic, emotional or moral value, while knowledge of the thing may be unrelated to direct personal benefit and relate to simply knowing that something exists (existence value). Value classifications therefore play an important role in defining CES, where it is useful to differentiate between concepts such as objects of value, assigned value and benefits.

b)   **Where are CES located?**

Mapping CES in space is of particular interest to MSP since this makes CES spatially specific. Cultural values have been mapped in many contexts, often in participatory processes, mostly focusing on those cultural values that can easily be located in space, such as recreational values and aesthetic values. It is more difficult to deal with those CES or values that are not location-specific, such as the generic value attached to nature. Drawbacks of mapping also include the need for "map literacy" of the participating persons and their willingness to pinpoint places in space. Results need to be accompanied by a clear identification of the constituency, i.e. an indication of who actually attaches what value to a site. Another issue is that CES may be located in one place, but appreciated by a much wider community of interest. This can lead to conflicts between the 'holders' of a particular resource and the constituency that places value on it.

c) **What are the benefits of CES to different stakeholders and who does the valuing?**

CES impact on human well-being in different ways, requiring the establishment of links between CES and different elements of human well-being. This requires criteria for weighing personal against societal well-being for example. Furthermore, there is evidence that value assessments are scale-dependent, with local stakeholders assessing changes in CES differently from regional and national stakeholders (Lange et al. 2010). This raises the question of which scale should count for how much in decision-making processes.

d) **How valuable are CES compared to other more tangible values and benefits?**

A key issue is how to compare different values and how to overcome the incommensurability of tangible and intangible values. At present, there is no common currency or value scale for values or the benefits arising from CES. Also, values are not static, but change over time, with the outcome of assessments depending not only on who does the valuing but also when it takes place. A survey in Germany for example found that the aesthetics of wind farms are valued differently by older and younger people (Gee & Burkhard 2010).

4. Cultural values in MSP – a planning logic

In order to make CES amenable to MSP, a three-step process is suggested, tackling some of the above issues in a participative process. The first step is to specify what is meant by cultural values. This step is essentially conceptual, drawing up a framework or classification system for describing CES and clarifying what is meant by benefits and services for the specific area and constituency involved. Ideally, this framework will also include indicators for each category of CES. The second step is to map the established value categories in space. This is leads to the identification of culturally important areas. Importantly, this step should also capture the reasons why these particular areas have been identified as important, in other words, identify the personal value bases upon which stakeholders base their judgments. The third step is to carry out a risk or vulnerability assessment of the culturally important areas identified. MSP decisions are made at the end of the third step.
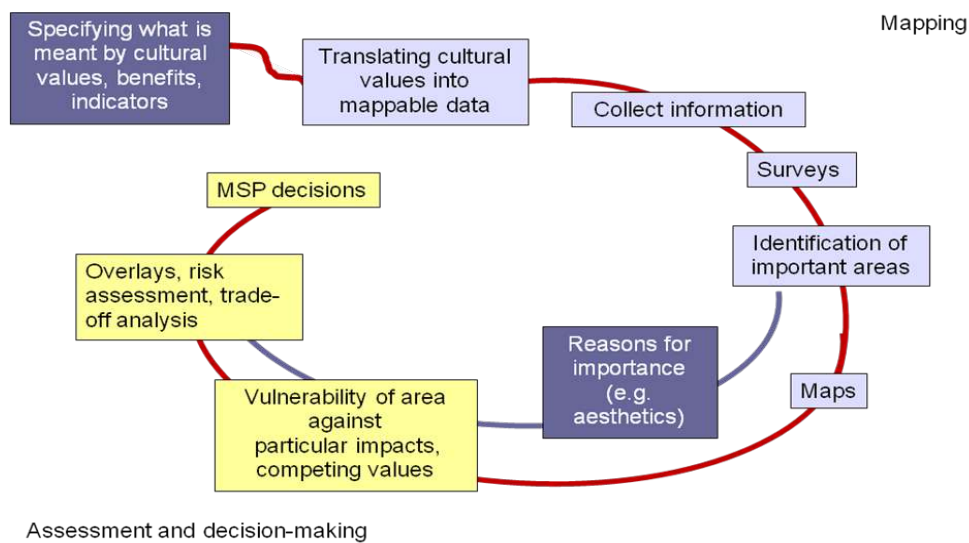
Figure 1: Including CES in MSP processes in a three-step process

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Annex 4: Cultural Ecosystem Service – the Shetland experience

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Marine spatial planning is a tool to manage the use of the marine and coastal environments. The Shetland Marine Spatial Plan is an example of a regional marine spatial plan and provides a policy framework to guide marine development and activities from mean high water springs (MHWS) to the 12nm limit (NAFC, 2012). The second edition of the plan was voluntarily adopted in 2008 and the 4th edition of the SMSP will be formally adopted by the Shetland Islands Council as part of their Local Development Plan during 2013. Once adopted the policies in the SMSP will be material considerations in decision-making on individual marine planning and works licences applications and will be the first statutory regional marine plan in Scotland. This underpins local commitment in delivering integrated terrestrial and marine spatial planning.

The management of Shetlands marine resource is a key priority for the Shetland community and the SMSP aims to help the local communities of Shetland to achieve their full potential on a long-term, sustainable basis. The marine environment is a valuable asset, not only through the continuation of a long-term provisioning role, but also a social and cultural one, directly contributing to the quality of life and well-being of local communities.

Codifying cultural values in Marine Spatial Planning

The non-material benefits people obtain from the marine environment include personal, emotional and spiritual enrichment, recreation and aesthetic experience. These non-material benefits derived from the ecosystem by communities can be termed 'cultural ecosystem services' (CES). While these intangible benefits are difficult to evaluate, the social impacts from any development are a key consideration in any decision-making process. Development can have social implications for the local community and impacts on these services can be diverse and complex in their nature, but are more likely to affect individuals and communities, at a local rather than regional or national level.

Development can restrict the choices available to communities reducing their safe access and enjoyment of recreational or cultural significant locations. Development therefore has the potential to affect the wellbeing of individuals and groups who value their use of the marine environment as integral to their 'way of life' and social identity. The ability and/or willingness of local communities to absorb these impacts can, and does, directly affect the success or failure of marine developments. Understanding what people value about their environment, and why they care about a particular place or region, can lead to a deeper understanding of potential conflicts that might be negated if addressed at an early stage of any development proposal. Through policy development and mapping the SMSP aims to reduce potential conflict and maximize compatibility between marine activities and where possible, encourage coexistence of uses.

Identification and mapping areas of cultural significance

A key part of the SMSP has been the identification and mapping of marine and coastal features and services, incorporating data on environmental, cultural and socio-economic uses and values. The spatial extents of these features and activities have been subject to local consultation, producing both local datasets and locally amended national datasets which can be used as a baseline within the marine planning process.

Cultural ecosystem services can be valued by a number levels, comprising national, community and visitor uses (tourism and leisure), with these uses and values potential differing. While these values can overlap these differences can add to the complexity of assessing a potential developments location and design.

Through community consultation the SMSP has mapped recreational use, important landscape areas, elements of landscape character, historical and archeologically locations, and tourism assets. Elements connected to this use, such as access has also been mapped where appropriate. Where available metadata has been collected on the intensity of use, spatial, temporal extents and relevant details of dependent features. Policies have been put in place to protect these assets, reflecting both local and national values, to insure that community assets are considered in the planning process.

Valuing Cultural Ecosystem service

Cultural ecosystem service information has been also been used to guide development of specific guidance, such as the development of guidance of renewable devices (Tweddle et al., 2013). Local consultation has been used to weight cultural assets relative to other environmental and economic considerations. This has been linked to policy guidance to ensure that adequate mitigation is put in place to protect communities and ensure the sustainable use of the environment.

Conclusions

While the SMSP has included cultural mapping and has linked this to policy development it has primarily focused on more tangible elements of cultural ecosystem service, including recreation, historic and aesthetic appreciation of high value areas. Collating more detailed information on cultural ecosystem values could be addressed through larger scale participatory surveying of the community, however this would be time consuming. As different elements of a community may value ecosystem services differently it is important to ensure that any survey effort would cover a broad spectrum of the community and any results are fully and publically consulted on.

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Tweddle, J.F., Kelly, C., Shucksmith, R. (2013). Regional Locational Guidance for wave and tidal energy in the Shetland Islands- May 2013. NAFC Marine Centre report. pp19.

Annex 5: Use of socio-cultural spatial data in marine planning for offshore renewable energy

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In order to account for social and cultural uses of the sea in marine planning, although a wide range of uses and values are placed on Scotland's seas, only some are available as spatial data. Published Cultural Ecosystem Service typologies often include categories of services "socially valued landscapes", "recreation and tourism" and "aesthetic value". Spatial data relating to these value have been collated nationally and concern recreational use, landscape value and cultural heritage.

Cultural heritage was addressed by compiling datasets of the locations of World Heritage Sites, Scheduled Ancient Monuments and different categories of wrecks in marine waters. Terrestrial coastal designated sites were considered to account for visual impacts from offshore renewable energy. A marine archaeology potential layetr was also created by combining sea level estimates from ca. 10,000 years ago with sediment types likely to preserve archaeological remains (soft sediments).
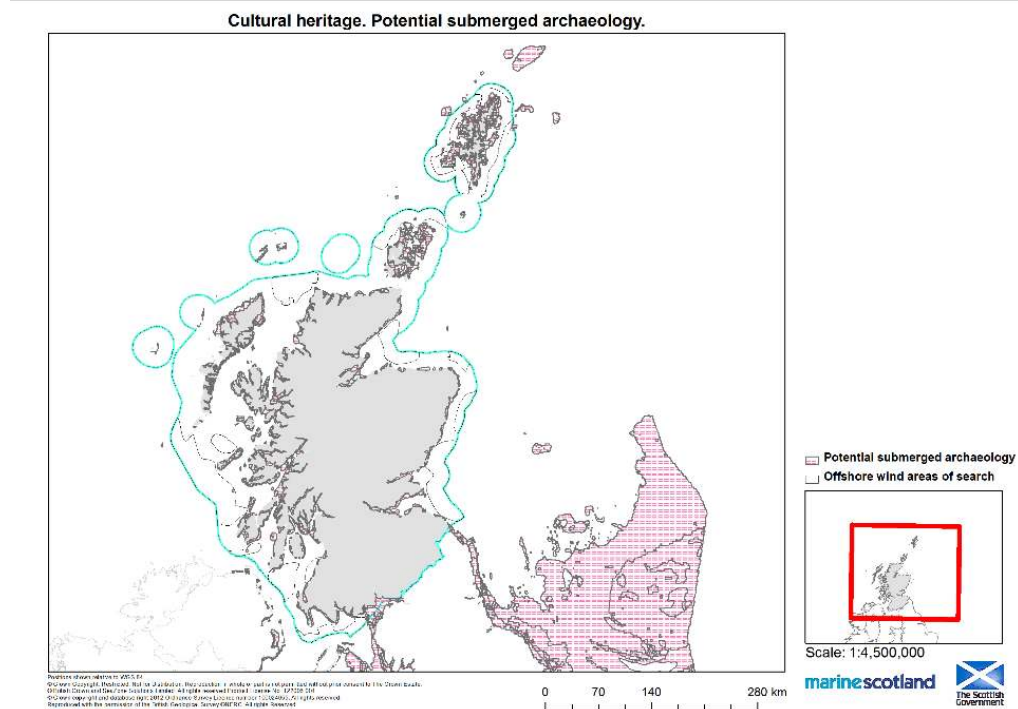

Figure 1. Mapped Marine Archaeology Potential

There is significant recreational and tourism usage of Scotlands coasts and seas. Usage data and economic valuation of expenditure by sector are available from survey work (2008) and show a considerable value to this ecosystem service for Scotland.

Spatial data concerning sea angling, kayaking, scuba ding, yachting, dinghy sailing surfing, windsurfing and bathing areas have all been collated and included in further analyses.
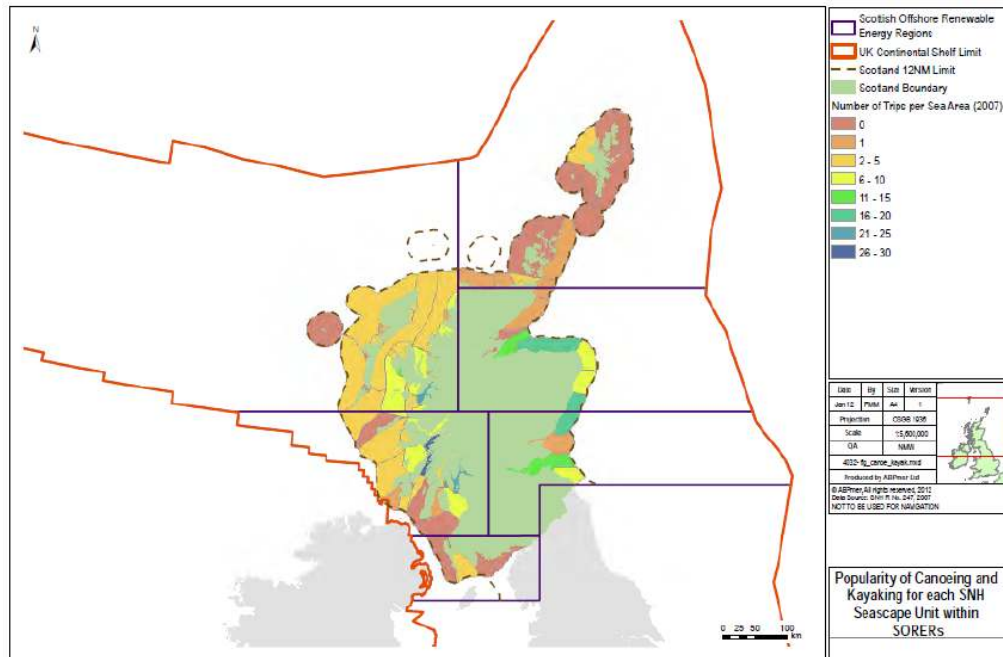

 Figure 2. Mapped usage of sea areas by sea kayakers

Various landscape designations exist across Scottish coastline. When considering impact on seascape from marine development it is important to consider the sensitivity of the viewpoint. Designations provide this sensitivity to a certain extent and allow for a weighting of the coastline in GIS analyses to consider potential impacts spatially. Marine Scotland has created shapefiles of 'seascape' based on coastal landscape designation status (culturally important sites, National Scenic Areas, Local Landscape Designations and 'other coast') with a seaward buffer scaled and weighted by distance and apparent size of different development types if viewed from the coast.
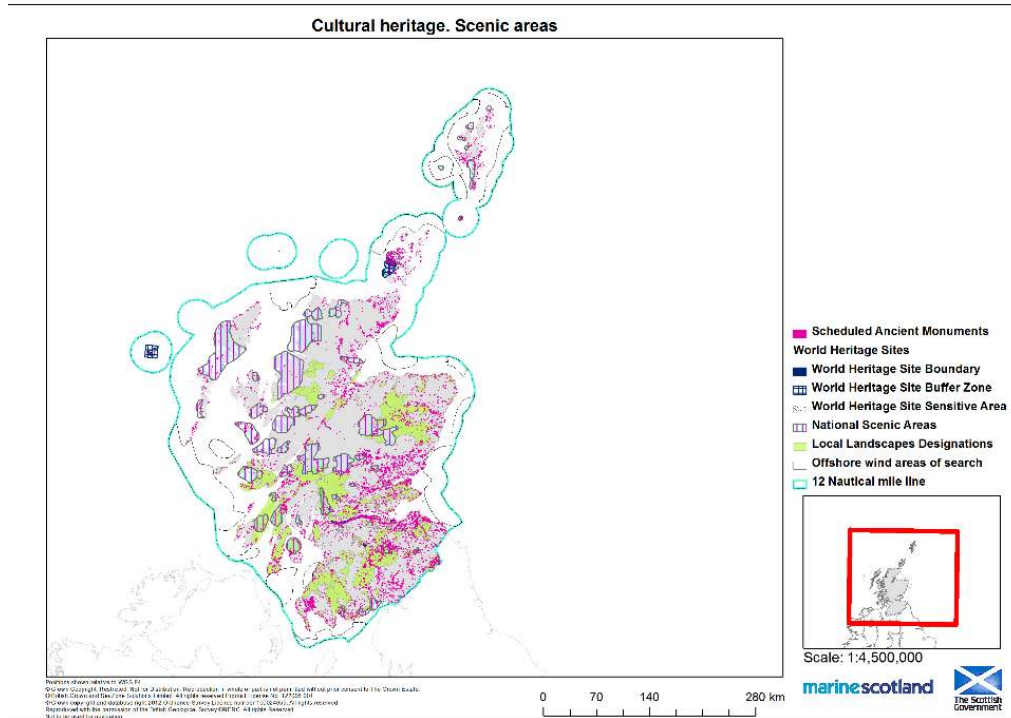
Cultural heritage. Scenic areas

Figure 3. Mapped areas of varying landscape designation

All of these spatial data were collated and analysed to generate constraint layers for different types of offshore renewable devices. These data were weighted in a MCE model (The Crown Estates Marine Resource System MaRS) according to their perceived relative importance and level of interaction / impact by differing device types.

Table 1. Weightings and buffering applied to spatial data layers to create a constraint map for Socio-cultural use

	Spatial data	2010 Wind	2011 Wave	2011 Tidal
Aesthetic value	Landscape composite coastline	NA	1000 (1-25km buffering)	0
	UK seascape	70 (1-51km buffering)	NA	NA
	National Scenic Areas	900	0	600
	World Heritage Sites	1000	1000	1000
Cultural heritage	Scheduled Ancient Monuments	800	800	800
	Archaeology Potential	700	700	700
	Wreck areas (charted)	700	700	700
	Wrecks	700 (100m buffer)	700 (100m buffer)	700 (100m buffer)
Recreational value	RYA cruising routes	300 (500m buffer)	500 (500m buffer)	300 (500m buffer)
	RYA sailing areas	300	500	300
	RYA racing areas	300	500	300
	Surfing beaches	NA	700 (1,2,5,10 km buffer)	400 (1km buffer)
	Bathing beaches	500 (500m buffer)	NA	NA

The weighted spatial data layers were used to create a composite "socio-cultural" layer that was taken forward for use at the 'Scoping' stage of Scotland's Sectoral Planning Process for Offshore Renewable Energy and has been used to help identify areas of least constraint for potential development.
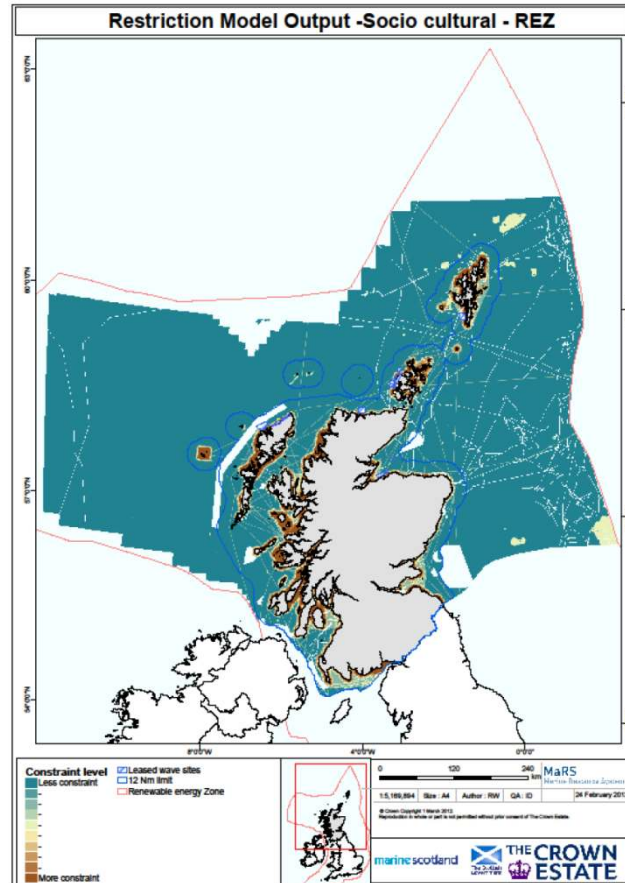
Figure 4. Composite constraint map produced for wave energy development

Further detail is provided by mapping potential development areas alongside the detail of the spatial data layers collected for 'Regional Locational Guidance'. The process outlined provides a mechanizm for relatively weighting spatial data relating to cultural services and accounting for them in planning processes. A wider range of defined spatial data defining areas of high social and cultural value as well as more robust valuation methods would improve the handling of CES in marine planning.

Annex 6: Spatially Explicit Expression of CES: Limitations and Ways Forward

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Key Points

- People experience CES as bundles of services, benefits and values and may have trouble with or object to detangling them. Open-ended questions allow them to express these values as they experience them.
- The way that CES data are collected influences the types of values that will be included
    - When CES data collection is embedded in a participatory process, a broader range of values can be captured.
    - The constituency of people who value an area may be much broader than those who live there or visit it.
    - Many values around CES are dynamic—changing over time and circumstances.
- Some stakeholders object on principle to spatial expression of CES.

Presenting Cultural Ecosystem Services (CES) values in a spatially explicit way may help to allow comparison with other types of values, help identify threats to these values and increase their visibility in MSP processes. Yet the need for spatially explicit information on cultural values limits the types of values that can be included. Using a typology of CES, the limitations of spatially explicit expression will be discussed in terms of the different types of values, benefits and services. Further issues include philosophical objections to spatial expression, worldviews that oppose the sort of prioritization often sought in MSP and the difficulty of separating non-material benefits that are simultaneously produced by many ES. Finally, ideas on way to include CES that are not amenable to spatial expression will be reviewed (e.g. value/goal statements, constructed scales, stakeholder deliberation with multiple metrics).

a) Codifying cultural values for MSP purposes

The main reason for using a concept such as CES in MSP is to assure that the important non-material values that people have around ecosystems are included in decision-making. CES may be the most important motivators for conservation. MSP can prioritize spatial data and if CES are not presented in a spatial format there is the risk they will not be considered on the same level. Using the concept of CES and spatial mapping can also help to identify threats to cultural benefits from ecosystem services and identify areas of synergy and trade-offs.

In some cases it is the very issue of classification that can make it challenging to map cultural places of importance. People experience cultural ecosystem services, the ben-

efits they derive from them and the values they attach to them not as discrete elements in a classification system, but as tangled whole capabilities and experiences. For example, a 'bundle' of services, benefits and values for fishing a salmon and feeding it to one's child could include provisioning, subsistence, recreation and artistic ecosystem services; spiritual, material, activity, place and heritage benefits; and other-oriented and non-market values (Klain & Chan 2012). It may be possible to determine which areas are important for fishing, including for example fishing grounds, aesthetic quality of the route to the grounds and the necessary supporting habitat for the fish stock. In the case of traditional fishing, other areas may be necessary to support the creation of boats and fishing gear (e.g. habitat for certain types of trees or other plants). All these areas could be identified, but separating which contribute exactly to which type of value, benefit or service may not only be difficult but inappropriate or even disrespectful to the way the person values them. When CES are classified these bundles are dissected into their constituent parts. Asking people to identify CES in this way is foreign to their actual experience of them.

b) Limits of Spatial Expression based on a Values Typology

Not all kinds of values can be appropriately expressed spatially, and many face important challenges in doing so. Three types of issues are: a) process dependence; b) valuation for others; and c) dynamic spatial values. In the following sections these issues are discussed based upon the typology of values from Chan, Satterfield and Goldstein (Chan, Satterfield, et al. 2012b).

Many values associated with CES are ill suited to aggregation of individual preferences. In the case of process dependence two types of distinctions are important: a) between preferences, principles and virtues and 2) between individual and group values. To illustrate the first case: fishers may have a *preference* for a certain fishing quota, *principles* about fairness of the process for determining the quota, and hold themselves to certain *virtues* of fair play. Their satisfaction with allotted fishing quotas and likeliness of following them may depend not only on the alignment of the quotas with their preferences but also on the alignment of the **process** of determining said quotas with their *principles* and with the virtues they hold themselves to. Thus transparency and participation in the process of MSP may also be important and not just the extent to which various preferences are met. Another reason for including a participatory process is that some types of values are group-based while others are individual. Sagoff describes this well with the distinction between "citizen" (group) and "consumer" (individual) preferences (Sagoff 1998). Citizen or group values reflect what we believe society should do, which may be different from what we want as individuals. Indeed, often individuals cannot articulate their values without a process of deliberation around a specific context (Sagoff 1998). Furthermore, in some cases the values around CES may be about the process of decision-making and resource management itself (e.g. inclusion and control over resources and decisions)(Chan, Guerry, et al. 2012a).

Certain types of values are not about what we want as individuals or even as groups but for other groups entirely. These include other-oriented values, existence and bequest values as well as biocentric values (Chan, Satterfield, et al. 2012b). In these cases it can be challenging to identify spatially the areas associate with such values; for example the preferences (and principles) of future generations can only be assumed. On the flip side, determining the people who value a place for existence or bequest value may prove challenging as many may live far away and have no contact with the actual place.

Finally, many values are not static and dynamic data may be needed. In contrast to intrinsic or final values, supporting or instrumental values are important for the way they facilitate something else of importance (Chan, Satterfield, et al. 2012b). They can therefore vary with changes in available substitutes, resources and capabilities (Chan, Satterfield, et al. 2012b). Another classification important for MSP is that of transformative vs. non-transformative values. For example, if a Marine Protected Area is established this may draw new visitors to an area. These visitors may have an important experience in the MPA which gives it a value to them previously absent. On the other hand, if an important cultural resource or place is lost, then new generations will not be able to have the transformative experiences with it that cause them to value it. In some cases maintenance of the values, traditions and activities around CES requires the continued provision of those ES (Chan et al. 2011). For example, if fishing stocks are so depleted that traditional fishing is no longer feasible for a generation, the knowledge and skills and also the value of those traditions may be lost.

Finally, Klain and Chan (2012) found that some stakeholders object to any attempts to prioritize, even qualitatively, certain areas or ecosystem components associated with CES. And as Chan et al. (2012a) point out some worldviews are in opposition to the idea of Ecosystem Services, i.e. that nature provides services to humans. In research in Northern Vancouver Island (B.C., Canada), research participants gave the following reasons for refusing to spatially identify important areas: importance could not be pegged to specific places, the information was sensitive, the exercise implies that other areas are unimportant, marine ecosystems are interconnected and emphasis should be on the whole, and finally that nature has gradients and not hard boundaries (Klain, Presentation at Ecological Society of America, 2012). These reasons are not surprising and show that many people are aware of the limitations of spatial expression.

c) Towards risk assessment: Rating pressures on cultural places of importance

Despite these challenges there are ways to include CES, even some of the more difficult to grasp values, in MSP processes. While some ways of including cultural value information are discussed below, here a brief review of metrics is offered, for the purpose of rating pressures on cultural places of importance. While many efforts have sought to use monetary measures, there are alternatives that may be more appropriate.

Satterfield et al. (2013) review a variety of methods that have been used to account for CES and intangible risks, such as careful construction of value-related questions that allow interviewees to express the intangible values they have (e.g. using narrative elicitation) and the use of locally defined, constructed scales. Metrics for CES can be direct (e.g. salmon population health or abundance), proxy (e.g. flow regimes), or constructed. Direct and proxy measures need not be shown in absolute terms; showing impacts in percent changes can be quite effective. In a study in Lemmens Inlet (Vancouver Island, Canada), stakeholders were able to make decisions using a variety of different metrics expressed using both monetary and percent change formats (Guerry et al. 2012). Constructed scales allow local people to define what is important to them, creating a numerical scale with qualitative descriptors of each level based on their value system. This is in many ways similar to the types of scales that risk managers use (e.g. negligible to high risk). In this case the local people serve as the experts in defining what the ideal and worst-case scenarios of that which they value would look like. In a risk assessment a variety of CES metrics could be used, some

direct, some proxy and some constructed. This is not unlike that which is done for other types of data. And as discussed earlier in this report in the risk assessment section, the goal is inform decision-making, not to add up the different metrics and let the numbers make the decision. Including forms of deliberation among the stakeholders, rights holders, and communities of interest can strengthen the quality of the risk assessment.

d) Mapping spatially relevant information

How then can we map a set of CES data that is inclusive of the wide variety of ways that people value ecosystems? First, an acknowledgement that not all relevant value information can be captured in spatial format allows us to include this information in other ways. For example, value or goal statements about the state of ecosystems and especially about the processes of making decisions can help. Allowing space for deliberation, especially when important decisions are made will offer room for group values and principles.

Open questions and qualitative data allow categories specific to the local context to emerge. For example, in interviews in Northern Vancouver Island, Canada, Klain was able to extract a rich array of value information on the importance of marine and coastal areas using this approach (Klain & Chan 2012). In addition to open-ended interview questions, Klain asked participants to draw polygons on a map indicated spatial areas of importance to them and describe why these places were important. In this type of context, narrative methods may be useful as many people need help explaining their values (Satterfield 2001). Narratives allow people to describe their values in the way they experience them. From this qualitative data, services, benefits and values can be identified.

Mapping is one tool among many to elicit data on CES. While it can help CES to be considered in planning processes, it does not encompass all the ways that people value ecosystems and their interactions with them. Embedding CES data collection in a participatory process is one way to expand the scope of values that are included.

Key Further Readings

Chan et al 2012a: suggestions for how to embed CES data and collection in a planning process

Klain and Chan 2012: describes methods for mapping and eliciting CES related values in a marine context

Satterfield 2013: discussion of metrics for CES

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Annex 7: Participatory Mapping for Coastal and Marine Planning: Rhetoric and Reality

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The rhetoric of the potential for participatory geospatial tools such as participatory GIS (PGIS) and volunteered geographic information systems (VGI) for coastal and marine planning and management has increased over the last decade. There has been more participatory mapping research for coastal and nearshore areas in particular driven by advances in geospatial participatory mapping tools. But progress in assessing and integrating socio-spatial information into the planning and management for coastal and marine areas has been slow. The presentation examines recent advances in participatory mapping research with a focus on the fundamental barriers that remain for the use of participatory mapping data for coastal and marine management.

Further details can be found in the following paper:

Brown, G. 2012: Public Participation GIS (PPGIS) for Regional and Environmental Planning: Reflections on a Decade of Empirical Research. URISA Journal Vol. 25, No. 2, 7-18.

http://www.urisa.org/files/journal%2012-2%20-%20web.pdf

Annex 8: Species at Risk Listing- Socio-Impacts on First Nations and Cultural Values Mapping in Canada

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Context

The Species at Risk Act (SARA) came into effect in 2002 with the stated purpose of identifying and protecting species in danger of becoming extinct by limiting their exposure to dangers (such as, over-harvesting) and protecting their habitat. SARA outlines several key processes that need to be followed to protect species at risk. These include:

- How species populations will be assessed;
- How species will be added to the SARA list, and;
- How species will be recovered.

Once a species is listed under SARA, restrictions to the use of a particular species will be determined. Due to the fact that this process can directly impact Aboriginal and treaty rights of First Nations, early involvement of First Nations in this process is essential. It is also important to develop a mechanizm to determine the potential impacts of the listing of species on First Nations. This mechanizm is likely to take the form of a social impact assessment (SIA)[2]. Although there are well established processes for determining these impacts in non-Aboriginal communities, similar processes for First Nations have yet to be developed. In the present context, then, there is a need to create a pilot process that could inform future listing consultations for the Mi'gmaq.

The Project

This project uses a community-based process to develop a First Nations' perspective and approach to guiding the development of a Social Impact Assessment (SIA) related to species at risk designation as it affects First Nation Communities. Building on work already completed (Koenig and Adlam 2012) and in partnership with the North Shore Micmac District Council-AAROM (NSMDC-AAROM), an initial pilot social

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[2] An overview of SIA is provided in Ervin (2005:111-124). See the Bibliography under Social Impact Assessment (SIA, SEA) for particular case studies.

research project to carry out a community-specific assessment of species at risk was developed. The pilot project adheres to the Assembly of First Nation Chiefs in New Brunswick's Indigenous Knowledge Study Guide. Work takes place in three phases, each of which contains a community reporting mechanizm:

First Phase: Community Workshop

The development of a community social research process needs to be guided by the community. "The community" (broadly defined to include both the formal leadership and members of the community) must be comfortable with the purpose of the research, the way in which the research will be conducted and how the research will be used. The first step is thus to conduct a workshop and invite a cross section of community members to discuss what social research is and why it is important. The workshop includes a mapping exercise that is used to identify areas of importance and values of the community that can later apply to ongoing initiatives[3] .

Second Phase: Community Survey

The second step is to develop a questionnaire to gather information about Mi'kmaq experiences with particular species. The questionnaire also asks for recommendations of who the knowledge holders are within the community and who may potentially be contacted for in-depth interviews After a pilot test in a number of community households, a letter to community members introducing the study will be hand-delivered to each household, as well as to the Chief and Band Council. The questionnaire will be implemented by using an in-person interview technique, to assist households with the accurate completion of the questionnaire. Two Mi'kmaq interviewers will be contracted to assist in the study. At least one of these interviewers will be Mi'kmaq speaking.

Third Phase: Key Interviews

The final phase involves interviews with up to 10 knowledge holders to cover three interrelated areas (see table below). Topographical maps of the Miramichi region will be used to have them locate their specific observations, thoughts and memories about attributes of habitat where they found and harvested species, size, abundance, environmental factors informing decisions about when to start harvesting and where to harvest, access to shoreline and harvesting locations.

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[3] The core activity in values mapping is to have participants place indicators on a local map to show sites to which they feel some sense of place attachment or that they value for various reasons. The model for this activity is derived from the 2009 study by the *Southern Gulf of St. Lawrence Coalition on Sustainability* in co-operation with Fisheries and Oceans Canada (DFO). The instrument presented here is adapted from the work of Brown and Reed (2007) and is offered only as an example of how values mapping might be undertaken. See Further Reading under Place Attachment (Community Values Mapping) for related case studies.

Summary of work plan

Phase	Explanation	Outcomes
		Outcomes
	Workshop Themes	Fact Sheet4 to Community reporting on results of Workshop
	To discuss the purpose of social research	
	To determine the best practises for carrying out such research	
	To consider how such research should be used	
First Phase	Demonstration Exercise	
Community Workshop	Mapping Community Values	
	Moving Forward	
	Planning a Community Survey	Household questionnaire5
Second Phase	Household questionnaire	Outcomes
	Social relations of households?	Fact Sheet to Community reporting on results of Household survey
Community Survey	Fishing experience of household members – location and time of fishing? What one does with the catch? Who one fish with? How you learn to fish? What fish you prefer to eat? Who cleans, prepares fish?	
	Other than yourself, who you would say knows a lot about fishing – how did you come to know them? Whether there is anyone else you would say knows a lot about fishing?	
	Moving Forward	
	Creating a schedule of interview questions	
		Schedule of Interview questions
Third Phase	Interview Schedule	Outcomes
	Kin relatedness	Fact Sheet to Community reporting on results from Key Interviews
Key Interviews	Memories of species experiences: beginning, adolescence, independent adult, last/most recent species experience	
	Harvesting experiences	
	Mapping these experiences	

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[4] Davis et al (2004) provided prompt feedback to community members at regular intervals via a number of such Fact Sheets.

[5] *A Preliminary Report of Research Results, Phase 1* prepared by The Paq'tnkek Fish and Wildlife Society in collaboration with the Social Research For Sustainable Fisheries (SRSF) provides an example of this kind of survey instrument.

First Phase: The Community Workshop

Our first step was to host a workshop and invite a cross section of community members from Metepenagiag. The workshop was designed to be interactive and included a mapping exercise with the purpose of identifying areas of importance and values of the community. Additionally, it would serve as a clear illustration of why the information is important and how the information can be used. Finally, it would help us develop a process to protect the confidential nature of the information provided by the knowledge holders.

Our Experience

In our review of the literature for mapping cultural values[6], we selected nine cultural values (economic, recreational, subsistence, life sustaining, aesthetic, cultural, historic, and spiritual). Additionally, we selected one further value (biological) which we broke out into the subcategories of harvesting areas, spawning areas, migration areas, and potential threats to the species. Although the plan was to have participants place coloured stickers representing different values on maps, what we found was that stickers were cumbersome and the associated value categories difficult for participants to understand. A more efficient approach was for workshop organizers, using coloured markers, to simply mark maps with significant valued areas as they spoke with workshop participants was implemented. As for the problem in understanding value categories, once workshop organizers moved onto the biological value and its

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[6] The core activity in values mapping is to have participants place indicators on a local map to show sites to which they feel some sense of place attachment or that they value for various reasons. The model for this activity is presented in Appendix 1 and is derived from the 2009 study by the Southern Gulf of St. Lawrence Coalition on Sustainability in co-operation with Fisheries and Oceans Canada (DFO). The instrument presented here is adapted from the work of Brown and Reed (2007) and is offered only as an example of how values mapping might be undertaken. See Bibliography under Place Attachment (Community Values Mapping) for related case studies.

subcategories, they then found that they could return to the previous list of cultural values and add this information as appropriate.

Future Steps

The workshop served to introduce the idea of social research through the collection and documentation of culturally relevant information around particular species. In an effort to extend this research, a community survey is planned with the purpose of documenting the basic attributes of household-centered experiences with these species and to identify those in the community who are identified as community "experts" that also need to be involved.

Take Home Message

The project has identified that the use of mainstream categories or values get "bundled" together when the discussions took place making it difficult for the participants to identify each value separately on the maps. However, when the biological value was broken down to specific species, specific habitats for those species and specific areas of threats the participants were able to very clearly. The study indicates that by defining categories without the knowledge holders being involved and then asking them to share their knowledge relating to the categories was foreign to them and potentially disrespectful. It is a requirement to involve the knowledge holders at the very beginning to determine how the information can be documented properly. This could involve defining categories/values with them or identifying another way that allows for respectful participation that allows for the knowledge to define whatever method can be used.

Done correctly, areas of importance for each value can then be identified based on community knowledge based on thousands of years living a traditional lifestyle. There are many options for mapping the information which can be designed on the process defined by the community. Details of the mapping process, such as scale, will need to be agreed to by the community before the method is implemented.

Indemnification

The contents of this abstract are intended to inform the Joint HZG/ICES/LOICZ Workshop held in Geesthacht, Germany June 17-21, 2013. This abstract outlines a preliminary pilot project to investigate a process that First Nations could consider implementing when a important species is in the process to be listed under the SARA. This voluntary process would help to identify the impacts listing that species will have on their community. The information provided herein is done "without predjudice" and cannot be used to create, define, alter or affect the legal rights of the Mi'gmaq and Wolastoqiyik, be construed as consultation or preclude any other discussions between the Mi'gmaq and Wolastoqiyik with New Brunswick or Canada as defined in the "Mi'gmaq Wolastoqiyik/ New Brunswick/ Canada Umbrella Agreement.

Annex 9: Cultural Values Mapping – Informing the AFNCNB Consultation Process

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The Assembly of First Nations' Chiefs in New Brunswick (AFNCNB) is an Indigenous Peoples' not-for-profit rights-based organization, representing 14 of the 15 Maliseet and Mi'gmag First Nation communities in the Canadian Province of New Brunswick. The AFNCNB is currently in a treaty-implementation negotiation process with the federal government of Canada and the provincial government of New Brunswick. Although the Maliseet and Mi'gmag First Nations entered into Peace and Friendship treaties, regarding the sharing of lands and resources, with the French and British Crowns starting nearly 300 years ago, negotiations on the implementation of these treaties have not been possible until very recently. In order for the AFNCNB chiefs to participate in effective consultation with the Crown a study guide for the collection of relevant indigenous knowledge was needed.

The AFNCNB research team sought the guidance of the Maliseet and Mi'gmag elders in the drafting of this Indigenous Knowledge Study Guide (IKSG) to ensure the research methodology respected Maliseet and Mi'gmag cultural norms, the knowledge holders and their knowledge. The AFNCNB IKSG is grounded in the Indigenous research ethic of OCAP; ownership, control, access and possession of the knowledge by the knowledge holders and their communities. The AFNCNB IKSG includes key methodological steps that are consistent with Indigenous Peoples' own research methods across Canada and internationally.

The research process starts with an historical literature review and cultural values mapping. The mapping of cultural values as the introductory phase of land use and occupancy mapping is a step we have implemented to begin the conversation with knowledge holders about the process of knowledge mapping. Through our experience with knowledge holders we have modified the cultural values mapping phase to include ground-truthing early in the process because the experience of being on the land has the ability to bring forgotten memory to the surface. Another way to spark memory is to have knowledge holders who are familiar with each other through community and personal connections can be interviewed in pairs or groups.

Knowledge holders in the cultural values mapping sessions will review maps of areas in question and highlight important sites, species and other values as well as identifying other key knowledge holders. From this initial group of knowledge holders the participants will choose the individuals who will undergo the biographical land use and occupancy mapping process. Biographical mapping participants are subsequently taken into the field to 'ground-truth' or verify places identified during the biographical mapping process. The AFNCNB research team is currently applying the IK study guide methodology, to several resource development projects, at the cultural values mapping stage. This important cultural knowledge will also be used in negotiations with the Federal and Provincial Crowns and future industrial development to protect the rights and interest of the First Nations' Peoples in New Brunswick. The

objective for the IK research team is to first collect a baseline of IK that can be useful in the planning process for land use and development. A baseline of IK for the province of New Brunswick will also be a way of preserving our indigenous knowledge for the future generations. The communal structure of the Maliseet and Mi'gmag communities has changed since European contact. In the old days the Maliseet and Mi'gmag people relied on oral tradition to pass on the knowledge and much of our knowledge still exists in that form. For this reason we must implement changes to our way of passing on this knowledge to our future generations by using the tools of information technologies to assist us in this preservation process.

The interconnectivity of all things on mother earth and beyond is the basis of our spirituality and it is this interconnectedness that makes it difficult to codify our cultural values in the context of spatial planning. This nature of aboriginal spirituality includes humans as part of the ecosystem so to remove us from the system and then look at it from the outside that ecosystem in order to classify and categorize values is a foreign concept. The collection of IK is not done by asking questions and rating the answers or categorizing the responses but by asking more broad open-ended questions then teasing out the bits from the story that emerges. The nature of our oral history method of sharing information makes it challenging to codify our "data". The overarching principle of our spirituality in mapping our cultural values is that we must take into consideration the collective values of the people. When we map cultural values of individuals it does not wholly represent all the people, as it will only give a snap shot of the individuals involved in the study. This interconnectedness makes it necessary for us to consider the needs of all our people respectfully. This snap shot does give us a starting point and it is from this point we will map biographical information from key knowledge holders of the Maliseet and Mi'gmag communities. The four pillars of sustainable development: economic, social, environmental and cultural all need to be considered when we are contemplating development to ensure that the benefits of these resources are managed carefully so as to provide benefits today while guaranteeing the rights and needs of future generations.

Indigenous Knowledge is a body of knowledge our ancestors used to inform the decisions they made for all aspects of daily living. This knowledge has been passed on through oral traditions and the passing on of this knowledge is an important part of ensuring cultural security. We cannot simply have weighted values of areas of land and sea placed into categories. Maliseet and Mi'gmag have learned through the passing on of the oral traditions that the interconnectedness of all ecosystems makes it necessary to consider the impacts of areas outside the footprint of a particular ecosystem when making decisions about landscapes and seascapes.

Indemnification

The contents of this abstract are intended to inform the Joint HZG/ICES/LOICZ Workshop held in Geesthacht, Germany June 17-21, 2013. This abstract outlines a the experience of developing and implementing an Indigenous Knowledge Study Guide/Methodology for the AFNCNB to apply in the process of consultation with the federal and provincial crowns of Canada. The information provided herein is done "without predjudice" and cannot be used to create, define, alter or affect the legal rights of the Mi'gmaq and Wolastoqiyik, be construed as consultation or preclude any other discussions between the Mi'gmaq and Wolastoqiyik (Maliseet) with New Brunswick or Canada as defined in the "Mi'gmaq Wolastoqiyik/ New Brunswick/ Canada Umbrella Agreement.

Annex 10: Integrating cultural and traditional values into marine spatial planning and coastal-zone management

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In most environmental assessment as well as coastal and oceans management, traditional and cultural traditional values have to be taken into account during planning and decision-making processes. Generally, stakeholder and public consultations are considered as the means of integrating such information into the planning process. In most cases however, consultations occur after most of the ecological and socio-economic information has been analysed. Consultations tend to focus on discussions regarding the development proposal and the ecological and socio-economic impacts while the information collected is presented in the form of narrative descriptions of concerns and oppositions. Although concerns and oppositions may often be expressed in terms of sustainability, the underlying stake is most likely concerns regarding potential changes to traditional and cultural ecosystem services that are valued by the local community of interest.

Ecological risk assessments have a fairly long history of integrating the physical, biological and process into assessments (Millennium Ecosystem Assessment 2005). Criteria or guidelines for significant ecological and biological components have also been developed (DFO 2004, 2006, 2007) to identify priority ecological vulnerabilities and conservation objectives. The term "significance" relates to the ecological relevance of a given ecosystem component or service such that any perturbation would have ecosystem level effects (DFO 2011). Such guidelines provide ecological criteria that are based on that particular scientific discipline avoiding the bias of introducing value judgement in the selection of these significant ecosystem components or services. During the planning process, the risks to these components and services are identified in relation to existing and future drivers and pressures resulting from human activities (Cormier 2013).

Using anthropology and social science methodologies, culturally significant area have been delineated from detailed surveys conducted in selected coastal communities (DFO 2009). Methodologies develop by Brown (2005) for forestry management. The initiative was explicitly conducted outside the construct of a development proposal to ensure that view and values would be provided without the bias of a controversy. Within the context of an environmental assessment, a similar initiative was also used to identify esthetic values of estuary to develop management measures in relation to aquaculture installation (Canada 2007). Although surveys can result in extensive detailed data, the data can then be aggregated into tangible geospatial representation of the values. It should be noted that such initiative requires normalized and peered review methods if such information is to be used in a regulatory context.

During the planning process, a wide variety of ecological, social, cultural and economic spatial knowledge has to be taken into account and integrated into a decision-making processes that are guided or scoped by legislation and policy (ICES 2013). As with the other information elements, traditional and cultural ecosystem services have to be integrated in the spatial plan to ensure that it is considered in the development

of management strategies (HELCOM/VASAB, OSPAR and ICES 2012). Within the context of an ecosystem approach to management, decision-making process may rely on a risk management approach for the selection of spatial allocations and management requirements priorities are based on risk. Risk criteria are used to evaluate and select the management options that are the most effective at achieving control while being feasible from an implementation perspective (UNECE 2012). The use of traditional and cultural risk criteria that describes the severity of the impacts to such ecosystem services is also required to ensure that these are considered at the same level playing field as the other ecosystem and socio-economic aspects. A marine spatial plan has to consider all current and future risks in order to ensure that human activities are soundly managed while protected the environment (Ehler and Douvere 2009, TBCS 2004).

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Annex 11: Testing an approach for mapping cultural ecosystem services at community level

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Numerous studies underline the importance of immaterial benefits provided by ecosystems and especially by cultural landscapes, which are shaped by intimate human–nature interactions. However, due to methodological challenges, cultural ecosystem services are rarely fully considered in ecosystem services assessments. This study performs a spatially explicit participatory mapping of the complete range of cultural ecosystem services and several disservices perceived by people living in a cultural landscape in Eastern Germany. The results stem from a combination of mapping exercises and structured interviews with 93 persons that were analysed with statistical and GIS-based techniques.

The study was published as: *Plieninger, T., Dijks, S., Oteros-Rozas, E., & Bieling, C. (2013). Assessing, mapping, and quantifying cultural ecosystem services at community level. Land Use Policy, 33, 118-129,* http://dx.doi.org/10.1016/j.landusepol.2012.12.013.

a) Codifying cultural values

With the exception of recreation and tourism, cultural services are rarely considered in ecosystem services assessments. Cultural services differ in various aspects from other ecosystem services, presenting strong barriers toward their broader incorporation. The definitions of most cultural services categories are vague and, for many of them, it is difficult to establish significant relationships between ecosystem structures and functions and the satisfaction of human needs and wants (Daniel et al. 2012). Also, cultural services do not represent purely ecological phenomena, but rather are the outcome of complex and dynamic relationships between ecosystems and humans in landscapes over long time spans (Fagerholm et al. 2012). They are difficult to quantify in biophysical assessments, and their economic evaluation is generally subject to controversy. Moreover, their normative nature and the heterogeneity of their valuation by various stakeholders provide additional challenges. However, many of these challenges, for example the subjectivity of enjoyment of ecosystem services, are inherent to other categories of ecosystem services as well, though rarely addressed explicitly (Daniel et al. 2012).

Incorporating cultural services into ecosystem services assessments is necessary for a comprehensive accounting of the contributions of ecosystems to human well-being, but their integration is a challenging task. Current research on ecosystem services is strongly focused on biophysical assessments, on the one hand, and on economic/monetary valuation exercises, on the other. However, ecosystem services also have a socio-cultural domain that requires alternative evaluation approaches. Studies of perceptions, values, attitudes, and beliefs may generate more meaningful insights regarding the contributions of ecosystem services to human well-being than purely biophysical assessments (Martín-López et al. 2012). In particular, they give more precise understanding of the relevance of ecosystem services for local stakeholders, al-

lowing greater cultural sensitivity (Chan et al. 2012) and recognition of trade-offs in ecosystem services valuation between different user groups, such as between tourists and local inhabitants (Fagerholm et al. 2012). Most perception studies (as reviewed by Martín-López et al. 2012) have revealed a preference for cultural services that is comparable in magnitude to preferences for regulating or providing ecosystem services.

b) Methods for identifying places of socio-cultural importance

Our study aimed to fill gaps in cultural services assessment by performing a spatially explicit mapping of the full range of cultural ecosystem services as perceived by local people. As it is increasingly being acknowledged that ecosystems not only provide benefits, but also various external costs (Dunn 2010; Lyytimaki and Sipila 2009), we additionally considered several disservices. The study was carried out in a study area in Eastern Germany, taking into account the specificities of cultural landscapes, in particular land cover mosaics and diversity of stakeholders. We were guided by the following research questions:

- What bundles of cultural services and disservices can emerge from diverging perceptions, and how can these differences be explained by socio-demographic determinants?
- How are the perceived (dis)services spatially distributed in the landscape?
- What cultural (dis)services do people perceive in relation to different land covers?

Our approach applied methods for social landscape values assessment and acquired local landscape knowledge through a combination of mapping and structured interviews, with subsequent integration into a geographical information system (GIS) (Brown 2005; Fagerholm and Käyhkö 2009; Tyrväinen et al. 2007). The overall study design was tested, discussed, and refined with students during spring semester 2012. Information on cultural (dis)services was collected from individual respondents, but later analysed collectively to derive local community values. Our method to represent landscape values and special places when devising a map comprised pre-identifying and numbering special sites on the map and annotating them in a questionnaire (Tyrväinen et al. 2007).

c) Towards risk assessment: Rating pressures on cultural places of importance

Our study did not include a risk assessment.

d) Mapping spatially relevant information

Cartographic representation of perceptions and preferences enables localization of the most highly valued ecosystems in a landscape (cultural services "hot spots", Bryan et al. 2010) and, consequently, identification of critical focal areas for cultural services management. Mapping the cultural services that stakeholders attribute to ecosystems also facilitates better comparison to provisioning and regulating services, thus informing effective analysis and negotiation of trade-offs between cultural services, biodiversity, commodity production, and other ecosystem services at landscape scale (Nelson et al. 2009). Additionally, such mapping may account for the spatial heterogeneity of ecosystem services demand, lack of which is a common limitation of economic valuation techniques (Martin-Lopez et al. 2009). Mapping stakeholder perspectives also allows consideration of place-based ecological knowledge, which frequently deviates from literature- and model-based assessments (Fagerholm et al. 2012).

Our results showed that respondents relate diverse cultural services and multiple local-level sites to their individual well-being. Most importantly, aesthetic values, social relations and educational values were reported. Underlining the holistic nature of cultural ecosystem services, the results reveal bundles of services as well as particular patterns in the perception of these bundles for respondent groups with different socio-demographic backgrounds. Cultural services are not scattered randomly across a landscape, but rather follow specific patterns in terms of the intensity, richness and diversity of their provision. Resulting hot spots and coldspots of ecosystem services provision are related to landscape features and land cover forms. We conclude that, despite remaining methodological challenges, cultural services mapping assessments should be pushed ahead as indispensable elements in the management and protection of cultural landscapes. Spatially explicit information on cultural ecosystem services that incorporates the differentiated perceptions of local populations provides a rich basis for the development of sustainable land management strategies. These could realign the agendas of biodiversity conservation and cultural heritage preservation, thereby fostering multifunctionality.

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Annex 12: Using marine ecosystem services to support marine spatial planning: The VALMER project

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VALMER aims to examine how improved marine ecosystem service valuation can support effective and informed marine management and planning of the Western English Channel. It is an eleven partner, €4.7 million project co-funded by the IN-TERREG IV A Channel programme through the European Regional Development Fund. The project runs from 1st September 2012, to 31st March 2015. The Western Channel is under increasing pressure from a wide range of competing sectors and interests. Effective and informed management of this shared space is vital to the sustainable use of this valuable resource, and ecosystem service valuation has the potential to contribute to this. VALMER will therefore develop and apply methodologies that can be used to quantify and communicate the real value (economic, cultural and environmental) of marine and coastal ecosystem services, and seek to improve understanding of the links between ecosystem services, their valuation, and effective marine governance. More information on VALMER can be found at: www.valmer.eu. Five key work packages will focus on:

1) Assessing and valuing marine ecosystem services

2) Visualizing and interpreting ecosystem service valuation data

3) Building scenarios to explore possible impacts, such as offshore wind development and population increase, on marine ecosystem services

4) Applying marine ecosystem service valuations to improve marine planning and management.

5) Communicating to as wide an audience as possible

A key challenge within any study of marine ecosystem services is to identify how services should be categorized. Within several projects undertaken within the Centre for Marine and Coastal Policy, Plymouth University, an adapted version of the ecosystem service classification developed by The Economics of Ecosystems and Biodiversity (TEEB; see: www.teebweb.org) has been used to classify marine ecosystem services. A key benefit of the TEEB classification is that is enables the separation of ecosystem processes from ecosystem services, which from an accounting perspective avoids the risk of double-counting. Adaptations were necessary to tailor the classification to a marine and coastal context, but the classification worked well, particularly as financial valuation was an important element of several projects.

A report for Natural England by Fletcher et.al, (2012a) identified ecosystem services available from a range of UK marine habitats through a review of existing evidence (via peer-reviewed grey literature searches) and discussion with experts. This resulted in a synthesis, organized by habitat type, of known ecosystem services available from selected features of England's marine environment. However, this study found that there are significant evidence gaps and for some habitats there was very little or

sometimes no evidence of the existence of services. A particularly significant evidence gap was focused on cultural ecosystem services for which there was generally minimal evidence. In order to recognize the potential existence of cultural ecosystem services in the UK marine environment, Fletcher et.al. (2012a) assumed that research and recreational services and spiritual services were associated with all habitats and species studied in their report.

In a later report by Fletcher, et.al. (2012b) for The Wildlife Trusts to identify the wider benefits of Marine Conservation Zones in England, the cultural ecosystem services evidence gap in England's marine environment was addressed by holding workshops with local residents, marine professionals, and stakeholders at four sites. At these workshops, the uses made of, and values held towards, the marine environment were discussed and where evidence of cultural ecosystem services was provided, this was recorded. New evidence was found for tourism, spiritual and cultural well-being, aesthetic benefits, and research and education for which there was no previously recorded information. This accords with methods applied in the UK by Pike, et.al, (2010; 2011) who used participatory mapping to identify the social value and tranquillity of coastal protected areas. Fletcher et.al. (2012b), Pike (2010; 2011) and other authors have used methods to identify cultural ecosystem services that require community engagement and contribution to fill current evidence gaps.

Financial valuation was used as a method to establish the relative scale of the marine ecosystem services provided by proposed Marine Conservation Zones in England by Fletcher, et.al. (2012b). It was found that the financial value of some cultural ecosystem services could be awarded a financial value (tourism, angling, recreation, education and research, nature watching) while others proved more difficult (aesthetic values, and spiritual and cultural well-being). It was found that for three of the four sites evaluated in detail, the financial value of the cultural ecosystems services was greater than any other ecosystem service value.

A key issue when mapping cultural ecosystem services is that the values held towards are positional and dynamic. One approach is to characterize coastal and marine space according to its dominant qualities, including cultural values. An important element of the C-SCOPE project (http://www.dorsetcoastalplanning.co.uk) was the development of a marine spatial plan for a section of the Dorset coast (UK). In order to characterize the marine environment according to its uses and social values, a seascape assessment was undertaken. This was combined with exiting landscape designations, such as Areas of Outstanding Natural Beauty and Heritage Coasts to identify coastal spaces designed for their important cultural ecosystem services.

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Annex 13: Recommendations

Recommendation	Adressed to
1. Expand WGMPCZM to offer a platform for the continued exploration of CES in MSP and their integration into risk assessment frameworks	WGMPCZM
2. WGMPCZM to support further activities from WKCES such as the already approved CRR	WGMPCZM