Monitoring and managing outdoor recreation in coastal and marine areas – *what do we know and what do we need to know?*

Documentation from a Nordic workshop

Andreas Skriver Hansen (editor)

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Preface

This report is a summary report on the experiences and findings of the Nordic workshop on *Monitoring and managing outdoor recreation in coastal and marine areas* which took place on the 2nd of December 2014. The workshop was hosted by the Unit for Human Geography at the University of Gothenburg and invited researchers, practitioners and policy makers with expertise within the workshop theme to engage in fruitful discussions. A total of 17 persons participated; 12 participants from Sweden, 1 from Norway, 2 from Denmark and 2 from Finland (see the full participant list in *Appendix A*).

The report is mainly structured according to the workshop program, with presentations set during the morning and group discussions in the afternoon (for the full workshop program, see *Appendix B*). The first part of the report begins with an introduction to the topic of monitoring and managing outdoor recreation in coastal and marine areas. This is followed by a second part, which consists of the summaries of four presentations from each of the four countries on the workshop topic. A third part then presents important findings from the group discussions, which were based around four central workshop questions related to the workshop topic. Finally, a conclusion is offered at the end of the report.

This report is compiled and edited by Andreas Skriver Hansen (PhD Student at the University of Gothenburg) with inputs from Professor Marie Stenseke and Associate Professor Per Nilsson, also from the University of Gothenburg. The content has been reviewed by all workshop participants prior to publication.

The workshop was financed by the Gothenburg Centre for Marine Research at the University of Gothenburg and also received support from the Graduate School in Marine Environmental Research. This workshop report should be seen both as workshop documentation and as a product that might result in further research opportunities or project applications.

16 February 2015

Andreas Skriver Hansen

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Summary

The purpose of the workshop was threefold. First, the aim of the workshop was to discuss the current status and importance of outdoor recreation monitoring and management in coastal and marine areas. It is a topic that has yet to find its place both within academia, as well as in resource management and policymaking. Secondly, the workshop was a way to direct future research, management and policy efforts on the topic with a basis on sharing knowledge and experiences among the participants at the workshop. Third, the workshop was a good opportunity to create a platform for Nordic experts who are actively involved with outdoor recreation monitoring and management in coastal and marine areas either academically, in practice or as policy makers.

The workshop was split into two halves. The first half consisted of four presentations from each of the four countries with a focus on sharing current knowledge about the topic on outdoor recreation monitoring and management in coastal and marine areas. Sweden presented a case from Kosterhavet National Park, which showed a range of preliminary results from a collaborative PhD project between a marine ecologist and a human geographer. Norway presented and evaluated upon a selection of outdoor recreation monitoring activities from Færder National Park. Denmark presented current work on maritime spatial planning, supported by a case study that introduced an online mapping tool with a focus on mapping recreational activities along the entire Danish coast. Finally, Finland presented a case on constraints experienced by the coastal population in terms of access to coastal areas, while a second case demonstrated how to monitor visitors in the Archipelago National Park in Finland.

The second half of the workshop consisted of two separate group discussion rounds with a final, joint discussion in the end. In order to direct the group discussions, four central questions were introduced. The first question concerned what knowledge managers and practitioners need in order to monitor and manage for outdoor recreation in of coastal and marine areas. The second question concerned the consequences of viewing outdoor recreation as a land/sea interest in its own right and in what way this view would interact with other land/sea interests. The third question concerned a discussion about where outdoor recreation and nature conservation meet in terms of monitoring efforts and how better integrated studies across different disciplines can assist in improving outdoor recreation monitoring and management of coastal and marine areas. Finally, the fourth question concerned the issue of whether it is possible to transfer experiences from terrestrial monitoring and management efforts to coastal and marine areas. On the basis of these discussions, several important findings were found.

Finally, further perspectives of the future role of outdoor recreation monitoring and management in coastal and marine areas were discussed during the final discussion round, including thoughts about how to develop the workshop results into new project suggestions across the Nordic countries.

1. Introduction

1.1 Background

Each year, thousands of people visit coastal and marine areas around the world in their search for recreational activities (Orams 2004). For this reason, the recreational use of coastal and marine environments has been on the rise (Needham 2013) and is often related to more general trends within tourism development (von Ruschkowski et al. 2013) and nature resource management (Puustinen et al. 2009). According to Hall and Page (2014), people are drawn to the sea and the coast because of the unique natural qualities and recreational opportunities in these areas, often resulting in close encounters with and experiences of nature. As a result, coastal and marine areas have become increasingly popular destinations and centres of attention not only for countless of visitors often travelling from far away, but also for the local population who consider the coastal and marine environment an attractive setting to live in (see Figure 1). Along with increasing leisure time and financial opportunities, as well as new technological advancements that makes the coast and the sea more accessible, the recreational use of the coast and the sea is therefore bound to grow in the future (Orams and Lück 2013).

Figure 1 – The coast is popular for visitors and the local population

The increasing popularity of coastal and marine areas also presents a paradox. On one hand, more and more people seek the unique natural environment characteristic to coastal and marine areas in their quest for recreational settings that match their needs and desires. On the other hand, the same increased recreational attention has resulted in negative impacts both on

the physical and the social environments in coastal and marine areas (Orams 2004; Eagles & Buteau-Duitschaever 2009). Examples of negative impacts on the physical environment include aspects such as littering, wear, noise, pollution and disturbance of wild life, while examples of negative impacts on the social environment include various conflicts between different recreational interests and activities, or between visitors and the local population (Emmelin et al. 2010). The increasing number of recreational participants therefore poses a threat to the environmental and social qualities that people seek in coastal and marine areas. The risk is that people end up 'loving' their preferable recreational destinations to death (Butcher 1997). Consequently, it is of the utmost essence that the extent and specifics of the recreational use of coastal and marine areas are emphasized in future planning and management activities of the coast and the sea.

The paradox between both using and protecting coastal and marine resource areas is an ongoing conundrum with a long history, particularly within natural resource management research (Cole 2004). However, when it comes down to actual implementation of planning and management tasks, resource managers are often sole responsible for finding the answer to the riddle, which it is not an easy task to solve, as environmental and recreational goals often collide or interfere with one another. This situation poses a managerial challenge also in coastal and marine areas where often high bio-ecological standards and high quality recreational experiences have to go hand in hand (Davis & Tisdell 1995). As a reaction to this, both natural and social scientists as well as resource managers of coastal and marine areas have placed an increased focus on how to best balance goals for nature conservation and protection alongside offering quality recreational experiences to visitors (Fish et al. 2005). The hope is to find a way to mediate the two management priorities or, at the very minimum, find a compromise between use and protection of natural resources.

In addition, resource managers are also required to take action due to international regulations. For instance, the current political debate in the Nordic countries on the topics of Integrated Coastal Zone Management (ICZM) and Maritime Spatial Planning (MSP) is interesting and relevant in this regard, as it concerns the future sustainable use of coasts and seas around the world. In a Nordic context, these discussions have also been engaged and the concepts are currently being integrated at different political, administrative and managerial levels (EU 2010; HAV 2014). In both planning frameworks, outdoor recreation monitoring and management play an important role, especially in relation to local and area-specific planning and management. It is therefore relevant to consider the importance and influence of ICZM and MSP in relation to the future recreational use of coastal and marine areas in all four Nordic countries.

1.2 Focus on outdoor recreation monitoring and management

Looking generally on resource management of coastal and marine areas in the Nordic countries today, the impression is that there are still important concerns among resource managers on how to best plan for increasing recreational activity in coastal and marine areas -

in spite explicit political promotion and support of outdoor recreation. The question is therefore whether resource managers of coastal and marine areas are equipped and ready to meet the challenge of finding a compromise between use and protection of natural resources, both in terms of knowledge and tools that are needed in the process. In other words, are today's management efforts enough? The answer lies in current outdoor recreation *monitoring* and *management* activities, which are two central managerial tasks that have the power to determine how the challenges are met.

Outdoor recreation management is often also referred to as visitor management, as it involves the management of recreational participants in a natural resource context (Manning 2011). In this regard, a focus for management is to both decrease negative human impacts on natural resources as well as avoid conflicts between different recreational interests and activities. The two tasks are integrated parts of a range of international management strategies that have been applied to protected areas, such as the Visitor Experience and Resource Protection (VERP), Limits of Acceptable Change (LAC) and Recreative Opportunity Spectrum (ROS) models (see McCool et al. 2007). In these models, outdoor recreation activities are seen as a central part of resource management along with goals for resource protection and conservation. Traditionally, outdoor recreation management has therefore mostly had a focus on the facilitation of different recreational activities and uses of the physical environment, while also analyzing and interpreting visitor patterns and trends (Marwijk 2009). This task often requires detailed visitor information, which is obtained via visitor monitoring, or as it is also called: *outdoor recreation monitoring*.

According to Wardell & Moore (2004, p. 13), the main objective of *outdoor recreation monitoring* is to "to produce reliable data which can be analyzed and presented in a format that can guide decision-making at all levels in a protected area agency". Without well-informed knowledge about the recreational users and their behaviour and activities in the area of concern, planning and management initiatives are likely to be both inadequate and faulty (Hornback & Eagles 1999). In other words, visitor monitoring is a way to support correct resource management and planning decisions. Consequently, resource managers often rely on a combination between monitoring activities and management actions in order to do their important work (Kajala et al. 2007). On the international scene, outdoor recreation monitoring has therefore slowly, but increasingly become an essential part of resource management, while also being the focus of a multitude of studies within various research disciplines. Furthermore, monitoring procedures are a central part of the feedback and report systems in the above mentioned international management strategies (Manning 2011).

Cessford & Burns (2008) list four reasons why monitoring can be helpful to resource management:

1) To monitor the condition of specific natural, historic and cultural heritage assets of conservation priority, and the changes in their related sustainability indicators
2) To account for visitor numbers and their patterns and characteristics of use

3) To know more about physical impacts – visitor effects on specific natural, historic and cultural heritage assets and processes
4) To find out about social impacts – visitor conflicts and satisfaction with the quality of recreation experiences

The four tasks can be considered basic monitoring tasks within resource management and are perhaps best summed up into two categories: 'environmental monitoring' (number 1 and 3) and 'recreational monitoring' (number 2 and 4) respectively. *Environmental monitoring* mainly concentrates on observing the conditions of specific natural environments and processes, including physical impacts caused by human activity, and have a long academic and managerial history within land use management (Hadwen et al. 2008). *Recreational monitoring*, on the other hand, is connected to studies of visitor characteristics, patterns and activities, including knowledge on people's recreational behavior and experiences (Manning 2011). Similarly, recreational monitoring (or visitor studies) also has a long history within resource management, where monitoring efforts are most commonly associated with different types of visitor management strategies (see Watson et al. 2000).

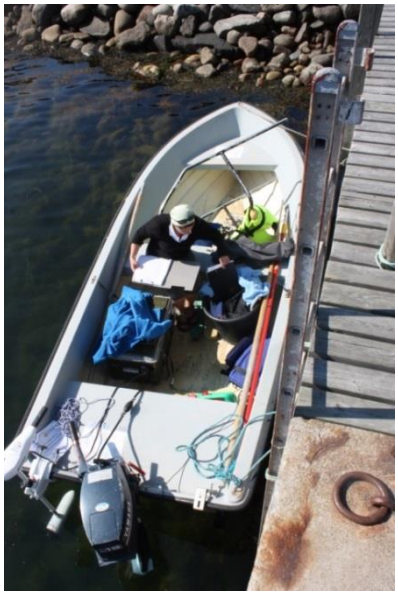

Figure 2 - Environmental monitoring and recreational monitoring in progress

Together, the two types of monitoring efforts provide an understanding of visitor activities and behaviour as well as the spatial distribution of visitor related impacts on the environment (Kajala et al. 2007). Both are central management tasks, but are often kept as separate activities in spite the explicit connections between them. Furthermore, they each require different disciplinary approaches, as environmental monitoring usually is performed under the domain of natural science (often biologists and ecologists), while recreational monitoring usually is performed under the domain of social science (Stenseke 2010; 2012).

1.3 Challenges and obstacles

The split between environmental and recreational monitoring and management activities in the management of coastal and marine area has caused some challenges. Looking at resource management in coastal and marine areas in the Nordic countries today, managers are often educated within a natural science tradition, while there is essentially no available management capacity within social science (Stenseke & Hansen 2014). This is particularly the case in protected coastal and marine areas, where more intensive management is carried out, such as marine national areas (Orams 2004). As a result, recreational monitoring is often undertaken by resource managers that are educated within the natural sciences and therefore have little or no experience with recreational monitoring and management aspects (aside from counting visitor numbers, maintaining recreational facilities and follow up on regulations on visitor use). This creates a paradox in relation to outdoor recreation monitoring and management activities, as there is a bias towards focusing more on environmental than recreational monitoring and management aspects (Cole 2006). In the words of Orams (2004, p. 171), this is an ironic and potentially destructive development, especially considering that:

> *"[…] almost all of the challenges faced by the marine environment are the result of human activities, including recreation, however, the great majority of research* [and management] *that occurs on our oceans remains in the biological and physical sciences"*

This situation is problematic, especially when one considers how quickly touristic and recreational activities in coastal and marine areas are growing. These trends therefore require immediate management attention and a pressing need for resource managers to know more about the recreational participants and their activities in order to anticipate new human-related challenges and prevent conflicts accordingly (cf. Figure 3).

Figure 3 – Water scooter activity: a new human-related challenge and potential conflict?

In order to optimize area monitoring efforts overall, two important managerial actions therefore become important: first of all, recreational monitoring efforts need to be prioritized and second of all, they need to be, as much as possible, planned in congruence with already established environmental monitoring activities. This puts emphasis on combined, interdisciplinary monitoring and management initiatives.

Another challenge related to the Nordic countries in particular is that outdoor recreation monitoring and management in coastal and marine areas must operate in congruence with the right of public access (*allemansrätten*) and shoreline protection, which are two characteristic planning aspects that have a large influence on the use of the coast and the sea in all four Nordic countries (Ankre 2007). Both make the coast and sea more accessible to public use, and thereby also to more recreational activity. At the same time, they also make the need for environmental protection explicit due to rising recreational activities along the coast and the sea. New thinking on outdoor recreation monitoring and management efforts as well as careful resource planning and management of coastal and marine areas is therefore required to control increased public access to, and growing recreational interests in, the coast and the sea.

1.4 Purpose and aims

The overall purpose of the workshop was to promote the development of an interdisciplinary knowledge base to improve outdoor recreation monitoring and management efforts in coastal and marine areas. To focus the workshop, three related aims were emphasized. First of all, the workshop was a way to discuss the current status and importance of outdoor recreation monitoring and management in coastal and marine areas, which is a topic that has yet to find its place both within academia as well as in resource management and policy making. This discussion comes out of a longer discussion related to natural resource management and especially the question about how to both monitor and manage goals for nature conservation and protection alongside offering quality recreational experiences to visitors. This question is not easily answered and is, particularly in the case of coastal and marine areas, a topic that requires more attention, not only within academia, but especially also among resource managers. A first important point on the workshop agenda therefore was to gain insights into *current* knowledge on and experience with outdoor recreation monitoring and management in coastal and marine areas – i.e. *what do we know now?*

Secondly, the workshop was also a way to direct future research, management and policy efforts on the topic of outdoor recreation monitoring and management with a basis on the experiences and conclusions reached at the workshop. This involved not only pointing out gaps and limitations in the current knowledge and literature on outdoor recreation monitoring and management in coastal and marine areas, but to also come up with thoughts for how new research, management and policy initiatives can remedy the holes and gaps on the topic. A second important point on the workshop agenda therefore was to look ahead and include

future needs related to the ever growing challenge of outdoor recreation monitoring and management in coastal and marine areas - i.e. *what do we need to know in the future*?

Third, the workshop was also a good opportunity to create a platform for Nordic experts who are actively involved with outdoor recreation monitoring and management in coastal and marine areas either academically, as practitioners or as policy makers. Due to the fact that outdoor recreation monitoring and management in coastal and marine areas crosses interdisciplinary bridges, experience on the topic is found in many different contexts and among professionals working in very different fields. A range of natural scientists, social scientists, practitioners and policy makers were therefore explicitly invited in order to have different stakeholder viewpoints represented among the participants.

One additional important point is that the Nordic countries share many similarities in terms of coastal and marine landscape types, e.g. archipelagos, which are rare elsewhere. As a result, comparisons between monitoring and management strategies, efforts and results from different coastal and marine areas in the Nordic countries are both interesting and highly relevant (Kajala et al. 2007). Moreover, a great number of visitors in coastal and marine areas come from neighboring Nordic countries. This fact makes knowledge exchange on outdoor recreation monitoring and management relevant across borders. In this regard, the focus of the workshop was coastal and marine recreation in general, and therefore not specifically aimed to concern certain areas or locations only (such as national parks or other protected areas).

1.5 Glossary

ICZM: Integrated Coastal Zone Management

MSP: Maritime Spatial Planning

GPS: Geographic Positioning System

GIS: Geographic Information System

VEP: Visitor Employed Photography

EUNIS: European Nature Information System

VIM: Visitor Impact Management

LAC: Limits of Acceptable Change

VERP: Visitor Experience and Resource Protection

VAMP: Visitor Activity Management Process

2. Workshop presentations

2.1 Short description

The first workshop activity was a series of short presentations from each of the four Nordic countries represented at the workshop. The aim of the presentations was to give an up-to-date status from all countries on the topic of outdoor recreation monitoring and management in coastal and marine areas, including relevant research results and experience from different resource management contexts. An explicit feature of each presentation was to include concrete case scenarios or projects that show advantages and challenges in the direct work with outdoor recreation monitoring and management in coastal and marine areas.

2.2 Monitoring and managing outdoor recreation in Swedish coastal and marine areas

(Andreas Skriver Hansen and Per Nilsson, University of Gothenburg)

Previous research

The Swedish presentation began by stating that systematic monitoring and management of outdoor recreation in coastal and marine areas is entirely lacking in Sweden. Instead, there has been a general tendency in Sweden to focus efforts mostly in terrestrial areas, especially when it comes to practical experience with outdoor recreation monitoring and management (see Emmelin et al. 2010). However, there are a few exceptions, most notable the work done by Ankre (2007, 2009), who has focused mainly on recreational zoning and the problem of noise in coastal and marine areas, and Morf (2011), who has focused mainly on conflict handling and planning of the coast and the marine environment. Both Ankre and Morf reach the conclusion that more research and work on the topic of outdoor recreation monitoring and management in coastal and marine areas needs to be done in order to fully comprehend current and future recreational developments of the coast and the sea.

Two new PhD projects

The presentation continued with an introduction to two ongoing and individual PhD projects, but with a joint focus on the topic of outdoor recreation monitoring and management in coastal and marine areas. The first PhD project is performed by a human geographer with a task to provide insights into how recreational participants, and the qualities that these participants seek, can be monitored in coastal and marine areas.[1] The second PhD study is performed by a marine ecologist, whose task it is to look more into how impacts on the

[1] For more details, please visit: http://www.gu.se/omuniversitetet/personal/?userId=xskran

physical environment from recreational activities can be traced and monitored under the surface.[2] The two PhD projects connects on a management level, where the results from the two studies will be integrated and thereby hopefully result in more proactive monitoring and management activities on outdoor recreation aspects (Stenseke & Hansen 2014).

The study area for the two projects is Kosterhavet National Park (388 km²). The park was established in 2009 and presents an interesting case due to its rich biological value with more than 6000 marine species found in the area, while also boasting a relative large numbers of visitors each year (up to 300.000), making the national park one of the most popular coastal areas in Sweden. This presents a managerial challenge, as the rich biological values both attracts, but are also impacted by, the growing number of visitors in Kosterhavet. In turn, monitoring and management of visitors and their recreational activities and impacts become an increasingly important task. The aim of the joint PhD projects therefore is to assist managers in this work, not only by engaging in relevant discussions on how outdoor recreation monitoring and management can be done, but also by providing insight into how interdisciplinary monitoring activities can be realized.

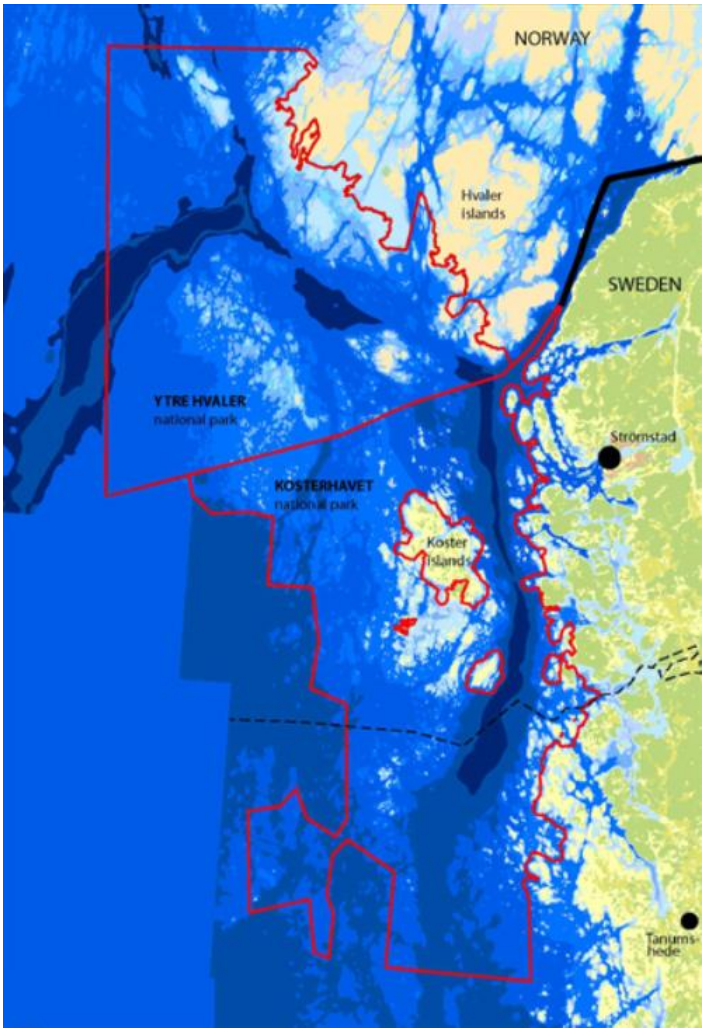

Figure 4 – Kosterhavet National Park
© Naturvårdsverket

[2] For more details, please visit: http://bioenv.gu.se/english/staff/jenny-egardt

Some important challenges will be addressed in the two individual PhD projects as well as in the joint part of the two projects. For example, in the geographic project, one major challenge is how to monitor visitor use patterns and behavior in an open landscape type such as coastal and marine landscapes, as these areas often contain a high degree of visitor dispersion. In the ecological project, locating and capturing impacts of recreational activities under the surface is furthermore a challenge due to the marine environment, which washes away impacts before they can be detected. A better integration of socio-cultural and ecological data in the management of outdoor recreation in coastal and marine areas can therefore only be obtained after the disciplinary problems have been solved. As a result, both projects contain a large focus on method development and evaluation, which involves testing different monitoring strategies and using the results to create interdisciplinary insights and recommendations on management strategies.

The geographic study

The project with a point of departure in human geography clarified the usefulness of outdoor recreation monitoring from a resource management point of view and that the basis for the current monitoring activities in Kosterhavet is the management plan for the national park (SEPA 2009). However, reading through the management plan, hardly anything is mentioned about recreational monitoring aside from keeping track of visitor numbers and activities, which the management team has been active with since 2012. The only other information that exists on the recreational use in Kosterhavet is a visitor survey from 2006, which contains information on recreational visitors and their activities in Kosterhavet (TUI 2006). However, the report only contains information from before the establishment of the national park and is not referred to in the national park management plan. Consequently, the basis for outdoor recreation monitoring and management in the national park is hardly established and lacks information and inputs from updated and professional sources. Three important tasks are therefore introduced in the PhD project: a) to gain updated information on the visitor use and activities in the national park, b) to test different monitoring methods in order to get more accurate information, and c) to establish better conditions for integrating the results with ecological monitoring results on a management level.

As a means to solve the first two tasks, a first field season was initiated during summer 2013 and resulted in updated knowledge on the recreational use and activities on Kosterhavet National Park. A range of different quantitative based monitoring approaches were applied, both in order to increase the accuracy of the information, but also to test the monitoring methods themselves in terms of validity and reliability. As a result, a mixed-method approach was chosen as the main strategy, including: a) a *self-administered questionnaire* which focused mainly on visitor demography and experiences, including a map exercise showing the location of visitor activities in the national park. This was backed up by results from b) *systematic interviews* with visitors as well as c) *on-site observations* of visitor behaviour and activities from different popular locations in the national park. The results provided

information on main groups, their locations, intensity and nature of their activities as well as details on activity interaction and conflicts (see Figure 5). Moreover, the results also provided important methodological reflections on the challenges working quantitatively with monitoring activities, such as troubles with high visitor dispersion due to the fragmented open landscape, which in turn made it difficult to establish a working sampling strategy.

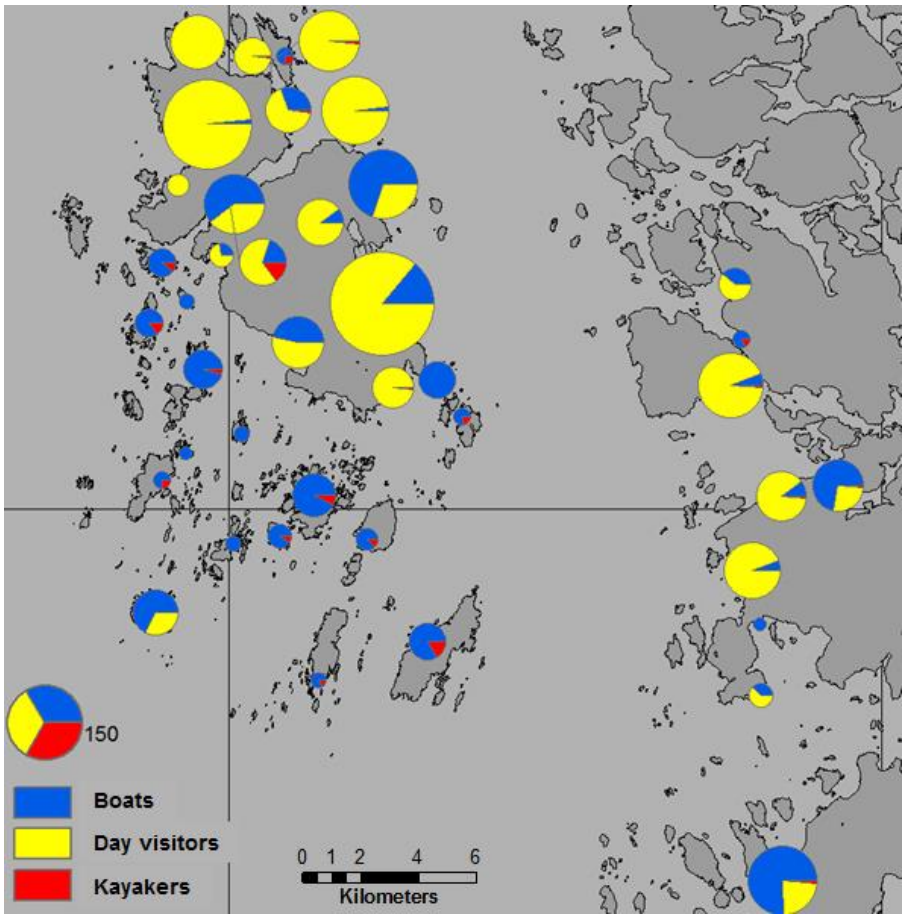

Figure 5 – Some initial results from the first field season 2013. © Hansen 2013

On the basis of the results from the first season 2013, a second field season was initiated during summer 2014, but this time testing a qualitative based monitoring method. The main focus was to document recreational experiences from the point of view of the recreational participants in order to track what factors that influence people's recreational experiences and what recreational qualities they seek. For this purpose, a method called Visitor Employed Photography (VEP) was used as a potential monitoring strategy, because pictures can reveal types of information, such as very personal and deeply rooted feelings, that is not easily communicated in pure verbal or written forms (Tonge et al. 2013). In other words, the visual content in the pictures, and the meaning that is created as a response, allows for other and usually also richer information to surface that other and more common quantitative based monitoring methods usually cannot disclose. Data was gathered by instructing participants to take pictures of their recreational experiences in Kosterhavet while also filling in a photo logbook and participating in a follow-up interview. Participants were therefore asked to take up to 25 pictures during an agreed period of different positive and negative outdoor

experiences that they had in Kosterhavet. The results provided information on how Kosterhavet is perceived and experienced as well as details on what experience values and qualities that recreational participants seek when they engage in recreational activities in Kosterhavet. In addition, the results also provided important reflections on advantages and disadvantages working with qualitative based monitoring strategies.

The ecologic study

The project with a point of departure in marine ecology presented a few important reflections on how natural science can contribute to outdoor recreation monitoring and management. In this case, the main task for the ecologists is to build information on the relationship between recreational use of the physical environment and the status of the physical environment itself. These assumptions can be confirmed or disconfirmed by tracking human related impacts via information gathered systematically and over time. In this aspect, one important assumption is that certain environments are needed for certain recreational activities, such as for instance boating or kayaking activities. However, there are also examples where the marine environment is indirectly required, such as sunbathing or picnic activities. Both types of activities may or may not result in impacts on the physical environment, but it will in any case depend on: a) the status the physical biotope(s) that is affected and b) the nature and intensity of the recreational activity itself.

In regards to the status of the physical biotopes, one particular important and first task is to describe the marine environment in the national park, both in terms of finding locations of different key biotopes in the park area and the status of their condition. For example, there are some biotopes that are more fragile towards human impacts, such as sea grass in shallow waters, while other biotopes are more resilient, such as hard rock sea floors. To do this work, a mix between biotope maps and the European Nature Information System (EUNIS) is used to determine and classify different habitat types in Kosterhavet. Secondly, a monitoring program based on quantitative methodology is also initiated with a goal to find indicators on for instance diversity indices and presence/absence of species, both on a microbial level. Sediment samples from different locations with different biotopes have therefore been taken and studied in order to find irregularities caused by human activity.

In regards to the study of the nature and intensity of the recreational activity itself, human impacts have also been studied using two strategies. First, a series of underwater transects were filmed from different sample sites in Kosterhavet, including likely impacted areas and control areas. To do this, an underwater camera was installed on a sled, which could document and record traces of recreational impacts on the sea environment (see Figure 6). Some of the resulting video footage has shown everything from litter and waste products to wear on rocks and anchoring damage. Second, the results were compared with the results obtained by the PhD partner, which settled the whereabouts (i.e. location) and intensity (i.e. pressure) of different recreational activities in the national park. In turn, this knowledge have been used to detect ‘hot spot’ areas in Kosterhavet, where areas of high recreational activity

can be compared with areas of high and low ecological values, and therefore work as a basis for evaluating managerial monitoring and management activities.

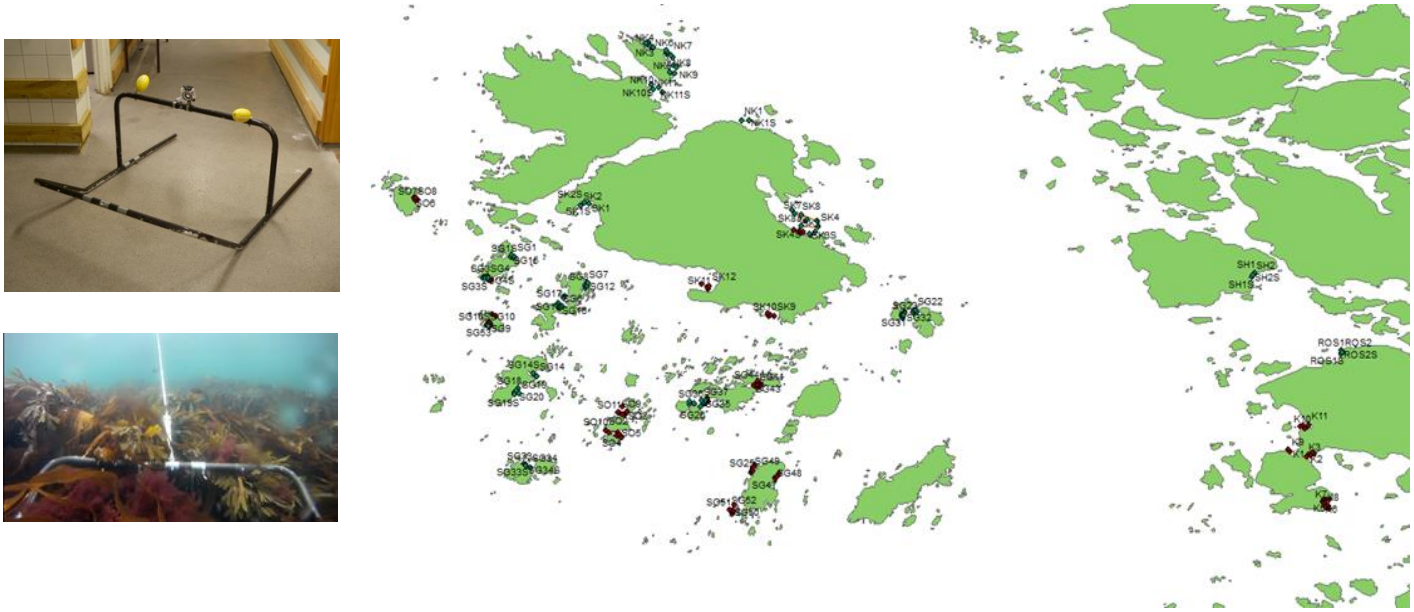

Figure 6 - The underwater camera sled and the sample sites. © Nilsson 2012 & Egardt 2013

In terms of a preliminary conclusions and a look ahead, the twin project has so far confirmed that an interdisciplinary monitoring and management approach not only is *important* but in fact *necessary* for the management of outdoor recreation in coastal and marine areas. At the same time, there are still some important questions that need answers:

- What does an interdisciplinary monitoring and management strategy require?
- What knowledge is needed further?
- What do managers want/need in terms of knowledge?
- What is realistic in terms of available time and resources?

The answers will be the focus of the second half the joint PhD project, which will run until the end of 2016. One or two papers from the joint part of the project will be co-written and hopefully published during 2016/2017.

2.3 Monitoring of outdoor recreation at the coast. Examples from the *Oslofjord*, Norway

(Odd Inge Vistad, Norwegian Institute for Nature Research)

Previous research

Alike to the situation in Sweden, systematic monitoring of outdoor recreation is almost absent along the Norwegian coast. Experience on the topic has again mostly come from terrestrial areas, especially forest areas, mountain areas and urban areas, which all are popular landscape types in Norwegian outdoor life. Nonetheless, the popularity of the Norwegian coasts and marine environments should not be underestimated, as they also receive their fair share of recreational visitors each year. In terms of research done on the subject of outdoor recreation monitoring and management in coastal and marine areas, not much is done. Only limited studies for specific purposes can be found, such as in studies on privacy rights versus the right of public access along the coast by Vistad et al. (2013) and on the recreational use of developed Norwegian shorelines by Skår & Vistad (2013). Furthermore, Meyer (1997; 1999a; 1999b) has studied Norwegian boaters in order to cover themes such as encounter norms among boaters in front country boating areas, environmental attributes in recreational boating as well as activity involvement, equipment, and geographic connection to recreation areas among boaters, primarily in the south-western part of the Oslo Fjord.

The Norwegian presentation began by stating that the main reason why recreational monitoring generally has been absent from the management of coastal and marine areas in Norway is because it is a resource demanding task that requires large resources in terms of time and money that resources managers often do not have. Consequently, recreational monitoring is hardly ever prioritized by resource managers, resulting in a lack of systematic monitoring efforts in Norwegian coastal and marine areas. Furthermore, this is complicated by the fact that social science capacities required to do outdoor recreation monitoring is very limited among resource managers, who are often educated within the natural sciences (e.g. biologists and ecologists). As a result, the position of social science aspects within resource management, such as for instance recreational monitoring, is downsized compared to natural science aspects, such as environmental monitoring. However, new initiatives have come to light recently. For instance, a program with more systematic monitoring activities on outdoor recreation has started in Trondheim (Vorkinn 2014). Moreover, there is also renewed focus on national park tourism branding and visitor management in several Norwegian parks.

Nøtterøy/Tjøme skerries and Færder National Park

The main part of the presentation introduced the case of Nøtterøy/Tjøme skerries, which are two coastal areas in the south-western part of the Oslo Fjord that makes a special case when it comes to management of outdoor recreation in coastal and marine areas in Norway. Generally, the Oslo Fjord is considered the most studied coastal area in Norway due to its popularity among thousands of leisure boaters and summerhouse residents, especially during the summer months. Furthermore, the first marine national park in Norway from 2009, Ytre Hvaler (354 km^2), is also located in the Oslo Fjord, and alike to Kosterhavet National Park, it attracts several thousand visitors each year.

In Nøtterøy/Tjøme the situation is much the same, which is why a mix of skilled individuals, interested local politicians and an enthusiastic local administration for a long time have succeeded in managing the area. Their efforts were finally rewarded in 2013, when Færder National Park (340 km²), including many of Nøtterøy/Tjøme skerries, was established (see Figure 7). Alike to Ytre Hvaler National Park, Færder National Park also boasts of unique conservation values as well as an interesting cultural heritage that is still visible in the landscape. Consequently, the area is a very popular travel destination that is facilitated for outdoor recreation purposes and with long traditions of outdoor activities that attract both the local population and recreational visitors from near and far.

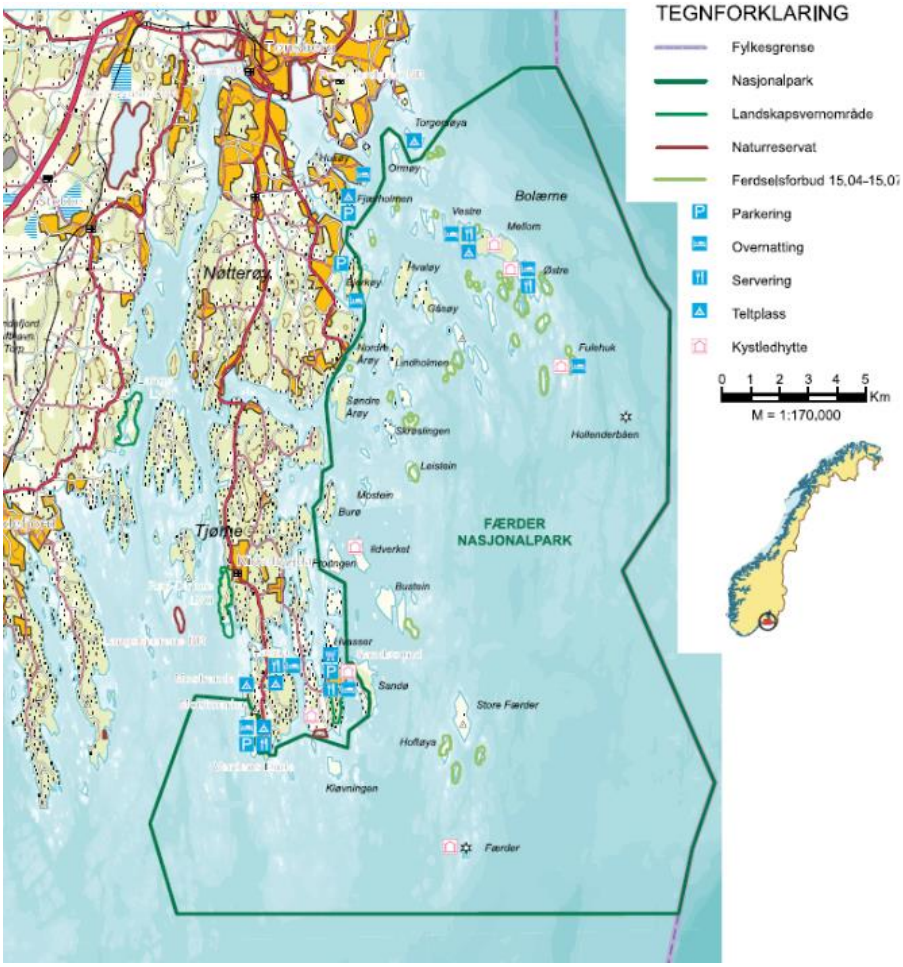

Figure 7 - Færder National Park including Nøtterøy/Tjøme skerries.

© Statens Kartverk 2014

Recreational monitoring in the area began already in 1990, where aerial photography was used as a method to count and map the number of boats in the four municipalities that boarders Færder National Park. Pictures were taken during the middle of the day and in the evening on two Sundays in July in order to document the maximum use in the area. The results showed that at its peak time up to 7700 boats were present in the area, including those moored in small boat harbors in the four municipalities (and thus a far greater area than Færder National Park). This number has since been used as a baseline for comparison with later counts. Other types of recreational monitoring activities include a survey performed by Meyer in 1993 as part of his PhD and published papers (see above). The survey consisted of a series of open and closed questions on opinions, preferences, attitudes and behavior, primarily

among boaters. Physical and social environmental characteristics were also included later, as was also details on place and activity attachment.

An interesting management action was introduced in 2001, where an impact management plan was launched in the area. The plan is founded on the Visitor Impact Management (VIM) model, which is a natural resource management strategy that was originally first introduced in North America and designed to detect and control visitor related impacts on the physical environment (McCool et al. 2007). Part of the strategy therefore was to set up indicators on physical and social environmental impacts in order to detect the extent, intensity and nature of the recreational use of the coastal and marine resources. Physical indicators included detection of bare ground, vandalism on bushes and trees as well as fire rings and litter. These indicators have been measured every year since 2001, while social indicators were measured in a survey performed by Meyer in 1999. This focused mainly on problems with speed, waves, noise, crowding and so-called 'stupid boating' (i.e. a mix of speeding, drunk boating as well as lack of boat skills and experience). Many of these concerns now receive special attention in Færder National Park, but have not yet been repeated in terms of an updated report of the situation. The Visitor Impact Management plan is currently about to be replaced by the coming management plan for Færder National Park, which will provide detailed plans for individual outdoor recreation areas in the park area.[3]

Figure 8 - Boats in Færder National Park. Photo: Ronny Meyer

[3] For more information, see Meyer 2001 and Gundersen et al. 2011.

Counting of tents is a task that has also been ongoing since 1996 on selected islands. The results well indicate the recreational development on these islands, but can say little about the development on other islands. An interesting tendency is that more short-term campers seem to be present now more than earlier, perhaps due to changing weather conditions or holiday routines. Last, but not least, waste management is also being done continuously with details reaching back to the 1980s. These details reveal the number of litter bags collected at each waste management point. This type of information can be used to determine use/visitations levels, and is therefore also a good source for further studies.

The latest monitoring activities in the area include another boat counting survey in 2014, which took place on a summer day in July with great weather. The whole archipelago was 'scanned' for boats and boat activity and thus illustrated a day with maximum activity. The results showed 1250 boats in the national park area and 750 in the immediate surrounding area. Moreover, 40 kayaks were also counted, which indicates that kayaking has become an increasingly popular activity in the national park area.

Future efforts

In terms of future monitoring and management activities in the area, several optimistic initiatives, but also a few challenges, have surfaced. In terms of opportunities, there has been a large focus on bringing in experienced based knowledge from actors that are directly involved with outdoor recreation management in the national park area. Among these actors is The Skerries Service (*Skärgårdstjänsten*), which is a national-municipal cooperation that handles waste management as well as the facilitation and maintenance of outdoor installations in the area. They are present along the coast throughout the whole year and are therefore an important source of information, especially with regards to information on popular or active recreational areas in the national park. If this knowledge could be systematized, it could be used more pro-actively in resource management. Aside from bringing in information from relevant actors, future monitoring activities are most likely to be placed under the authority of the new national park management team. The challenge will be to actually make it a management objective, as authorities only work with management by objectives (*målstyrt forvaltning*). Currently, however, outdoor recreation monitoring and management are not included as a goal due to the costs and difficulties involved. For this reason, outdoor recreation monitoring and management need to be coupled to other goals in the area if they are to be prioritized.

In spite these challenges, outdoor recreation monitoring and management still need to continue, hopefully in congruence with new opportunities that are introduced in the coming years. For example, yearly registrations and counts of recreational activities in the national park area could be a goal that should be emphasized in order to detect new recreational developments and conflicts. This could for instance be done by filming or taking photo every year from a helicopter or via registration from boats. Aerial photography is a good

opportunity, especially if combined with the coastal guard activities, when they fly out and take photos anyway. This could be a way to minimize costs and combine efforts across administrative borders. Furthermore, more field studies should be prioritized with an aim to assess human activities more systematically in order to detect negative impacts before they reach a critical level. Also, more interviews, questionnaires and other self-reporting methods on the internet should be introduced in order to acquire more information on the recreational participants in the national park. These initiatives were all initiated by Meyer in his work from the 1990s, which could therefore be used as a baseline for new monitoring initiatives.

2.4 Marine spatial planning and project on mapping of marine recreation activities in Denmark

(Berit C. Kaae and Anton S. Olafsson, Copenhagen University)

Previous research

Of the four Nordic countries represented at the workshop, Denmark is perhaps the country that have done the least on the topic of outdoor recreation monitoring and management in coastal and marine areas. This is a puzzling situation, especially considering the fact that Denmark has a relatively long coastline compared to the size of the country. This was also the statement by the two Danish workshop representatives, who currently are involved with the first larger project in Denmark on the topic of documenting recreational activities along the Danish coasts and near-coastal waters.[4] In regards to research done on the topic of outdoor recreation monitoring and management in coastal and marine areas, attention on outdoor recreation has mostly been given to forest and urban areas in Denmark (Kajala et al. 2007), while the Danish coasts and seas have been almost wholly neglected. Only a few studies with remote relevance have surfaced over the years, such as a study on safety among anglers, kayakers and kite surfers (Andkjær & Arvidsen 2012) and a study of the challenges of implementing Integrated Coastal Zone Management (ICZM) and Maritime Spatial Planning (MSP) in Denmark (Kaae 2013). Neither of them, however, directly involves aspects on outdoor recreation monitoring and management. Outside academia, the situation is almost the same. Outdoor recreation is traditionally a focus for the Danish Nature Agency (*Naturstyrelsen*) and the Danish Outdoor Council (*Friluftsrådet*), but only the Outdoor Council explicitly writes about the importance of the Danish coasts and sea. Details on outdoor recreation monitoring and management are again not included.

MSP planning in Denmark

The Danish presentation was split into two parts. The first part introduced current efforts in Denmark on implementing MSP in national planning of the coast and the sea. In this regard,

[4] Visit www.havfriluftsliv.dk

an important note is that Danish activity on outdoor recreation in coastal and marine areas is done primarily in relation to MSP planning. The background of the MSP process is the international directive on maritime spatial planning, which emphasizes integration between land and sea, stakeholder involvement and transparency in planning of the coast and the sea (HAV 2014). Furthermore, it is based on an ecosystem-based approach where efficient and sustainable use of coastal and marine resources is the main goal. The motive is to find solutions to competing interests in the coast and the sea, such as for instance renewable energy sources, fishing activities, transportation, aquaculture and other growth areas, including tourism. The interests in these sectors have highlighted the need for efficient management of the coast and the sea in order to avoid potential conflicting situations between competing interests and instead create synergies between different activities on all administrative levels. The benefits include better coordination between different involved stakeholders as well as both financial and environmental protection. MSP is of particular relevance to outdoor recreation monitoring and management in coastal and marine areas as it involves establishing the preconditions for future outdoor recreation planning.

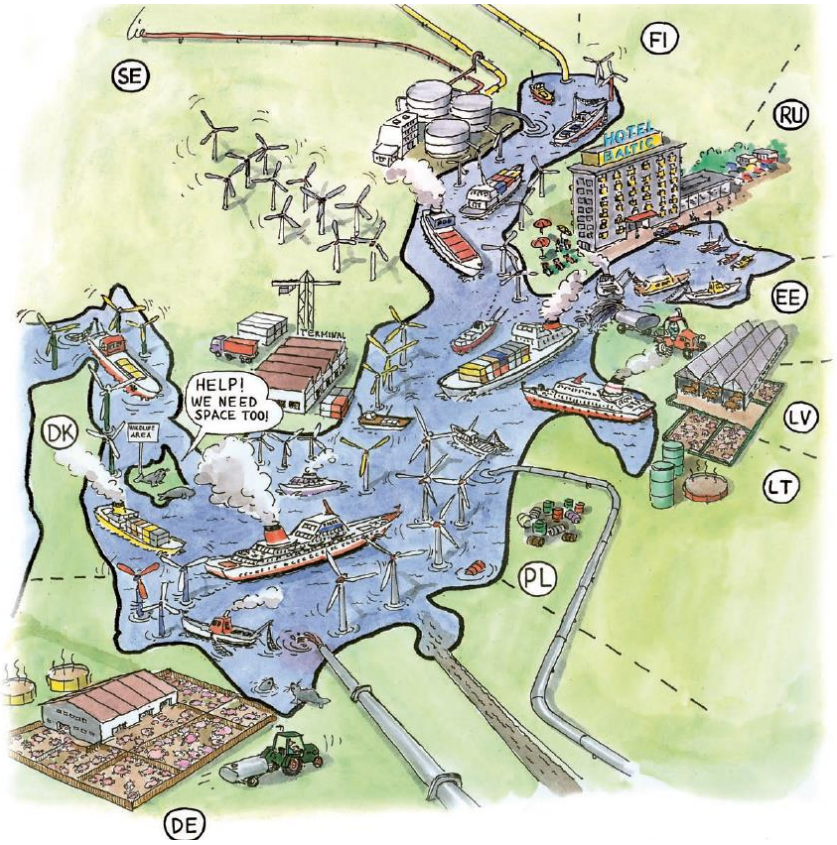

Figure 9 - MSP planning in the Baltic Sea.

© WWF

Looking closer at the marine directive, however, outdoor recreation is not listed or mentioned anywhere as a prioritized activity in a marine environmental context. Tourism is mentioned, but placed well down on the list of important sectors. In turn, this asks the question why outdoor recreation is not on the list, or if it means that outdoor recreation is included in the tourism sector and further, what that would mean in terms of planning priorities, including monitoring and management activities. The absence of outdoor recreation as a land/water use

priority in the other Nordic MSP planning processes was emphasized as a problem by several workshop participants.

Yet another challenge in MSP process in Denmark has been to settle the responsible authorities for the enactment of the marine directive in Denmark and therefore also the work on MSP (including outdoor recreation aspects). The solution has been to set the border between municipality planning and MSP planning at the waterfront in order to avoid planning overlaps. This way, planning confusion is avoided, such as it is for instance seen in the Swedish enactment of the MSP plan. Discussions on the subject and preliminary planning have already begun, but it is not until 2021 that the maritime plans will be approved and therefore also enacted in Denmark. Interestingly enough, it is again the Danish Nature Agency that coordinates the MSP process, the same authority that is also responsible for outdoor recreation management in Denmark. If this will help outdoor recreation to appear on the list of priorities on the MSP planning process is, however, still uncertain.

New project: mapping recreational activities

The second part of the presentation involved an introduction to the aforementioned project on documenting recreational activities along the Danish coasts. The background is that the coasts and the sea in Denmark are popular places for the performance of outdoor recreation activities and therefore also a central part of the tourism industry in Denmark. The project is meant to be a part of the MSP process in Denmark and thereby partly solve the problem that outdoor recreation is not listed as an important land/water use priority in the process by providing important recreational data and information that is otherwise left out in the MSP process. Important aspects in the project include how to document the many current and future recreational activities that are linked to the coast and the sea, and how emerging and changing recreational activities and challenges can be monitored and managed in congruence with the overall MSP planning process. Further sub-aims include:

- A summarization of existing knowledge on marine recreation
- The development of a web-based tool for user-based mapping of recreational activities in coastal and marine areas
- A contribution with new knowledge on maritime outdoor recreation to relevant organizations (for example to prioritize new initiatives/activities)
- To make small upcoming outdoor recreation activities not yet organized in clubs more visible, including information on their users, interests and needs
- To establish opportunities to compare across marine activities.
- To stimulate the awareness of maritime outdoor recreation and the benefits to health and learning

The project consists of two part parts. The first part is to test and evaluate on a user-based mapping tool with an aim to document marine based recreation and tourism activities in Denmark. A small demonstration of the mapping tool was given and provided information on

how to find the mapping tool online and how it works (see Figure 10). The mapping tool itself is built on on-line participation, where people visit the mapping website and are asked to participate in the mapping exercise. During the exercise, people mark their recreational activities through the online GIS mapping tool and answer a few questions about the marked locations of activity (such as motivation and frequency of visits) as well as a small questionnaire on background information and user demographics. The website is available to all who are interested, and is based on a crowd-sourced strategy where word about the survey is spread through Facebook and other online media channels (i.e. a snowballing strategy). A future task is to also approach local outdoor organisations more systematically and have their members participate in the survey. The project is set on a national scale and is currently underway and running for a full year with expected results early in 2016.

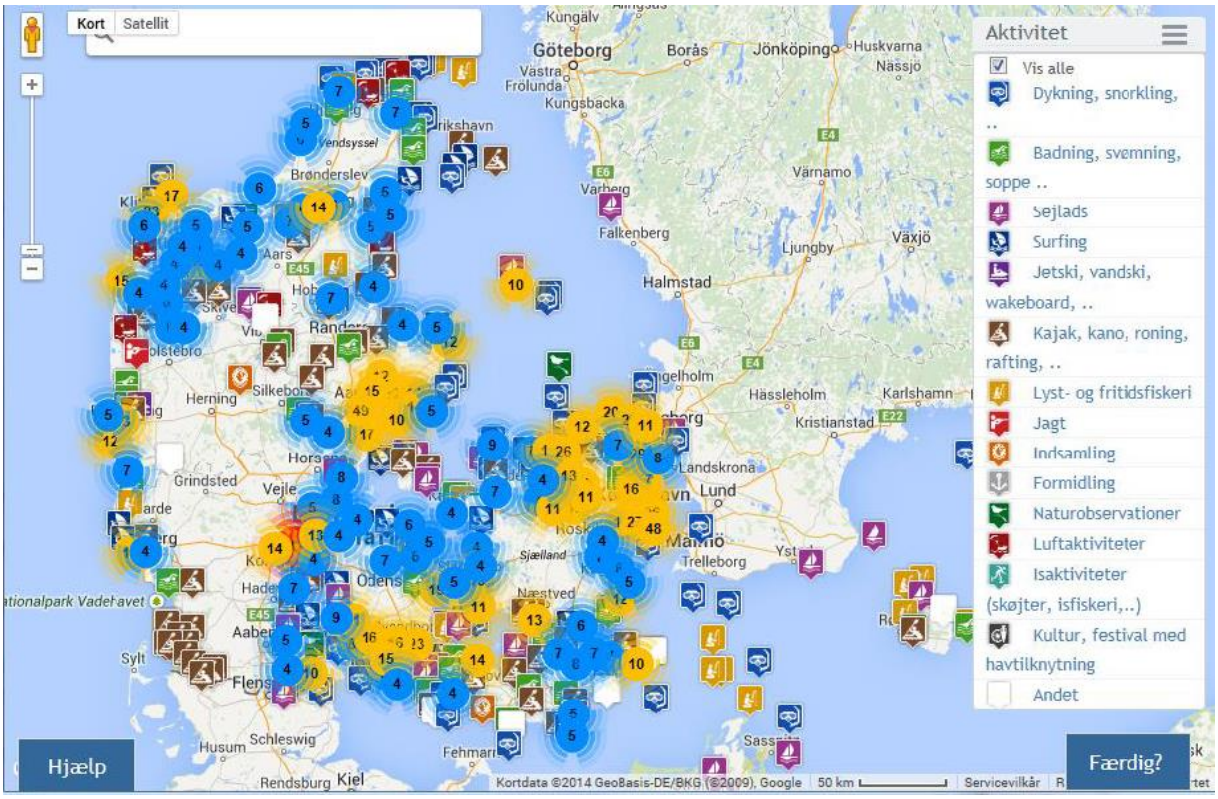

Figure 10 - Example of the online mapping tool. © Kaae & Olafsson 2014

A few preliminary results were also presented, although these are still too early to base any final conclusions on. For instance, 1764 registrations (map points) have been made by 482 unique users with almost one month into the project. The average age of the users is around 44, while almost 75% of the registrations have been done by men. The most popular registered activities include kayaking, surfing, diving and swimming. Finally, a map of the registration points done by the participants have already identified very dynamic markings that can be used to detect 'hot spots' of different marine based recreational activities.

On the basis of these results, concerns on the data quality and generalizability of the results were raised among the workshop participants. For instance, there is a danger that some

recreational groups are represented more than others due to the sampling strategy. The results might therefore not show the true situation, but only the situation among the majority of the people who have visited the website. Also in terms of the sampling strategy, questions were asked concerning age and sex distribution among the participants, as men seem to be overrepresented. As a result, certain (male-dominated) activities might be overrepresented and thus lead to faulty interpretations of the data material. Aside from these concerns, a few interesting observations were also shared, such the options for making a comparison between urban and rural areas in relation to differences in the recreational use of the coast (i.e. numbers and activities). Moreover, a future idea could also be to compare the activities pointed out on the map with information and data on shore types to see if some shore types are preferred more than others, or if some types of shores attract special kinds of activities.

Moving on, the second part of the project is still not initiated, but will include a further development of the mapping tool into an expert-based GIS-mapping tool that can analyze recreational patterns more thematically. Furthermore, new potentials for the mapping tool will also be explored, such as the ability to detect areas where recreational activities have yet to be introduced. In turn, these results can be used to compare much used areas with areas of less recreational use and see if there are differences, both in terms of activity types and intensity levels, but also in terms of social and physical impacts. In the long-term part of the project, the idea is to introduce the mapping tool to a number of municipalities and local planners in order to assist in the inclusion of recreation and tourism activities in the upcoming MSP planning process. Moreover, there are already now thoughts about setting up a control group, where people are sampled more systematically across the nation in order to compare the results with the results found in the first project part. Expected outcomes include:

- A user-based mapping of maritime outdoor recreation activities in Denmark
- A mapping tool that can be used also in the future
- More knowledge and documentation of the very diverse recreational uses of the sea. Very useful also for organizations
- A report for free download
- From the overall project: inclusion of outdoor recreation and tourism in MSP

At present, the mapping tool is a very explorative approach to monitoring of outdoor recreation that still includes many uncertainties. However, the potential result would be a GIS based tool that can be used as an information system to support the upcoming MSP process as well as the future organization of outdoor recreation monitoring and management activities in coastal and marine areas.

2.5 Monitoring and managing outdoor recreation in coastal and marine areas: Case of Finland

Marjo Neuvonen Natural Resources Institute Finland (Luke) and Martti Aarnio, Metsähallitus, Parks & Wildlife Finland)

Previous research

Experience with outdoor recreation monitoring and management in Finland has traditionally had a strong focus. Furthermore, and quite opposite the late coming of marine protected areas in the other three Nordic countries, Finland has had experience with protected coastal and marine areas since the early 1980s, when three out of Finland's five marine national parks were established. On a national level, National Outdoor Recreation Demand Inventory (LVVI) study provides Outdoor Recreation Statistics, which include measurements of a number of different aspects of outdoor recreation and nature tourism demand (Finnish Forest Research Institute 2015). LVVI-studies are made by Finnish Forest Research Institute and they have been conducted twice: years 2000 and 2010.

Monitoring and management of all the national parks and the other state-owned protected areas, wilderness areas, national hiking areas and public waters is a responsibility of Parks & Wildlife Finland – a unit of Metsähallitus. Since 2000, Parks & Wildlife Finland has been using a standardized method, developed together with the Finnish Forest Research Institute, to gather visitor survey data from those state-owned protected and recreational areas where recreation and tourism play a significant role (Kajala et al. 2007; Metsähallitus 2015a). The monitoring consists of continuous visitor counting with electronic counters and of visitor surveys repeated at a five year interval. The visitor monitoring is implemented systematically across all the state owned marine protected areas, which includes five national parks and Kvarken World Heritage Area. Altogether, 11 visitor surveys have been implemented in these six marine areas (e.g. Hemmilä 2008; Nyman 2008; Meriruoho 2010; Weckman 2013).

The data are gathered primarily for management and monitoring purposes and reports are produced by Parks & Wildlife Finland at local, regional and national levels. The large data sets are gathered in a uniform manner across the country and saved in one database (ASTA), which provides opportunities for further analyses, such as estimations of local economic impacts of visitors' spending (Huhtala et al. 2010; Kajala 2012; Metsähallitus 2015b), customer segmentation (Konu & Kajala 2012), as well as health and well-being impacts perceived by visitors (Kaikkonen et al. 2014).

Recreational demand and constraints in access to the coast

The Finnish presentation was split in two parts. The first part introduced results and thoughts from a study project in 2010 on the recreation demand among the coastal population and how they perceive constraints in their current use of coastal areas (Neuvonen et al. 2009). In Finland, 48% of the coastal line is considered developed, especially around larger urban areas in the south, which are more densely populated, such as Sipoo, Espoo and Helsinki areas (Laurila & Kalliola 2008). On this background, the report focused on a concern about the recent development of Finnish coastal areas, where free access is constrained by new building and housing initiatives. In principle, coastal areas in Finland should be accessible to the public, especially since coastal areas are a major part of the supply of recreational

environments for citizens. However, due to new housing and construction projects, especially in and around larger urban areas, the resources for outdoor recreation in these areas have become limited. Furthermore, outdoor recreation does not have a strong position in Finnish legislation in spite the fact that it is considered an 'everyman's right' where access to the shore is guaranteed. Consequently, there is a worry that a weak shoreline protection combined with further development of the coastal areas will result in limitations of future access to the Finnish coasts.

Partly to understand this problem better and partly also to find out how the Finnish people use the coast, a population survey on the recreational use of Finnish coastal areas was initiated in 2008 by the Finnish Forest Research Institute (*Metla*) and the Ministry of Environment. The project was a continuation of the work previously done on ICZM in Finland and had as a more specific aim to better understand the everyday lives of the coastal population and their experiences of constraints in regards to access to the coast. Some of the questions posed were:

- What is the recreation demand of those living in coastal areas?
- Who have experiences of constraints?
- What kinds of problems are in question?
- Which factors and mechanisms may explain how and why people have experienced problems related everyman's rights?
- Are those factors related to supply of public recreational services, which could be improved with better planning and management of recreation services?

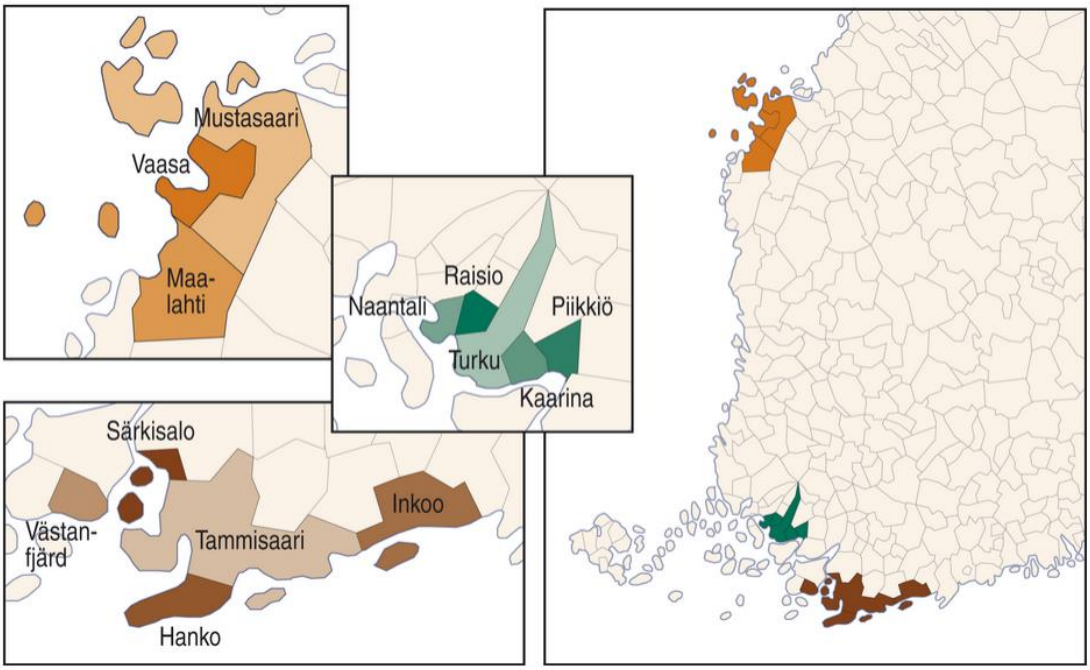

Figure 11 – Vaasa, Turku and Tammisaari study areas in Finland. © Neuovonen et al. 2009

Three study areas were chosen, including the larger urban areas of Vaasa, Turku and Tammisaari on the west and south coast of Finland (see Figure 11). Data was gathered

through distribution of a random questionnaire survey, which received a total number of 1414 responses out of a 5000 person sample (28.3 response rate). 1061 questionnaires were gathered via web-based distribution and another 353 questionnaires were collected via postal mail. One important note in the survey was to distinguish between two different ways of accessing the coast: 1) access from mainland by foot or bike, which included people coming from the mainland or from inner parts of larger islands, and 2) access by boat, which included people looking for places to moor their boats on islands or along the mainland shore. The main focus was to receive information on what type of constraints and the number of constraints the survey respondents experience in relation to coastal access. Furthermore, special attention was also given to constraints related to access points (i.e. lack of infrastructure), to other people (e.g. privacy issues) or to environmental factors (e.g. weather and ice conditions). Lastly, the results were related to information on the respondent's recreational behavior and socio-economic background as well as details on the supply of recreation areas and services.

As background for the report, survey data was applied to give a robust estimate of the total number of visits in coastal and marine areas for recreational purposes in Finland. This showed that about 1.5 million people participate in some form of recreational activity close to the coast. Moreover, almost 500.000 people participate in nature-based tourism in coastal and marine areas. The survey also showed that the top five coastal based recreational activities include spending time at the shore (e.g. picnics, sunbathing, watching the views etc.), followed by spending time in second homes, swimming, boating and fishing activities.

Concerning the perceived constraints in regards to access to the shore by boat and from land respectively, the report displayed the following results:

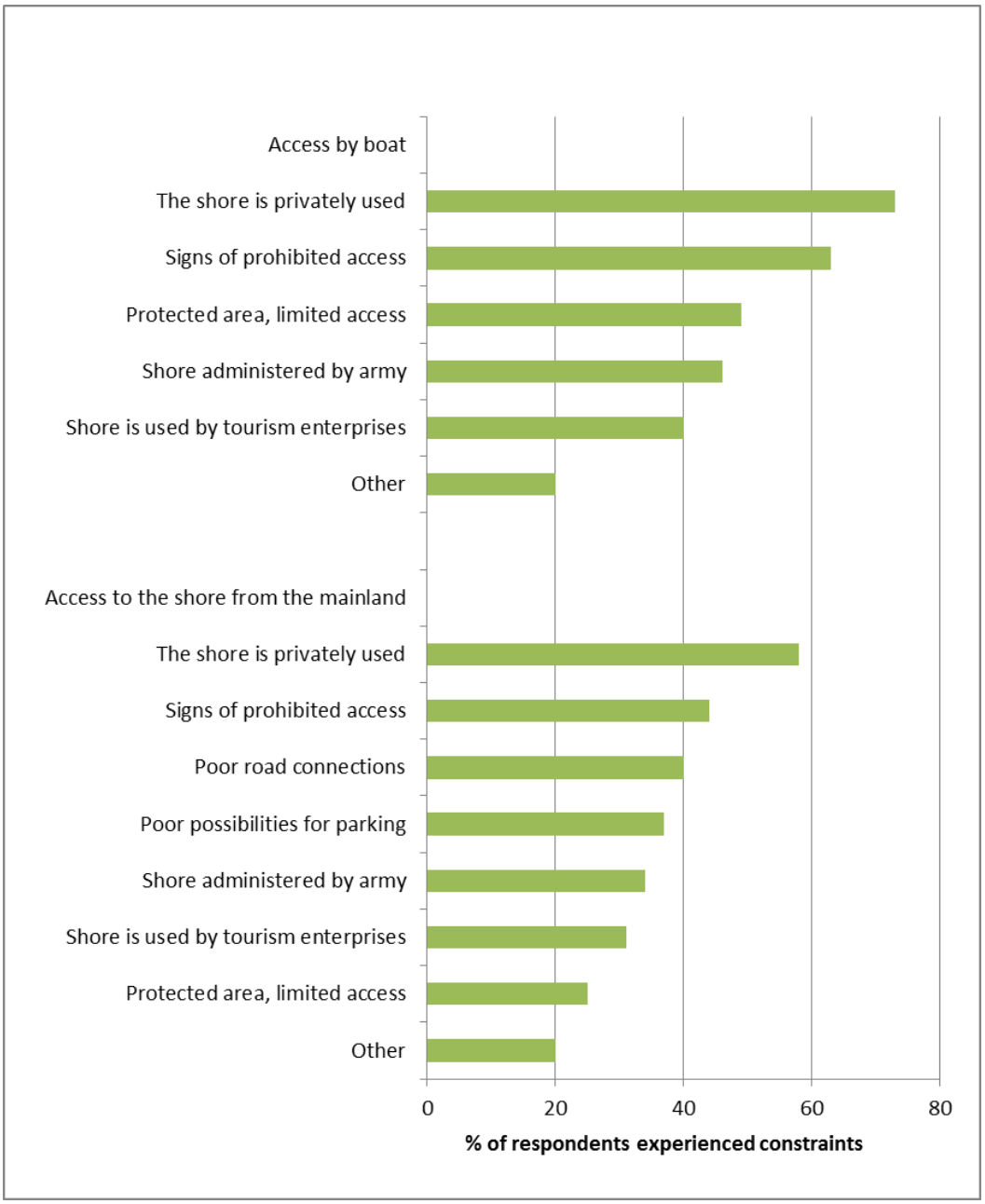

Figure 12 - Experienced constraints among the respondents accessing the coast by boat or from mainland

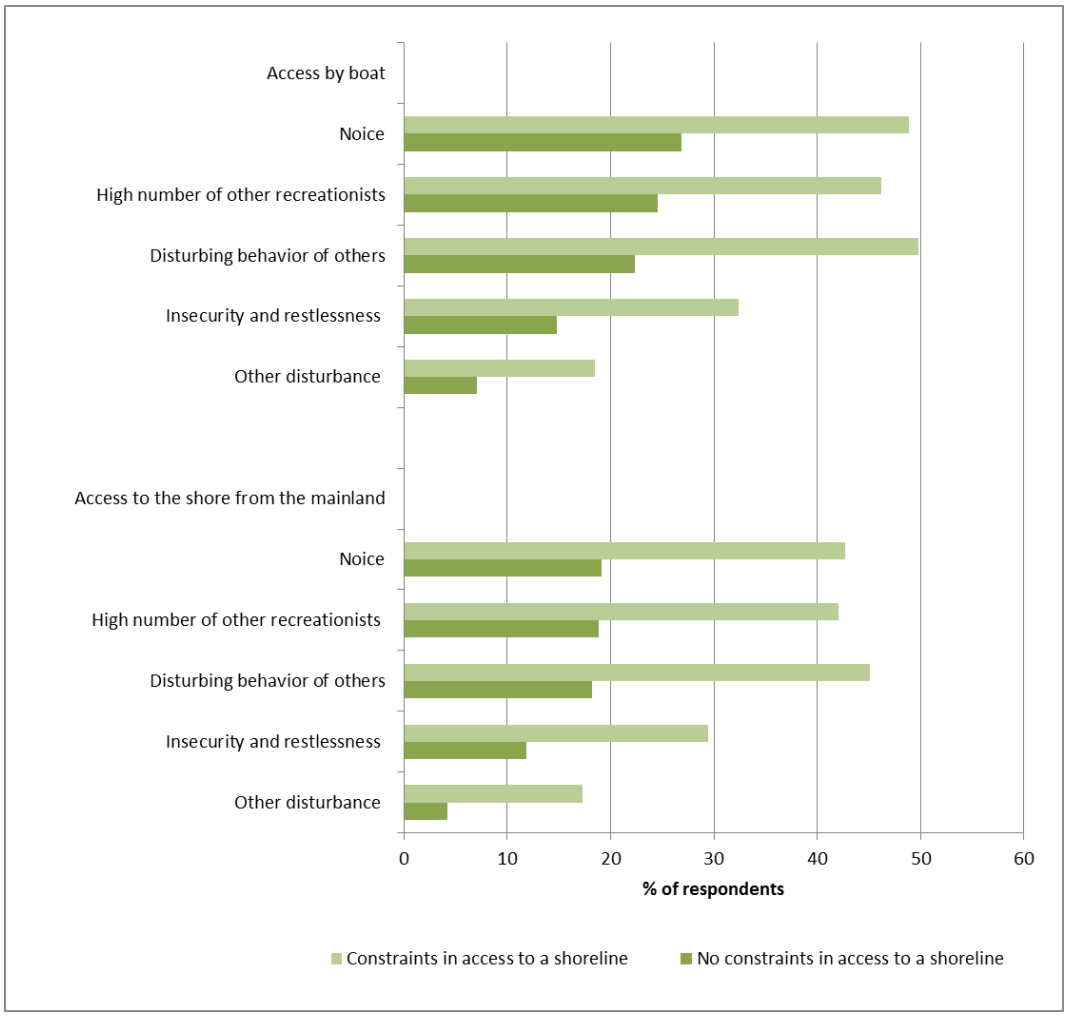

Figure 13 – Perceived constraints in the category 'Other'

© LVVI 2008 -study, Natural Resources Institute Finland (Luke)

As can be seen in Figure 12, the main constraints perceived among the respondents are related to privacy issues and signs of prohibited access. These results resemble the aforementioned situation in Norway, where issues around privacy rights versus the right of public access also have been pointed out. Other constraints include poor infrastructure as well as limitations in access due to tourism enterprises and protected area status, which are issues that are also common in the other three Nordic countries. Furthermore, Figure 13 shows that constraints are not only related to the development of the coast. Problems such as noise, crowding and disturbing behaviour from other recreationists can also be important factors. Based on these results, future public access to the coast should be studied more closely, especially in areas with large populations.

Monitoring in the Archipelago National Park

Moving on, the second part of the Finnish presentation introduced a case of monitoring and management of outdoor recreation in the Archipelago National Park (500 km²), which is

located in the south-western part of Finland (see figure 14). The national park was established in 1982 and consists mainly of more than 2000 smaller islands, including a rich cultural and biological heritage that has turned the national park into a very popular recreational area.

Figure 14 - The Archipelago National Park © Metsähallitus

Monitoring of visitors in the national park has been systematically ongoing since the early 2000s and three visitor surveys have been implemented with an average of five year interval (Sarlin 2003; Aaltonen & Mäki 2009; Heinonen 2015). Moreover, visitor counting has been implemented ever since the establishment of the national park. In the beginning, the visitation numbers were based on rough annual estimates, but from year 2008, more rigorous methods were taken into use. Electronic pressure mat counters are strategically spread out at important points in the archipelago and results from 2010 to 2014 confirm the popularity of the summer months as the busiest tourism months with visitor counts topping during June, July and August. Together, the visitor surveys and the visitor counting efforts have resulted in valuable visitor information that can be used for further studies, planning, management as well as communication (e.g. on the value of the park).

All visitor survey and visitor counting data are administered in the ASTA visitor information system which both stores the data and allows for diverse reporting for various purposes at different levels (i.e. from area specific to national). Currently, the ASTA visitor information system contains recreational information from more than 180 visitor surveys from protected areas and visitor centres throughout Finland. Furthermore, the database also includes detailed accounts of visitor numbers from more than 360 counters currently in use in Finnish protected areas (Metsähallitus 2015a). By combining data results from visitor counting and survey results from 2013 and 2014 in the Archipelago National Park, the following results were produced:

- 59 137 visits total

- 264 260 visitor days
- Foreign tourists 5,2 %
- Domestic tourists 90,8 %
- Local visitors 4 %
- Local economic impacts of park visitors´ spending (2013)
    - Total impact of spending 4.0 million €
    - Total impact on employment 48 person years

Though interesting results, a general concern was put forward by the workshop participants about whether the information obtained from the visitor surveys and visitor counting subsequently was used to direct concrete area management activities. In other words, did the produced data results inspire improvements of management actions? The answer was yes, the results have been used by area managers. More fundamentally, the challenge is to make area management to understand and accept that the main value of continuous visitor monitoring is in yielding basic information on what kind of visitation there is. Visitor monitoring produces comparable results across areas and over time, thereby indicating differences between the areas as well as potential trends, thus providing invaluable information for communication. It is not intended nor designed to address all management issues.

Last, two Parks & Wildlife Finland websites were introduced. The first one - *www.excursionsmap.fi* - was presented as an informative tool with details on where to find information on recreational opportunities and trips in the Finnish outdoors. Search options include a variety of different recreational interests and activities both in protected areas as well as in non-protected areas. The map is interactive so that it is possible to search both on locations (by using the curser on the online map) and by an available menu. For instance, zooming in on the map allows people to find information on both build properties in the areas (and thus also information on property rights) as well as destination information with details on the location and the national park as a whole. The second website – *www.outdoors.fi* – contains detailed descriptions of state-owned protected areas. The website also contains an interactive map that can be used to search for information on everything from history and activities to accommodation and transportation. Both websites depend on updated information from locations with recreational activities and opportunities, and therefore serves as a direct link to the importance of carrying out outdoor recreation monitoring and management that can provide this information. On this background, the end goal is to build up a united and unified set of online GIS applications with information on recreational activities and opportunities that can serve public information needs while also assist area managers in their work.

2.6 Partial conclusions

The results of the four presentations managed to solve the first aim of the workshop, which was to gain insights into *current* knowledge on and experience with monitoring and management of outdoor recreation in coastal and marine areas in all four Nordic countries. Secondly, the four presentations also managed to give a glimpse of some of the answers to the second aim, which was to look ahead and discuss *future* needs in relation to the ever-growing challenge that outdoor recreation monitoring and management in coastal and marine areas presents. Put together, some partial conclusions of a more general character can be drawn from the four workshop presentations:

- The popularity of the coast and the marine environment in all four Nordic countries is increasing and has turned these areas into recreational and touristic havens.
- Concerns about human impacts on the environment and conflicting interests between various recreational users have increased.
- Very little has been done in all four countries on the topic of outdoor recreation monitoring and management in coastal and marine areas, both on a management and a research level. The result is that experts on the topic are lacking.
- Current monitoring practices in resource management mostly narrow down to 'business as usual', such as visitor counting and maintaining recreational facilities.
- More detailed work on outdoor recreation monitoring and management is mostly done by researchers that often disregard management implications of the results.
- Experience with interdisciplinary monitoring and management strategies is wholly lacking in resource management as well as in science.
- Timely to engage with outdoor recreation monitoring and management in coastal and marine areas due to national and international focus on the ICZM and MSP processes.
- There are some new interesting monitoring and management initiatives and opportunities currently taking place, such as the online mapping tool presented in the Danish presentation and the ASTA information system presented in the Finnish presentation.
- Fruitful future options for sharing ideas and approaches between the Nordic countries exist.

3. Two discussion rounds

3.1 Short description

The second workshop activity was two discussion rounds with two follow-up discussions and one final discussion. The purpose of the discussions was partly to continue some of the conclusions reached in the four morning presentations, but also to discuss some more fundamental issues and challenges concerning the future role of outdoor recreation monitoring and management in coastal and marine areas. In order to guide the workshop discussions, four questions of particular relevance to the focus of the workshop theme were presented to the workshop participants. The questions were made broad enough to encompass most of the relevant topics on the workshop agenda, while also being specific enough to engage in concrete discussions among the workshop participants:

1st discussion round	*1) What knowledge do managers and practitioners need in order to monitor and manage outdoor recreation in coastal and marine areas?* *2) What are the consequences of viewing outdoor recreation as a land/sea interest in its own right and in what way would this view interact with other interests (e.g. nature conservation and other human activities)?*
2nd discussion round	*3) Where does outdoor recreation and nature conservation meet in terms of monitoring efforts and how can better integrated studies across different disciplines assist in improving outdoor recreation monitoring and management of coastal and marine areas?* *4) Is it possible to transfer experiences from terrestrial monitoring and management efforts to coastal and marine areas? If yes, then how? If not, then why not?*

Each discussion round lasted one hour with another 2 x 45 minute follow-up discussions of each discussion round among all participants. Last, a final discussion took place with an aim to follow up on main points from the two discussions rounds. An important note is that the four main questions by no means excluded other relevant questions or comments that were presented during the discussion rounds. Rather, they worked mainly as opening questions for the discussions in each group, which in many cases went beyond the scope of the four questions.

3.2 The first question: what knowledge do managers and practitioners need in order to monitor and manage outdoor recreation in coastal and marine areas?

Changing times

Main points from the first question

- Outdoor recreation in coastal and marine areas is changing
- Lack of systematic monitoring
- Different types of monitoring activities
- Quantitative and qualitative monitoring needs
- Need for resource managers to critically asses own efforts
- Awareness of spatial and temporal scales important
- Geographic and conceptual clarities

One initial point emphasized by several workshop participants was that it is important to recognize that the recreational use of the coast and the sea has changed a lot in the past 40-50 years in all four Nordic countries. In accordance with the situation described in the introduction, the interest in coastal and marine areas for recreational and touristic purposes have been growing steadily for years, especially around large urban areas. Whether it is for living purposes or just as a momentarily frame for recreational activities, the coast and the sea still manages to draw many people due to its unique environmental and recreational settings. As a result, many coastal and marine areas are experiencing an increase in visitor numbers and recreational and touristic activities, a situation that mirrors a growth in demand for outdoor recreation opportunities among the general population. While old recreational traditions therefore continue, new recreational initiatives are also being introduced faster than ever before in order to cater for public needs.

In addition, public and political attitudes in regards to the recreational use of the coast and the sea have also changed. For instance, while recreational activities in the 1950s, 1960s and 1970s were mostly based around a housing exploitation of the coast (e.g. the 'summerhouse boom'), increasing coastal and marine protection as well as a growing variety of different recreational and touristic activities are characterizing the general development of the coast and the sea today. The strong focus on shoreline protection combined with free public access is a clear testimony to this situation. Furthermore, it has also become important to recognize that it is not only the numbers and history of recreational activities in coastal and marine areas that have changed, but also the nature of these recreational activities. For instance, trends within adventure tourism and green tourism have led to new uses of the coast and the sea and thereby challenge older, more traditional uses. This situation goes hand in hand with new technological advancements, such as GPS and scuba technology, which have made the coast and, not least, the sea not only more accessible but also more open towards new exploits. As a result of this development, new managerial challenges have surfaced.

Third, and finally, not only have new recreational activities appeared and increased in numbers, but traditional recreational activities are also themselves changing or being affected

by new activities. The case of leisure boating can here be used as an example of how more and bigger boats, and therefore also increasing numbers of visitors, have put new demands on availability and numbers of recreational facilities along the coast (such as toilets, waste bins and information boards). Furthermore, increasing concerns have been raised on the issues of rising levels of litter, which are found in and around coastal waters, as well as problems with sewage disposal from boats, which have grown parallel to the increase in leisure boaters. Both cases have negative effects not only on the environment, but also on people's recreational experiences and thereby also the quality of the overall stay at the coast or at sea. Yet another example that was brought up is the increase in kayak activity, which is fast becoming one of the most popular recreational activities in coastal and marine areas. Alike to leisure boaters, kayakers also need recreational facilities, however, often in places, where boaters do not go. Consequently, new demands for recreational facilities have been put forward to cater for their needs also. In turn, this has raised serious questions among recreational planners about how to keep up with public demands and recreational trends that are changing faster than ever before.

Information on these changes is therefore needed urgently and has made the call for more and better monitoring and management of recreational trends and activities in coastal and marine areas pressing. However, the changing nature of outdoor recreation activities and patterns has also implied new challenges for monitoring and management activities as they grow in influence and thereby also in complexity. For this reason, even if a monitoring system is in place, it cannot rely on static monitoring activities, whereby only basic visitor information is reported on (such as visitor numbers). Rather, a monitoring system needs to be dynamic and serve multi purposes in order to be able to address the nature and development of all recreational activities. In turn, this not only puts high pressure on manager capacities and resources (i.e. knowledge, time, finance…), but also creates a demand for new and interdisciplinary innovations within environmental and recreational monitoring and management in coastal and marine areas.

The current situation

Taking a closer look at a management level on the topic outdoor recreation monitoring and management today, another relevant question relates to what is currently being done in practice. In this case, several workshop participants expressed that systematic outdoor recreation monitoring activities in coastal and marine areas are almost none existing in any of the Nordic countries today (perhaps with the exception of Finland, cf. section 2.5). If monitoring activities are undertaken at all, they mostly narrows down to counting visitor numbers only, as this is often the primary (if not only) factor that is asked for by the responsible authorities. Other monitoring efforts are often not prioritized, partly because there is no administrative demand for it, and partly because there is a lack of money and time to carry out more monitoring activities. The reason why visitor counting is prioritized so high is because numbers are often directly related to justification of the park progress; numbers and figures are needed to show that there are people at all and thereby justify current management

efforts and activities.[5] However, the question is whether basic information such as body counts are enough, or if, in fact, more advanced and detailed information on visitors is also needed, such as for instance data on visitor opinions, experiences or conflicts, which can be used to direct more concrete managerial actions. In this case, other monitoring strategies aside from visitor counts are required with a focus on gaining more detailed visitor information. Some efforts have been made, for instance as it is seen in a few of the former mentioned visitor surveys in Norway and Finland, but it was reported that these are not performed regularly or systematically and furthermore, it is unknown to what degree and extend they are used by area managers in practice.

The workshop participants further emphasized that acquiring visitor numbers and detailed visitor information are both relevant monitoring tasks, but for different reasons, on different levels and for different purposes. At present, however, it is often only visitor counting that is being prioritized in resource management, but even that task only applies to a few selected destinations and locations, such as national parks. The question then is: do managers know how to ask for both basic and more advanced types of systematic monitoring? Without much knowledge and experience on recreational monitoring in general (aside from counting visitors), it was put forward that managers often find it difficult to identify knowledge gaps and requirements for new monitoring initiatives, especially in a situation where experience with outdoor recreation monitoring already is very limited. Consequently, managers first and foremost need more knowledge on what monitoring activities to prioritize when, in what situations and for what reasons. A central task therefore is to introduce more outdoor recreation monitoring activities in resource management, not only in order to spread a general awareness about the topic among managers, but to also have them realize the potentials and opportunities of different types of recreational monitoring activities.

Different levels of monitoring activities

To emphasize what was meant by types of recreational monitoring activities, it was further pointed out that different types of monitoring activities exist, depending on a mix between the level of required data, area goals and management capacities (i.e. knowledge and resources). In particular, four different types were identified:

- Monitoring of *visitor numbers, flows and general behaviour*. This is perhaps the most common and basic monitoring activity and therefore often the only one made mandatory or prioritized by resource managers. It is often done continuously.
- Monitoring of *environmental impacts from recreational activities*. Alike to the previous one, this type of monitoring is also often a basic and mandatory monitoring task used for environmental protection purposes. It is often done continuously.

[5] In Sweden, for example, resource managers are only required to report on visitor numbers, which in turn are used for analysis purposes of more general trends and developments within the specific area.

- Monitoring *of visitor needs, motivations as well as detailed visitor behaviour and social impacts*. This is often an accompanying or supportive type of monitoring that is most often found in various visitor surveys. It is often only done occasionally.
- Monitoring of *recreational experiences, perceptions and conflicts*. This is a more unusual type of monitoring activity where in-depth visitor information is used to detect important visitor related qualities and values. Very rarely done (if done at all).

All four types of monitoring activities require different approaches and considerations and are sometimes done combined and sometimes apart. Looking more closely, however, perhaps the greatest difference between them is the fact that while the first three monitoring types are usually quantitatively based, the last monitoring type is often qualitative based. Consequently, there has been a tendency among resource managers to consider mostly the first three types of monitoring activities, while the last type is often not prioritized due to a lack of experience and competences to work with qualitative based methods. As a result, there is a need for resource managers to clarify quantitative and qualitative monitoring needs: what type of knowledge can quantitative methods provide and what type of knowledge can qualitative methods provide? And how can both monitoring activities best be matched with environmental monitoring activities in general? The justification for management efforts that involves the first three types of monitoring has already been explained (cf. p. 5). However, in case of the last monitoring type, some words of justification should be said further.

One important aspect with monitoring activities that take on a qualitative approach is that this type of knowledge can reveal details that quantitative based monitoring methods usually cannot disclose. For instance, by studying visitor perceptions and experiences, resource managers can gain insight into how various recreational groups view different natural features and recreational qualities in coastal and marine areas. This knowledge could be used to study what experience values that people find important as part of their recreational activities. For instance, people often answer that nature is important for the quality of their recreational activities and experiences. Furthermore, it is interesting to also study what kind of not only natural, but also other qualities people find attractive when they engage in recreational activities, and compare these results with visitor activities and motivations. In relation to environmental monitoring efforts, the same results could also be used to detect landscape qualities for different types of environments and relate the findings to the ecological status in those areas. The result could be a good indicator of what environmental qualities people prefer and consequently also how to ensure that these qualities are maintained. Does recreational qualities depend on nature qualities and if so, how? Such questions would be relevant knowledge for resource managers as they directly deal with the question on how to understand recreational participants and how they value coastal and marine environments.

Qualitative based monitoring activities are therefore needed in resource management. However, looking at current management efforts today, there is still a large imbalance between the use of qualitative and quantitative based monitoring methods, let alone their integration with environmental monitoring efforts. The reality is that quantitative based monitoring methods are preferred in most cases, partly because they are easier to understand

for managers, and partly because they provide figures, data and statistics that can be used for basic management purposes. In the case of qualitative based monitoring, however, many managers express that there is too much uncertainly involved with qualitative monitoring methods and that they are resource demanding, both in terms of time and finance. Furthermore, they are also difficult to integrate with environmental monitoring results. As a result, outdoor recreation monitoring and management efforts remain based mainly on quantitative data.

The bottom line is that it is difficult to come up with any standards for outdoor recreation monitoring, as it all depends on or change according to area contexts, area goals and available resources. Nonetheless, there is a fundamental difference between basis knowledge (i.e. numbers, activities, movement, behaviour, motivations, satisfaction, impacts etc.) and more in-depth knowledge (i.e. perceptions, experiences and conflicts). Both levels require different monitoring approaches and management considerations. Perhaps the first three levels are more relevant for general management purposes, while the last level is needed for more complex questions, such as dealing with conflicting recreational interests or changing visitor values. In any case, quantitative and qualitative based data on outdoor recreation is needed in resource management, as it provides managers with both broad and in-depth knowledge about important recreational aspects and conditions.

Setting objectives and spatial/temporal frames

On this background, area managers must begin to critically look at their current monitoring and management efforts in order to assess what aspects that need adjustments or improvement. In this regard, a first important task is that managers clarify monitoring and management *objectives*. No monitoring or management activity should be initiated before clarifying this step as it directly connects to larger area goals (e.g. conservation efforts) and also make monitoring and management efforts more focussed. Setting objectives also include consideration of both *relevance* and *precision* in monitoring data. Monitoring efforts has to be relevant for something, in other words: it needs to prove something. Otherwise it will not be supported politically and thereby financially. Furthermore, monitoring needs to be precise, that is, accurate and according to general monitoring standards. Otherwise the data material becomes useless and will therefore again not be supported politically and thereby financially.

Secondly, it is also important that managers consider both spatial and temporal aspects in relation to outdoor recreation monitoring and management activities. The spatial aspect considers questions of scale, i.e. on what spatial levels monitoring and management activities should be carried out. Visitor counts and visitor surveys, for instance, usually take place on an area scale, while the scale of studies on visitor impacts and visitor related perceptions, experiences and conflicts usually depends on the focus of the study. In this regard, one important consideration is to be aware of the important differences between coastal (terrestrial) and marine areas, both in terms of landscape type and recreational use. For

instance, there are large differences between monitoring beach based activities compared with recreational boating activities at sea. Both scenarios require different monitoring approaches and will likely result in different types of data.

What concerns the temporal aspects of recreational monitoring and management, it is also important to consider seasonality of different types of activities, including information on types of recreational impacts and disturbances that occur in what seasons. Interesting monitoring tasks in this regard could be to study what kind of habitat areas that are used in different seasons, which could be joined with environmental monitoring results in order to work out a sensitivity and disturbance index for different seasons. Furthermore, another important task is to document changing recreational patterns and behavior over time. This knowledge is especially needed if the task is to be able to anticipate or forecast new recreational trends and behavior. In turn, this might also result in pro-active monitoring activities and thereby also more direct management efforts.

Geographic and conceptual clarities

Finally, one last aspect concerns a more fundamental task, namely that of geographic and conceptual clarities. For instance, where does the border between coastal and marine go? And what consequences do these delimitations have for monitoring and management activities? Throughout the four workshop presentations and during the group discussion it was noted that both concepts were used frequently, but without any further discussions on what they actually imply. In fact, there seemed to be an almost universal, but also very simplified, understanding of coastal areas as areas with sea shoreline. But is that really true in all cases? And what about recreational activities that cross the border between coast and sea? This is an important question that needs to be addressed, especially when working with recreational activities in the transition zone between land and water.

Furthermore, another aspect is to consider what is really meant by concepts such as ‘planning’, ‘management’ and ‘monitoring’, when they are used in relation to outdoor recreation in a resource management context. How are these three concepts connected, both on a conceptual and on a practical level, and when is it important to differ between them? For instance, monitoring activities and result are often what leads to planning and management initiatives. On other hand, planning and management actions are often the two factors that dictate monitoring needs. In this sense, monitoring activities provide data that allows planning considerations, which in turn are carried out through management actions. The result is a circular process, where one part in the chain relies on the other until a routine of doing all three activities continuously is the result. This is also the fundamental thinking behind the aforementioned international management strategies, such as the Visitor Experience and Resource Protection (VERP), Limits of Acceptable Change (LAC) and Recreative Opportunity Spectrum (ROS) models, which all include a circular relationship between planning, management and monitoring activities.

3.3 The second question: what are the consequences of viewing outdoor recreation as a land/sea interest in its own right and in what way would this view interact with other interests?

Lack of priority

Main points from the second question

- Outdoor recreation as a land/sea use interests in its own right
- Cooperation with environmental monitoring efforts essential
- Outdoor recreation not a threat but an opportunity in environmental planning
- Forecasting and intervention as possible strategies
- Political and financial backup two important requirements
- Professional training in social science needed among resource managers

The second question considers a very important prerequisite prior to any future efforts done within outdoor recreation monitoring and management; namely that outdoor recreation needs to be viewed as a land/sea interest in its own right. The fact is that outdoor recreation has never really had its own placement within natural resource management. Instead, outdoor recreation has often been emphasized as a sub-issue that is directly linked to, but also subject to, nature conservation and environmental protection policies.[6] As a result, goals on outdoor recreation monitoring and management have traditionally received less attention, and thereby also less prioritization, within area management than goals on nature conservation and biodiversity. In terms of management practices, this has meant that visitor management have been more about concerns with rules and regulations that match conservation and protection goals, instead of seeing recreational activities as an opportunity to better understand and work more actively with human-nature relations and interactions.

Considering how fast recreational activities and trends are changing and how fast visitor numbers in coastal and marine areas are growing, the situation is important to address, perhaps now more than ever before. A consensus among the workshop participants therefore was that outdoor recreation deserves a renewed status as a prioritized concern within resource management. More accurately, outdoor recreation monitoring and management should be more visible in physical planning and management activities as well as in conflict solutions, especially since these are often human caused. Outdoor recreation has a large influence on the future of coastal and marine areas due to the temporal and spatial changes that recreational activities will continue to undergo in the coming years, both as an increasingly influential human based phenomenon and as a land/sea use that will continue to grow. Consequently, this also means that matters on outdoor recreation should no longer be minimized to questions concerning rules and regulations. Instead, outdoor recreation should be seen as an important

[6] This is very evident when looking at the authorities that traditionally have been, and mostly also still are, working actively with outdoor recreation planning and management: they are all environmental agencies - for example Naturvårdsverket (Sweden), Naturstyrelsen (Denmark) and Metsähallitus (Finland)

and integrated part of resource management that creates both challenges both also opportunities for more wholesome natural resource management.

Not competition – but cooperation and compromise

Another important point is to emphasize that even if outdoor recreation is accepted as a land/sea interest in its own right, it does not mean that goals for outdoor recreation should compromise other land use interests or human activities in coastal and marine areas. This is especially important in relation to nature conservation and protection, where it is not a question of outdoor recreation competing with these two goals. Rather it is a situation where the managerial efforts on nature conservation and protection can be used as a benchmark for efforts needed within outdoor recreation monitoring and management activities. Both management goals should be balanced against one another and receive appropriate amount of attention, with a focus on finding integrated ways where both goals can assist and benefit from one another instead of working as diametric opposites. With an approach like this, it is probably more likely that both management goals will find more common ground than disagreements, especially due to the fact that both goals rely on many of the same fundamental conditions and share many of the same interests, such as a healthy environment and a minimization of negative human impacts. This is particular also the case on a larger planning level, where both goals often protect the same interests and compete against other uses of the sea, such as energy projects and transportation activities.

Of course, one should not be blind to the fact that even if outdoor recreation is accepted as a land/sea interest on equal terms with nature conservation and protection, some situations will undoubtable occur that require compromises between both goals, for instance in cases of areas with strict conservation regulations. In those situations, equal terms are not the right solution and it must therefore be accepted that one goal is prioritized above the other, including suitable management arrangements that fit the prioritized goal. The keywords here are ‘trade-offs’ and ‘negotiations’, where accept and demand within each area goal are negotiated until a fair ‘trade’ or compromise between the different goals is found. The same is also the case in situations where a prioritization of outdoor recreation interests potentially threatens other human or local activities by the coast and at sea, such as commercial fishing or building projects. In those cases, the keywords are again trade-offs and negotiations between all involved interests in order to come up with a compromise that suits all parties. The main requirement is, however, that outdoor recreation is not placed as an appendix to nature conservation concerns, as the situation is now, but instead is taken seriously and on same terms as any other land/sea interest.

The benefits

The result of viewing outdoor recreation as a land/sea interest in its own right will bring about several benefits of which three benefits are of particular importance. The first benefit is that a

prioritization of outdoor recreation in resource management also means that other associated aspects become interesting to study. For instance, outdoor management and monitoring activities are closely related to topics such as public health and tourism development, which are both major political goals. A win-win situation could be created: on one hand, an effort could be made to connect the benefits that come from outdoor recreation with public health issues and tourism development. On the other hand, the growing political focus on public health and the economic importance of tourism can be used as legit arguments for why outdoor recreation management and monitoring is important. This is especially true in the case of tourism activity, as the general trends within tourism only points towards one conclusion: more and faster growth. Consequently, this development requires attention and measures taken in order to avoid clashes between environmental interests and people's touristic and recreational demands and activities.

A second benefit is that resource management can move beyond management of outdoor recreation based solely on the precautionary principle, which is often the preferred managerial strategy in situations where professional or scientific knowledge is absent. The precautionary principle works particularly well when dealing with environmental issues and concerns, as changes to natural processes can be studied over time and thereby dealt with accordingly. However, it works less well when the issue is 'people' because of fast changing patterns and trends in human behaviour and activities. Due to a lack of professional knowledge about these circumstances, resource managers therefore resort to the precautionary principle, but often with the result that management actions become slow and re-active process. Furthermore, as the precautionary principle is built on environmental favorization, it also means that human activities first and foremost are seen as potential threats to the environment, even in cases where potential damage or threats have not been proven. In the worst case scenario, this may lead to wrong assumptions about outdoor recreation aspects and therefore also wrong managerial actions. By prioritizing outdoor recreation as a land/sea interest in its own right and thereby supply managers with new professional knowledge, the precautionary principle can move beyond its biased green perspective and instead work more pro-actively with outdoor recreation as an opportunity to direct managerial action rather than just as an ever-growing threat to the environment that has to be stopped at all costs.

In relation to this, a third benefit could be to focus more on forecasting and intervention studies on new recreational trends and developments. Both concepts emphasise the need for monitoring and management activities to go from being mere reactive activities that only sets out to confirm and fix problems once they has occurred, into being more pro-active activities that anticipate issues before they develop into problems. For instance, forecasting includes prediction that uses monitoring data to understand causal relationships between nature and humans (e.g. the relationship between activities and impacts). Intervention studies, on the other hand, have a focus on testing and experimenting with different planning scenarios in order to provide solutions to different management challenges. Both approaches result in particular types of monitoring and management strategies that can be advantageous to use in marine contexts, where there are many uncertainties involved in understanding how human-

nature mechanisms and relationships work. Furthermore, forecasting and intervention studies are two strategies that are well known within the natural sciences. Many resource managers are therefore likely to be familiar with the two concepts, which could work as an advantage if they are considered and applied in practice.

The requirements

Aside from benefits, making outdoor recreation a land/sea interest also entails two important requirements. The first one concerns the fact that any prioritization of and focus on outdoor recreation will require political and financial backup. In other words: what is not prioritized politically does not receive financial backup, which makes the aspects closely tied. In regards to political support, outdoor recreation is already put forward as an important national goal in all four Nordic countries. However, looking at the management level today, this is challenged by, indeed drowning among, many other important political goals in resource management, such as nature conservation and biodiversity, public health and environmental education. As a result, goals on outdoor recreation, let alone efforts on outdoor recreation monitoring and management, often appear long down on the list of management priorities. For this reason, better political coordination between national goals and management goals is needed and particularly implies that the political goal on outdoor recreation is reflected and prioritized also on a management level. Only if this is done will outdoor recreation monitoring and management be placed higher on the list of management priorities.

However, even if political support is given, funding for outdoor recreation monitoring and management activities is the next issue. Looking again at the current situation in resource management today, environmental conservation and protection swallow most of the budget, while only a very little percent (of any at all) is allocated to outdoor recreation management, let alone monitoring. The simple, yet problematic fact is that if resource managers are to work more actively with outdoor recreation monitoring and management, they need more financial support to do this work. Guarantees of funding are, however, always a tricky matter that is never certain and furthermore, funding always requires good arguments.[7] If those cannot be given, funding will simply not be made available. Consequently, resource managers need to carefully consider what arguments to use in order to convince politicians to allocate more funding for outdoor recreation purposes. One important first step is that resource managers are open about their lack of resources as well as realistic about the difficulties that they face when working more actively with outdoor recreation. In this sense, resource managers should also try to make politicians understand that management is no longer just about sea grass and seals, but also a question about skills to work with people. In other words, just as conservation

[7] The case of Finland was emphasized here as a positive example of how outdoor recreation monitoring and management can be strengthened if continuous financial support by the government can be secured. Without the financial backup they receive now, Finnish resource managers would not be able to carry out their advanced monitoring and management activities. See also section 2.5 in this report.

professionals are needed in resource management, so are professionals with knowledge on outdoor recreation management.

In relation to this, a second requirement is that resource managers need to receive better training in outdoor recreation monitoring and management. Or if this cannot be done, or is too costly an affair, then at least be able to hire external social science expertise and competences. As the situation is now, managers rarely receive much education in outdoor recreation monitoring and management. A few ranger programs do exist, but they are mostly focused on pedagogic aspects and communication and do not deal directly with outdoor recreation monitoring and management aspects. As a result, current outdoor recreation management and monitoring practices often lack a professional foundation, because resource managers lack social science skills and concrete experience with recreational monitoring activities. There is therefore a specific need to develop the expertise on outdoor recreation management and monitoring among resource managers, primarily through proper education and training in both areas. This includes one on hand more insight into how and for what reasons monitoring and management activities should be carried out, while it on the other hand also entails that monitoring and management standards are prioritized and formalised in order to maintain a certain professional level of knowledge and expertise. In the end, the main goal is that managers learn to ask the right questions in relation to outdoor recreation management and monitoring activities and combine these efforts with results from environmental monitoring and management activities.

3.4 The third question: where does outdoor recreation and nature conservation meet in terms of monitoring efforts and how can better integrated studies across different disciplines assist in improving outdoor recreation monitoring and management of coastal and marine areas?

Integration across disciplines

Main points from the third question

- Both natural science and social science competences needed in management
- Joint monitoring and management activities are almost non-existing
- Important to find common monitoring and management goals and interests
- Exchange of disciplinary data and knowledge is central for management
- Disciplinary integration and cooperation hold the key to better interdisciplinary monitoring and management

The main advantage about joint, interdisciplinary monitoring and management efforts is the possibility for natural and social scientist to exchange disciplinary data and knowledge that can be used to improve overall management actions and activities. For instance, social science competences are needed to understand visitor uses of coastal and marine resources. Likewise, natural science competences are needed in order to avoid that recreational activities lead to irreversible changes to the environment. Integration of environmental and recreational interests should therefore be an important focus for resource managers. Furthermore, in the case of often preferred and used management strategies, such as zoning activities, an interdisciplinary planning team that can accommodate both environmental and recreational interests is often a requirement. In other words, environmental and recreational planning and management depend on data and information from one another.

On this background, the third question considers two important factors. The first once concerns where environmental and recreational monitoring efforts meet in terms of common goals and interests on a resource management level. This is closely tied to the fact that resource managers often face problems or challenges that require information from both environmental and recreational monitoring activities. Secondly, another factor is also to find out more about what data and knowledge natural science trained resource managers and social science trained resource managers need from one another in order to be able to engage and contribute to joint monitoring activities. The point is relevant to put forward, since it concerns the important question of how to use different disciplinary insights and results to improve both own and joint monitoring activities.

Finding common ground

In terms of finding common interests and goals between environmental and recreational monitoring efforts, several can be pointed out. For example, one central management task is

to gain knowledge about increasing numbers of recreational participants and activities in coastal and marine areas and use this knowledge to analyse increased risks of disturbances and impacts on the environment. In this case, resource managers need social data to pin point where people are and how many they are in order to find pressure levels and the possible effect of these on the environment. Consider for instance the case of anchoring damage from leisure boats. On one hand, environmental monitoring is required to assess the impact (i.e. damage) itself. On the other hand, recreational monitoring is needed to understand the conditions that led to the impact, that is, the circumstances around the boating activity. Joint monitoring and management considerations are therefore required to understand the cause and effect relationship between the impact itself and the activity that led to the impact.

However, it also works the other way around, as social scientists often need information on existing or possible impacts to regulate visitor flows away from the affected areas. In this case, resource managers are faced with yet another challenge: that the risk of disturbances and impacts will lead to more rules and regulations, which often leads to negative visitor reactions. In this case, managers often state that they want to see changes among visitors, but that changes in attitudes and behaviour are difficult to change. Furthermore, people are often so accustomed to their own behaviour that they will often not accept encouragement to do so. In turn, this puts a large emphasis on monitoring of recreational behaviour in order to track changes and conflicts. On the other hand, information about impacts can maybe be the factor that will cause a change in behaviour. In this case, environmental education becomes a crucial task, as people who learn more about impacts and why these may lead to more regulation, hopefully also will learn to use the environment more responsibly. The goal is to ultimately have fewer impacts as well as fewer rules and regulations in resource management and in this work, joint monitoring and management activities are crucial.

As a further emphasis of the above point, another example is to use joint monitoring activities to investigate the relationship between impacts and recreational experiences. For instance, how do impacts on the environment influence visitor experiences? Are they detected at all, and if so, do they always lead to negative experiences? And how do recreational experiences influence impacts? Do people eventually learn how to behave correct in nature, or will impacts always occur regardless of managerial of visitor experiences? These questions are all relevant for resource management and they all require attention on combined monitoring efforts: environmental monitoring detects the impacts, and recreational monitoring document people's experience of the impacts. This information could potentially lead to improvement in environmental education of the public with a focus on minimizing impacts and thereby also negative recreational experiences.

Yet another example is to use joint monitoring and management activities to investigate how environmental factors affect recreational activities. In Norway, for example, a lot of knowledge about hiking activities in the mountains has surfaced due to monitoring of wild reindeer movements. Maybe the same approach could be used in marine areas, for instance by monitoring seals or sea birds in order to detect where people go or stay at sea and compare this information with where the animals are located. Are there conflicts or do both sides adapt

to the situation? Monitoring methods could easily be developed that take both aspects into account, but it requires an interdisciplinary approach where environmental and recreational monitoring activities are combined. Moreover, it will again require a shift of mentality among resource managers to not always look at human activities as a problem, but instead an opportunity to gain more insight into human-nature encounters and interaction.

In this regard, it is important to question the view that human-nature encounters is something that will always lead to environmental impacts and other negative influences on nature. In fact, it would be interesting to investigate if there are positive impacts from the meeting between nature and human and how these potentially can be developed, both below and above the surface. For instance, the case of mussel farming was pointed out as a case where a human activity actually benefits the marine environment by cleaning coastal waters of miscellaneous pollutants in the water. This could become a very important step towards a halt to environmental degradation, especially close to urban areas, where the risk of foul waters is greater. The central question therefore is: could there be cases where recreational activities benefit the environment? Above all, the answer to this question lies in more focus on joint monitoring and management practices across disciplines.

Exchange of disciplinary data and knowledge

In relation to what concrete data and knowledge natural science trained resource managers need from social science trained resource managers and vice versa, each side have different needs. Looking first at resource managers with a natural science education, they particularly need social science data in order to understand human-related impacts on ecosystems. Being trained within the natural sciences, resource managers are first and foremost environmental experts, and therefore rarely experts on the social conditions that have led to impacts. Human activities cannot be studied in a closed laboratory environment, which is why resource managers depend on social science expertise to gain necessary data that allows for them to assess the extent and seriousness of the impact. In other words, managers also need information on what has been going above the surface in order to explain the conditions that have led to environmental impacts below the surface. In this regard, important social science data usually include detailed information on visitor behavior and spatial movements as well as information on type and intensity of visitor activities at certain locations where impacts have been detected. In relation to this, recourse managers also need social data to understand more about why some visitors prefer certain types of environments. For example, some areas such as beaches and natural harbors usually receive a lot activity and are thereby more vulnerable to impacts, while other places that receive less activity also may lead to less impacts. In this case, social data can provide valuable information on visitor preferences and thereby pin point areas that are likely to see increases or decreases in recreational activities and impacts.

What social science educated resource managers need natural science data for is often data on what areas that contain what kind of biological qualities in order to see if there is a connection between biological qualities and recreational qualities. For instance, why are some areas more

popular than others? Is it due to the biological qualities in the area, or due to other factors? In this case, there are indications, which have shown that some of the recreational qualities that people seek and value often are closely related to environmental values. These two sets of values, human values and environmental values, could thus be analysed in order to investigate where there are overlaps and where there are differences. Furthermore, from a recreation industry point of view, it is also important to know if an area is biologically rich/sound in order to attract people due to the simple reason that healthy nature attracts visitors. In turn, this knowledge can be used strategically by area managers to know more about what biological qualities people appreciate and thereby make sure that these biological qualities are kept intact in order to ensure visitor satisfaction. In this sense, a possible idea could be to work with a 'minimum standard of acceptance', which is another way of describing what minimum biological qualities (such as clean water, fresh air, clean beaches, no noise etc.) a certain location should have to meet visitor demands and ensure satisfaction. A minimum standard could be followed and monitored by resource managers and changed according to environmental changes or changes in visitor demands, preferences and activities.

Some challenges connected to the exchange of disciplinary monitoring data and knowledge are, however, also present. For instance, natural and social scientist rarely speak the same professional language, why misunderstandings or misinterpretations are often prone to happen. This can cause frustration between the two parts and lead to unnecessary complications. A first important step is therefore to settle on a common ground and problem that is understood by both parts in order to work towards a shared professional language. Secondly, each discipline has different requirements in terms of research methodology and thus also data quality. This may lead to conclusions based on faulty or inaccurate data results and thereby waste an entire work effort. A second important step is therefore to be open about disciplinary requirements and use them to improve disciplinary weaknesses, while keeping the strengths. Third, and finally, there is also the issue that joint monitoring efforts might not be possible in some cases due to differences in time and in scale. For instance, environmental monitoring activities are often lengthy processes on usually small scales (i.e. site specific), while recreational monitoring activities are often momentary and take place on larger scales (i.e. area scales). For this reason, a combination of monitoring data might lead to inconsistent results. A third important step is therefore to work with monitoring cases that match as much as possible both on a temporal and a spatial scale.

Requirements and opportunities

Joint monitoring efforts entail some important requirements and opportunities, which also need to be emphasized. First of all, in terms of requirements, it is a fact that management driven research can create integration on disciplinary monitoring and management efforts as long as the problem is perceived as such. In other words, if managers can see the benefit of a better integration between nature conservation and outdoor recreation then it will also be possible to work towards integrated results. However, integration presupposes that you talk on

the same level, standing in front of a piece of landscape. That means that nature conservation and outdoor recreation have to receive the same level of management attention - not one prioritized above the other. As mentioned earlier, this is presently a problem in many resource management contexts due to a traditionally strong focus on nature conservation and protection. For years, environmental monitoring has thus been the only type of monitoring activity performed by resource managers, while recreational monitoring efforts mostly have been concerned with measuring visitor numbers only. A first important requirement therefore is to facilitate and prioritize both environmental and recreational monitoring activities and thereby also make room for both sciences to meet. Only on those terms can integration and interdisciplinary cooperation be initiated.

Secondly, another requirement is to acknowledge that monitoring efforts, and especially the interpretation of the results of monitoring efforts, also depend on other disciplines aside from biology and social science. For a long time, there has been a tendency to always see resource management as work for biologists and ecologists, a fact, which is often reflected in area objectives. Nature conservation and protection goals have always come first, while more socio-cultural factors come second. However, even the socio-cultural dimension of resource management requires knowledge and expertise from many other research disciplines than just social science. For instance, aspects that belong under the psychology discipline can be used to study visitor behaviour (i.e. behavioural studies). Likewise, history can contribute with disciplinary insights into recreational patterns in the past and thus improve the understanding of current recreational trends. Furthermore, results from heritage studies might also be important to include in order to understand area contexts better, especially in protected areas, where cultural heritage values are often interwoven with natural heritage values. A second important requirement therefore is to integrate important knowledge from across different disciplines, and thereby make monitoring and management efforts truly interdisciplinary.

Moving on to the opportunities in joint monitoring and management activities, one particular task could be to work more actively with management strategies and models that already include and emphasize joint monitoring and management efforts. For instance, the aforementioned planning frameworks (see section 1.2) all include environmental and recreational monitoring activities as part of their step-by-step management guidelines. In those cases, monitoring efforts are usually part of a systematic monitoring and evaluation programme intended to follow up on area goals and management activities. In other words, it is a very important step that allows managers to assess not only changes to the environment and new developments in recreational patterns, but also their own actions. One opportunity could therefore be to look into the value and usefulness of these planning frameworks in order to find more information on joint monitoring efforts.

Another opportunity is to find examples among current management activities that could be developed into joint monitoring activities. For instance, a case from Sweden was brought up from a protected area, where increasing amounts of litter have created a problem for both nature conservation (negative impacts) and outdoor recreation (negative experiences). Currently, the situation only receives attention in terms of maintenance purposes (i.e.

emptying waste disposals). However, if these efforts could be systematized and related to environmental and recreational monitoring activities, they could be used to study use levels, which in turn could be used to predict visitor concentrations and impact risks. Another case from Denmark also presented the idea that current monitoring activities that already take place could include aspects that also concern other aspects or interests. For example, biologists regularly count seabirds in different areas. In this case, why not combine these monitoring activities with monitoring of people? Again, these activities could be systematized and thereby produce results that potentially could increase the knowledge about human-nature interactions. Efforts should therefore be made to find ways to turn ongoing management activities into joint monitoring activities.

A final important opportunity is to focus on future concerns that require joint monitoring and management efforts. For instance, the topic of climate change and the option for climate adaptation in the future is an important issue. Rising concerns about climate change has made it important to anticipate future changes in the environment, which in turn might also cause changes to outdoor recreation activities and behaviour. Joint monitoring activities should take these changes into account and be ready to detect them before they turn into problems. In this case, both environmental and recreational monitoring activities could make use of forecasting and intervention strategies in order to predict potential future climate scenarios. The only challenge is that climate change means that the base line for monitoring is not stable. Monitoring should therefore not be a closed box, but rather be a dynamic activity that adapts to future changes in the natural environment.

A requirement for the future

Changes in the environment happen rather slow, especially compared to trends and changes within outdoor recreation activities and behaviour, which happen much faster and often on a much larger scale. Consequently, there is a need to keep track of the speed at which both phenomenon progress. Furthermore, some things that are acceptable at one point in time may not be acceptable in the future. This goes both for recreational behaviour and for what is allowed in terms of recreational activities. Moreover, increased knowledge about coastal and marine ecosystems and how they work have led to an increased awareness of how fragile marine environments really are. In turn, this has resulted in lower thresholds for recreational impacts and thus also more rules and regulation in relation to certain recreational activities. To address all these issues, systematic and interdisciplinary monitoring efforts must be in place. The point of departure should be that keeping a healthy ecosystem also will lead to satisfied visitors. Of course, it is important not to be blind to the fact that there some disciplinary differences undoubtedly will hinder effective cooperation between natural and social scientists. An important task is therefore to identify these obstacles in order to find out how they can be solved. Only then can attention be put on finding common ground between environmental and recreational monitoring and management activities and the building of a foundation on which to cooperate and communicate across different disciplines.

3.5 The fourth question: is it possible to transfer experiences from terrestrial monitoring and management efforts to coastal and marine areas? If yes, then how? If not, then why not?

Important differences

> ***Main points from the fourth question***
>
> - Important differences between terrestrial areas and marine areas
> - Experiences from terrestrial areas not directly transferable to marine areas
> - Lack of knowledge on how to proceed with monitoring activities in open landscapes and under the water
> - Important to learn from other countries and area contexts
> - Experimentation with different monitoring strategies a valid approach

Looking broadly at the field of outdoor recreation monitoring and management, it is a field that traditionally is founded on knowledge and experience from mountain areas or forest areas, while coastal and marine areas have been less of a focus. This is particularly visible in the literature on the topic, which for a long time have had a tendency to concentrate outdoor recreation monitoring and management efforts and experiences around matters that are terrestrial based. This is a problem, especially as coastal and marine areas per definition differ much from terrestrial areas both in landscape type, but more importantly also in area conditions, which hinders a direct transfer of knowledge and experiences. Different requirements to and adjustments of methods and strategies will therefore have to be considered in each case from coastal and marine areas, which in turn complicates management actions, as resource managers have to think carefully about using correct strategies. In regards to the fourth and last workshop question, two important points were therefore emphasized by the workshop participants. The first point was to discuss why coastal and marine areas cause complications for monitoring and management activities, while the second point was to discuss what can be done about the complications. In any case, a general consensus was that it is necessarily to build up new knowledge and experiences on outdoor recreation monitoring and management that is exclusively aimed for coastal and marine areas.

Complications of transfer

In terms of the complications, coastal and marine areas present specific challenges in relation to the application of both environmental and recreational monitoring and management activities. For example, *environmental monitoring* activities are complicated by the fact that it often involves monitoring of recreational impacts that take place *under the surface*, in the water. As a result, impacts are often hidden both from the mind of the recreational participants, but also from the eyes of the managers. In contrast, human impacts in terrestrial areas are usually easier to detect as they often result in visible and sometimes even permanent damage (such as fire rings or damaged trees). Impacts are therefore also an important marker

that can be used to study use patterns and wear from recreational activities, such as it is often done in studies from campsites and trails. In water-dominated areas, however, and especially under the surface, impacts are not easily detected as the water flow often quickly washes away signs of any impacts. The seriousness of the impacts therefore becomes difficult to assess, both in terms of the nature of the impacts as well as the degree and extend of the impacts. Only in serious cases, such as in cases of anchoring damage or chemical releases from boats, recreational activities leave more permanent impacts that can be tracked and studied more thoroughly. The conclusion therefore is that new and better ways to better trace and monitor impacts under the surface are required.

Secondly, in terms of *recreational monitoring* activities, the *open landscape*, which is often characteristic to coastal and marine areas, makes visitor flows and behavior hard to document, as often a high degree of visitors dispersion characterizes this area type. In many terrestrial areas, this situation is often different, especially in areas where it is possible to canalize, and thereby also monitor, most visitors through a few area entrances. The fundamental and important point here is that recreational monitoring is connected to predictable patterns in space and time. However, in open landscapes, such as coastal and marine areas, this is often not possible, as visitors constantly leave and enter the area from multiple points with no means of control. An open landscape category therefore presents special complications, as monitoring activities of visitor flows and behavior goes from lines characterized by a certain degree of predictability to open spaces, which are often characterized by random, and therefore also unpredictable, visitor patterns. In turn, this poses a challenge in terms of choosing correct monitoring methods and procedures in an area type without any major entry points or ways to canalize visitors. New ways to monitor visitors and their recreational activities in open landscape contexts are therefore also needed.

Lack of knowledge and attention

One central problem related to the lack of knowledge and experience with outdoor recreation monitoring and management in coastal and marine areas is that specialised manuals aimed to inform managers on the topic often only include examples from terrestrial areas. Likewise, most scientific papers on the topic of resource management and monitoring base most of their results and advices on experiences taken from terrestrial areas. Consequently, there is a lack of knowledge and experience about how to proceed with outdoor recreation monitoring and management activities in coastal and marine areas, let alone about how to work with joint monitoring and management efforts. Specialized knowledge and experience from coastal and marine areas is therefore much needed, including new area based monitoring and management manuals that take a point of departure in the special area conditions that characterize coastal and marine areas. At the same time, however, the situation also begs the question as to why resource managers have not been more active about the problem with their lack of knowledge and experience with outdoor recreation monitoring and management in coastal and marine areas. Maybe awareness of the problem is one answer, but it is also likely that not enough

work, and therefore also experience, on the topic has been done. Consequently, both managers and scientists must join hands and learn to speak up about the lack of knowledge on the subject, primarily by identifying problems and challenges that require attention.

Another characteristic problem for outdoor recreation monitoring and management in coastal and marine areas is that monitoring and management efforts often have a tendency to stop at the shoreline, simply because monitoring and management experiences from coastal and marine areas are not yet developed. As a result, another challenge concerns the often uneven balance in priority between monitoring and management of recreational activities taking place *above* the surface compared to *under* the surface. This might be due to the above stated reason that outdoor recreation monitoring and management is easier to carry out above the surface compared to below the surface. However, this does not mean that it is any less important to know more about what happens under the surface. For instance, recreational activities with direct contact with the underwater environment, such as diving and snorkeling, can result in serious impacts if not monitored and managed correctly. Likewise, problems such as anchoring damage from leisure boats are also a serious concern with direct and serious impacts under the surface, and therefore also require monitoring and management attention. Consequently, there is an explicit need for more data from the underwater landscape to see what is actually going on there in terms changes or impacts on habitats and ecosystems caused by recreational activities. Opportunities could even arise out of the situation, such as using degraded underwater area for other purposes, such as specialized underwater activities. Different underwater areas can be reclaimed for different purposes, but depends on knowledge about the health status of the marine environment as well as information on different recreational needs and activities.

What can be done?

Moving on towards more solution based thinking the question is what can be done about the lack of knowledge on how to work with outdoor recreation monitoring and management in coastal and marine areas. Ironically, one initial task would be to use terrestrial knowledge and experiences as a benchmark – if only to learn what monitoring and management efforts that will *not* work in coastal and marine areas. This would require a comparison between monitoring and management efforts and experiences from terrestrial and coastal/marine areas respectively in order to find out what methods and strategies that are or are not applicable, and then proceed to find solutions to the knowledge gaps. Furthermore, it also becomes important to differentiate between monitoring and management activities. In this case, management experiences are more frequent and better supported than monitoring knowledge and experience from coastal and marine areas. This situation should be solved by more attention on providing resource managers with new knowledge on monitoring activities rather than changing management practices overall. In terms of finding this knowledge, one suggestion could be to take a closer look at the similarities between outdoor recreation monitoring and management in coastal/marine areas and public commons, as commons – alike the sea – are

for every person to use freely and have no private ownership. Sharing knowledge and experiences between both area types could perhaps then be helpful.

A second suggestion would be to look into what EU and international requirements there are for reporting on both environmental and recreational monitoring activities today. In case no guidelines exist, this could then be used to again emphasize the lack, and therefore also need, for more attention on the subject. Furthermore, another idea in this regard is to investigate what monitoring and management practices that exist in other EU and international countries and find inspiration there. Obviously, the Nordic countries are not the only countries that are challenged by the same questions on outdoor recreation monitoring and management in coastal/marine areas. Therefore, efforts should be made to gather best-practice knowledge from around the EU countries and internationally. In other words, there is no need to reinvent the wheel one more time.

A third suggestion is to also recognize that we are still in the exploratory phase of dealing with disciplinary monitoring and management strategies in coastal and marine areas and that many factors concerning interdisciplinary efforts therefore also still are unknown. However, that also means that there is still room for mistakes as well as improvements. One strategy would therefore be to also take on a more experimental approach, such as it is seen in the Swedish PhD study from Kosterhavet National Park, where experimentation both within and across disciplinary boundaries may lead to new valuable knowledge and experiences on how to proceed with outdoor recreation monitoring and management in coastal and marine areas. The keyword is indeed ‘experimentation’ as there are as of yet no standards, nor any results, to rely on or compare with. Consequently, one useful way forward is to engage with uncertainties and challenges through an experimental approach based on a trial-and-error strategy, where useful results and experience can accompany management actions. Combining manager knowledge and experience with academic experimentation is therefore an approach that should be emphasized, indeed prioritized.

Last but not least, a fourth and final suggestion that would also benefit from an experimental approach would be to concentrate monitoring and management efforts around ‘hotspot’ areas (that is, areas where environmental and recreational qualities and interests have a tendency to concentrate and even clash). Hotspot areas can be advantageous to use as both test and case examples as they often show the relevance and need for joint monitoring and management strategies. Furthermore, they have already been recognized in terrestrial resource planning and management strategies as a potential way to identify different kinds of resource conflicts and therefore also find appropriate solutions. One special feature in this regard is to find correlations between biological values and recreational values in certain hot-spot locations, while another feature is to detect human caused impacts and problems. An obvious task would therefore be to investigate if the same approach can be used in coastal and marine areas, for instance by focusing on popular areas and relate important factors, such as choice of location, with ecological qualities and human activities at the location. Benefits would include new zoning strategies and environmental education as well as information and facilitation of recreational needs and activities. One word of caution should be given, however, as the

‘hotspots’ strategy is under criticism for mixing apples and pears, that is, trivial things are often mixed with important things and lumped into one ‘hotspot’ category. For example, some factors may receive attention that does not need attention, while other aspects, which should have received attention, are ignored. Furthermore, too much focus on hot spots areas will take away the attention on non-hotspot areas. Working with the term therefore requires full attention in all aspects and that is often a very difficult procedure.

3.6 Partial conclusions

The results of the group discussions managed to answer many questions with relevance to the second workshop aim, which was to look ahead on *future* needs in relation to the ever growing challenge of monitoring and managing outdoor recreation in coastal and marine areas. In particular, challenges and opportunities were identified, while also more fundamental concerns about the lack of interdisciplinary cooperation in social and natural science based resource management were discussed. Based on the group discussions of the four workshop questions, the following partial conclusions are offered:

- Changing and increasing use of the coast and the sea for recreational purposes have made monitoring and management activities more important than ever.
- Outdoor recreation is a political goal and focus in all four Nordic countries, but receives little financial backup at a local management level.
- There is a need to look at outdoor recreation as a land/sea use category in its own right, however not in competition with – but rather in support of – nature conservation.
- There is a striking lack of knowledge to work more actively with outdoor recreation monitoring and management among managers of coastal and marine areas.
- Different kinds and levels of outdoor recreation monitoring and management strategies are required in coastal and marine areas.
- Area objectives as well as temporal and spatial frames are all decisive factors for outdoor recreation monitoring and management activities.
- Interdisciplinary approaches and cooperation is the key to work more proactively with monitoring and management of outdoor recreation in coastal and marine areas.
- There are already now several management tasks that would benefit more from joint monitoring and management efforts, e.g. impact studies and experience studies.
- New and better ways to combine both existing but also new monitoring and management strategies need to be found.
- Resource managers of coastal and marine areas must speak up themselves on the need for more focus on outdoor recreation monitoring and management.
- Monitoring and management experiences from terrestrial areas are often difficult to apply in coastal and marine areas due to different landscape conditions.
- New monitoring and management activities that are specialized for coastal and marine areas are needed.
- Experimentation with new monitoring and management strategies, including more focus on forecasting and intervention studies, offers new opportunities to develop and improve efforts on outdoor recreation monitoring and management in coastal and marine areas.

4. Final discussion: general challenges and opportunities

Several additional challenges and opportunities of a more general character were pointed out by the workshop participants during the final discussion. These challenges and opportunities focus mainly on the future role of outdoor recreation monitoring and management in coastal and marine areas and have therefore been placed separately here.

4.1 Challenges

First, in terms of challenges related to future outdoor recreation monitoring and management activities in coastal and marine areas, three in particular were pointed out and emphasized by the workshop participants:

- The role of outdoor recreation in the ecosystem service debate
- Lack of focus on recreation monitoring and management in non-protected areas
- Limits to monitoring and management activities
- More focus on recreational activities and less concern about environmental consequences

A general concern was expressed by several workshop participants in regards to the role and priority of ecosystem services in resource management. The challenge is that outdoor recreation is placed in the 'cultural ecosystem service' category, which is the category in the ecosystem service framework that has received the least focus, both on a political level and on a resource management level. In fact, the ecosystem service debate has focused more on quantitative, economic analysis of ecological and biological values, while focus on more human related factors have experienced only little or no development. Consequently, priorities on outdoor recreation monitoring and management have also been downsized which, in turn, creates a problematic situation as recreational activities have a growing impact on the ecosystem as a whole and therefore should not be underestimated. Consequently, it has become important to realize and accept that outdoor recreation is an important ecosystem service that deserves more attention both politically and in resource management. In this case, an important point is that if cultural ecosystems will receive a larger focus in resource management in the future, they could be used as an argument for more focus on outdoor recreation monitoring and management activities also.

A second challenge concerns the fact that even if outdoor recreation monitoring and management is finally given political and financial attention and support, there is a tendency to canalize most of the money to *protected areas* where issues around nature conservation and recreational activities seem to be most explicit or pressing. In turn, this means that areas without protected area status hardly receive any attention at all. For example, while Kosterhavet National Park in Sweden has received at least some backup in matters related to outdoor recreation management, areas outside the park are still suffering from total lack of

political attention and therefore also funding. The fact is that only if an area is given political attention, it may receive funding. It is therefore important to look into how to make non-protected areas more visible on the political agenda in order to ensure a more evenly distribution of financial support. In terms of outdoor recreation monitoring and management activities, this also means that experience and results should not apply to protected areas only, but should also be applicable in areas outside protected areas. This includes finding low-cost solutions to monitoring and management activities that can be used in areas where there is little or no funding to back up outdoor recreation management and monitoring efforts.

A third challenge relates to the problem that there may be limits to how monitoring and management activities can solve certain area related issues. For example, the upcoming ban in Sweden on releasing septic material from leisure boats is a good example of a situation which has both environmental and recreational consequences, but where the regulations will be challenged by people's current recreational behavior. It may not be a problem in relation to smaller motor boats, which are the most frequent ones in coastal and marine areas, as they are too small to carry septic tanks onboard. But it is a problem with larger boats, which are becoming bigger and more frequent, and which therefore also have larger capacities and installments. The main problem, however, is how to change the attitude and behavior among boaters, as many consider the rule pointless or distracting. In this case, more focus on environmental education might be the answer, but it still does not change the fact that it is difficult to monitor and manage fundamental human behavior and habits. Consequently, new management actions, such as the new septic regulations, need to be addressed carefully and realistically in relation to monitoring and management activities, so that new rules and regulations that are put into action do not become wasted efforts.

Fourth and finally, many participants also expressed that there is a growing challenge in the fact that the opportunity to engage in recreational activities has become more important than environmental concerns for the area in which the recreational activities take place. In other words, some recreational participants care more about an area's ability to supply good conditions for recreational activities than for the area itself. Thus, in theory, they could do their activities anywhere as long as conditions allow them to do what they want. As a result, this attitude can potentially lead to a lack of environmental awareness and thereby set the scene for more human impacts on the environment. The rising proportion of adventure based recreation can be a good picture of this, as these activities often focus more on the quality of the recreational experience than on the environmental qualities that the experiences often depend on. This is an ironic and potentially destructive development that undoubtedly will have consequences for the relationship between the physical landscape and recreational activities. Furthermore, it might also lead to a growing difference between deep ecology visitors ('greenies') and adventure visitors ('adrenalists'), which in turn may lead to conflicts based on ecological values and recreational preferences. It is therefore important that future outdoor recreation monitoring and management efforts consider the growing separation between recreational activities and the landscape (or environment) in which they take place.

4.2 Opportunities

Next, in terms of opportunities related to future efforts on outdoor recreation monitoring and management in coastal and marine areas, several were emphasized by the workshop participants:

- The role of newly introduced natural areas
- New activities offers new monitoring opportunities
- The introduction of new technologies
- The value of citizen science
- Importance of new planning frameworks

One interesting task is to see how new coastal and marine areas, such as previous military sites, can be used to develop new monitoring and management activities. For example, what do these new areas require in terms of monitoring and management efforts? And what are the future challenges of such areas that shift focus? There are different opinions on how these requirements and challenges should be handled, both politically and on a management level. In any case, it will be interesting cases to follow and to maybe experiment with also, especially as newly introduced or opened areas often are areas within very pristine conditions, both from an environmental point of view (i.e. few human traces) and from a social point of view (i.e. yet few conflicting interests). In this case, joint monitoring and management activities can be introduced from the very beginning and relate results and experiences from these areas to areas that have a much longer visitor history. Based on this comparison, new monitoring and management strategies can be developed and used to decide future activities across different types of costal and marine areas.

Another opportunity is to take a closer look at the growing speed of newly introduced recreational activities in coastal and marine areas and see what they entail not only in terms of management concerns, but also in terms of opportunities to improve monitoring and management activities. The concerns would relate to the fact that new ways to explore and use the coast and the sea always bear with them new procedures in terms of management and monitoring. In turn, management and monitoring have to be better to discover new recreational trends in time, so that they can be planned accordingly. An important task for resource managers is therefore to be aware of specialized recreational activities and compare these activities with special ecological conditions in a given area context. The opportunities, however, are that new activities can be used for data purposes that would otherwise be difficult to obtain. For instance, the growing numbers of kayaks or kite surfers in many coastal and marine areas can be tracked by installing GPSs on the kayaks or boards. The result would be information on their numbers and movement, which in turn can be used for ‘hotspot’ mapping purposes. Furthermore, new activities can also be used to promote environmental awareness if coordinated correctly. For instance, recent popular recreational activities in coastal marine areas, such as geocaching or snorkel trails, can be used proactively to communicate environmental information to visitors on location. In both cases, a

combination of activity and learning will be the result and hopefully lead to more enlightened recreational participants.

A third opportunity emphasizes the above point and relates to the introduction of present and future technologies in outdoor recreation monitoring and management of coastal and marine areas. For instance, in terms of existing technology, the use of GPSs for tracking purposes has already been recognized as an excellent way to study visitor movement and patterns. Boats and other means of transportation on the water can also be tracked with GPSs, for example by using navigational charts in boats or actual placement of GPSs on moving vessels. The result will be a much more systematic tracking of visitor activities. In this regard, one new aspect that could be developed further is to combine GPS information on human movement with GPS information on sea birds, seals etc. This would produce two different map layers which could then be analyzed through GIS technology in order to find spot hot-spot areas where biological interests clash with recreational interests. In turn, these results may lead to new regulations or zoning actions. Yet another new aspect would be to go from the study of only 2D to 3D patterns in order to study movement under the surface also. In this case, GPS tracking of snorkeling and diving activities could be more systematically developed and result in more detailed information on user patterns in the water. The result would be both horizontal and vertical tracking of recreational patterns and movement, which in turn could be used to predict human impacts and thereby also detect potential hot-spot areas.

In terms of current technology, another option is to combine cell phone technology and network coverage with GPS information in order to gain more accurate user information. Almost every recreational participant carries a cell phone these days, and these can be tracked to see where people are or move between. In this regard, tracking via cell phones works better than tracking via navigational charts or installments on moving vessels, as the cell phones follow people and not just the vessel itself. Furthermore, cell phones can also work as a way to count visitors and thereby support other counting efforts that are already taking place in the area. Currently, however, privacy issues are still a hindrance for this strategy to work, as there are restrictions on information that is made public available by the network companies. This is the case in the Scandinavian countries, while there are studies from Finland and Estonia that have produced interesting results.[8] Another way to use cell phone technology is to use cell phones as a way to document how people perceive and experience the area they choose for their recreational activities such as it was demonstrated in the Swedish workshop presentation. People are keen photographers and many would gladly show the content of their pictures if they knew that it would benefit area objectives. In this way, visitor pictures can be used to document important visitor places and locations as well as capture important visitor qualities and experiences that resource managers are not aware of.

In terms of future technology, sometimes something comes along that surprisingly can be used for monitoring and management purposes. This is for instance the case with drones, which have become a more and more common phenomenon, both on a professional level (e.g.

[8] See for instance Ahas et al. 2010

in the military for reconnaissance purposes) and on a private level (e.g. simply as toys). For instance, drones can effectively document visitor activities, numbers and behavior and thereby potentially replace other, usually expensive monitoring methods, such as aerial photos and counters, both above and below the surface. Currently, the technology is there, but there is a lack of practical and ethical experience on work with drones in resource management. Another important future option is related to the use of popular online media sources, such as Facebook, Twitter etc., which can be used to collect and document details on visitor opinions and thoughts about the area in question as people often upload pictures and share comments through these channels. Currently, many popular areas already have introduced Facebook or Twitter websites, and use them as an important way to communicate and keep a dialogue with the public. The next step could be to use them also in cases of less popular areas. Yet another option in this regards is to look into how other online resources can be used, such as it is for instance seen in the online mapping tool that was introduced in the Danish workshop presentation. In this case, the online resource was used as a way to acquire large data sets that would otherwise be too expensive or difficult to apply on a local management scale.

Connected to the use and development of new technology, a fourth opportunity is to look into the potential in citizen science, that is, data results that are based on information provided by the public. This builds on the fundamental idea that when it comes to nature conservation and protection, professional experts (i.e. biologists and ecologists) are needed. But when it comes to recreation, and especially visitor perceptions and experiences, using people as experts can in many cases be a much preferred strategy. After all, it is the recreational participants themselves that know their own experiences best. For this reason, some resource managers have begun to consider the public as an important knowledge resource, especially on matters that they are uncertain about or where information is difficult to obtain. Both the Swedish and the Danish workshop presentations introduced methods and results based on citizen science. In both cases, the responsibility of contributing with data and knowledge on outdoor recreation aspects were put into the hands of the visitors, who then delivered time and space specific data that resource managers can use for further area monitoring and management purposes. In turn, this also makes visitors a better interface or source of knowledge than just as taxpayers in large statistical surveys. In addition, citizen science is a relative low-cost option for managers that can lead to bottom-up strategies and transparency in area planning and management, and therefore also better communication with the public.

Finally, a fifth opportunity is connected to the aforementioned ICZM and MSP processes that are currently taking place both internationally, nationally, regionally and locally in all four Nordic countries, and in which outdoor recreation hopefully will be included as an important land/sea interest. However, as the Danish workshop presentation pointed out, current efforts seem to go in the other direction, towards a neglect of important outdoor recreation factors in the future planning of the coast and the sea. The main reason is connected to the fact that what is not known is simply not prioritized politically (or financially). Consequently, more knowledge about outdoor recreation in coastal and marine areas is required if the goal is to integrate outdoor recreation into the ICZM and MSP processes. In other words, a prioritization of outdoor recreation in ICZM and MSP requires knowledge about relevant

outdoor recreation factors and the only way to get this data is through monitoring and management activities. From this point of view, the ICZM and MSP processes can in fact be used as a way to legitimize more efforts on outdoor recreation monitoring and management in coastal and marine areas. If nothing is done about the situation very soon, incorporation of outdoor recreation into ICZM and MSP is very likely going to be difficult in the future. Perhaps a joint Nordic strategy on the topic would be a preferable idea to continue with.

5. Summary and conclusion

An important statement throughout the workshop has been the need for more and better ways to work with outdoor recreation monitoring and management in coastal and marine areas. As stated earlier in the introduction, this need comes from the fact that many coastal and marine areas for some time now have experienced an increase in recreational and touristic activities, which have created a situation where environmental conservation goals have to be balanced against recreational interests and developments. Furthermore, a wish put forward by the workshop participants during the workshop was also that efforts should be made to fuse environmental and recreational monitoring and management activities, as both tasks lead to the same basic goals; namely as a healthy environment and satisfied recreational participants. Moreover, from a more practical management point of view, joint monitoring and management efforts can lead to better overview of important recreational and environmental factors and challenges that need to be addressed in order to avoid environmental and social problems and conflicts now and in the future. These priorities are fundamental for all work done within natural resource management today, and therefore also in the management of coastal and marine areas, which has been the focus point of the workshop.

Based on the experiences shared during the workshop, however, the current situation shows that there is still a long way from important political statements and wishful thinking to actual realization and implementation of interdisciplinary efforts on outdoor recreation monitoring and management in coastal and marine areas. Why is that the situation? Some explanations were partly given during the workshop presentations, which aimed to uncover what is currently known about the subject of outdoor recreation monitoring and management in coastal and marine areas (cf. the first workshop aim). Furthermore, more explanations surfaced during the workshop group discussions, which aimed to uncover what we still need to know about the topic (cf. the second workshop aim) as well as identify problems and challenges that hinters better integration of outdoor recreation monitoring and management in coastal and marine areas. Based on these two efforts, some interesting results and insights surfaced during the workshop that were able to provide some of the answers. Time has therefore come to summarize and conclude on the workshop results by focusing on the following seven selected, but perhaps also most crucial, obstacles and opportunities with the most influence on the future role of outdoor recreation monitoring and management in coastal and marine areas:

- Lack of political backup and prioritization
- Lack of competence, knowledge and experiences
- Need to clarify problems and challenges
- Usefulness needs to be proven
- Integration on several levels
- Terrestrial areas vs. marine areas
- New opportunities

Lack of political prioritization and financial backup

Outdoor recreation monitoring and management are indisputable two important tasks in resource management. However, in spite of this fact, there is a tendency for managers to prioritize environmental monitoring above recreational monitoring. One major reason is that outdoor recreation monitoring and management efforts long have been suffering from a lack of political backup and therefore also managerial priority. Looking at all four Nordic countries, outdoor recreation is often put forward as an important political goal. And yet, as the workshop presentations have shown, there is still a large gap between political goodwill and support of outdoor recreation on a national level to the realization and prioritization of outdoor recreation monitoring and management actions on a local resource management level. More accurately put, what is lacking is funding for staff and resources that allows for outdoor recreation monitoring and management activities to be performed. This is connected to the problem that outdoor recreation planning interests are still often placed within environmental agencies, that is, the same agencies that are also responsible for nature conservation and protection. Consequently, there will automatically be conflicting interests between nature protection and outdoor recreation, both in practice and financially.

It may therefore be time for involved governmental agencies to consider how they can better equip and support resource managers in matters related to outdoor recreation monitoring and management. In this aspect, it is important to realise that recognition is a prerequisite for integration, which basically means that outdoor recreation will first have to be recognized on the same level as nature protection or any other land/sea interest if any integration is to be obtained. Furthermore, it also worth to remember that outdoor recreation can in fact be used to legitimize nature protection due to its growing importance and influence. Without more knowledge on outdoor recreation, impacts from recreational activities are doomed to grow both in size and in consequence. It is therefore of utmost importance that outdoor recreation (and tourism) are prioritized and taken seriously by politicians and resource managers alike. In this case, international pressure, such as the ICZM and MSP processes, can be used both as guidelines and as a motivation.

At present, the situation seems difficult to change, especially since resource managers are often pressured by political demands that on one hand emphasize national goals on environmental protection and goals for biodiversity, while on the other hand also signals the importance of more and better recreational opportunities in the name of public health, local development and satisfied citizens. Both are equally important goals, and therefore cannot be compromised. However, if outdoor recreation is finally be recognized as a land/sea interest in its own right, integration between outdoor recreation and nature conservation goals will be much easier and smoother. Not only because outdoor recreation most likely will be given financial backup, but also because the two sides will be better able to identify synergies and conflicts. However, as long as outdoor recreation remains the underdog in resource

management, it will also be treated as such and important options for integration of outdoor recreation and nature conservation will be lost.

Lack of competence, knowledge and experiences

Aside from lack of political prioritization and financial backup, another major challenge is the fundamental lack of competence, knowledge and experience on matters that relate to outdoor recreation monitoring and management among resource managers - both on a general level, but particular also in relation to joint disciplinary efforts. The main part of the reason is that resource managers are often trained as biologists or ecologists, who therefore often lack the required social science competences needed to study outdoor recreation as a growing and integrated phenomenon of resource management. This is an ironic situation, especially considering the fact that outdoor recreation management first and foremost has to do with management of people behaviour in natural settings, which calls for a mix between natural science and social science experts. More to the point, resource managers have focused monitoring and management activities mostly around maintaining biodiversity goals and qualities, while visitor monitoring and management activities have received much less focus. In turn, the lack of social science competences has caused managers to make poor decisions on visitor related matters and questions, as their knowledge is often based on personal experiences or best guesses, or at the best: unconfirmed information about visitor related issues. The inevitable result is that without a planning and management framework that involves systematic monitoring activities, visitor information will be exposed to misinterpretations and speculative thinking among resource managers, and thereby lead to ad hoc decision-making and re-active management measures as well as faulty or wrong predictions on future recreational trends.

Due to the lack of social competences among resource managers, there is also a symptomatic lack of experience with interdisciplinary monitoring and management efforts. As emphasized earlier in the report, environmental and recreational monitoring efforts can too easily be thought of as two different and separate activities. However, a natural resource area cannot easily be divided between biophysical conditions and human activities. Instead it is a world, where natural processes and human activities actively and continuously form the landscape/seascape. Consequently, there is a need to base area monitoring and management efforts on an integrative approach, which in turn calls for more knowledge about how interdisciplinary efforts can be combined in practice to create valuable monitoring and management tools available for resource managers. Basically, the interdisciplinary aspect is important in understanding the nature-human relationship present in any landscape or seascape scenario, and is thus also crucial for implementation of successful management strategies. Currently, however, very few resource managers have experience with complex combined monitoring methods, which therefore poses a problem in day-to-day management. New accessible and easily applied interdisciplinary monitoring and management efforts are therefore needed in order for managers to overcome their own disciplinary boundaries.

Need to clarify problems and challenges

Related to the lack of competence, knowledge and experiences among resource managers on the topic of outdoor recreation monitoring and management, there is also a profound need to raise the awareness of these lacks. First and foremost, that means that resource managers need to speak up about the problems and challenges they face in the management of outdoor recreation and, secondly, they also need to acknowledge that outdoor recreation is an important question and land/sea interest in its own right. This is not to put less value on management efforts done or currently taking place on outdoor recreation today, or deny their important work, especially in cases where managers have been working several years with outdoor recreation planning. But the point is that their knowledge is often inadequate when it comes to the deeper social aspects within outdoor recreation management, such as for instance visitor perceptions, experiences or conflicting scenarios, of which the latter is often solved by unpopular rules, regulations or restrictions. The time has therefore come for resource managers to review and assess their social science competences and be honest about whether their abilities to handle outdoor creation issues and challenges are on the same level as their abilities to handle environmental issues and challenges. This is most often not the case for the simple reason that they do often not have training within the social sciences. It is therefore important that resource managers come forward and acknowledge the need for more and better social science competences.

Usefulness needs to be proven

Prioritization of outdoor recreation in resource management presupposes that the results from monitoring and management activities are of relevance to resource managers. In other words, the usefulness of outdoor recreation monitoring and management activities has to be proven, if managers are to put their sparse resources into working with both tasks. However, to prove this is not just a matter of pointing to what has been emphasized in this report, but it is also a matter of practical considerations on the challenges working with outdoor recreation monitoring and management. For instance, resource managers need to know that monitoring and management efforts potentially can turn out be a costly affair and therefore require both time as well as large financial and human resources. Secondly, outdoor recreation monitoring and management also requires a fundamental understanding of *why* it is important to carry out outdoor recreation monitoring and management activities, which often reflects back on area goals and objectives. And third, there should also be a large focus on *how to* apply outdoor recreation monitoring and management in daily management routines, which emphasizes the need for practical knowledge about and experience with correct monitoring and management applications and procedures. In the eyes of many resource managers, it is often these factors that have to be balanced against the usefulness of more focus on outdoor recreation monitoring and management.

One important task therefore is to demonstrate that in spite the practical concerns and difficulties in working with outdoor recreation monitoring and management activities, the usefulness of the results will still outweigh the challenges. However, this requires available experience with and results from outdoor recreation monitoring and management efforts that can showcase the advantages and usefulness of working more actively with outdoor recreation monitoring and management to resource managers. At present, not much experience or results can be found in current resource management practices, especially in coastal and marine areas. But there have been cases internationally, such as for instance in the case of The Great Barrier Reef in Australia, where outdoor recreation monitoring and management practices have been linked to nature conservation for more than three decades. The main challenge is that it is often very difficult to make a direct transfer of results and experiences from across the world and from areas that are fundamentally different both in size and area conditions. Furthermore, experiences and results on the topic have also surfaced from academia, although these are often limited to very case and area specific contexts and therefore also difficult to transfer direct experience from. Nonetheless, a combination of both international experience and academic results could be a starting point, as the usefulness of outdoor recreation monitoring and management activities should primarily come from professionals working with the issues first hand. This seems to be the most legit way to pass on results and experience, as experts who have positive experiences with outdoor recreation monitoring and management activities will be better to convince resource managers with their results. This also includes building a better bridge between scientific results and management practices.

Interdisciplinary foundation and integration on several levels

The separation between environmental and recreational monitoring and management today is furthermore a hinter to more interdisciplinary monitoring and management approaches that are needed in order to comprehend and meet future challenges related to growing touristic and recreational activity in coastal and marine areas. Indeed, a fundamental prerequisite for correct management of outdoor recreation is that environmental concerns and challenges are minimized, while recreational opportunities and issues also have to be considered. Both aspects have to be compared simultaneously in order to find the right compromise between use and protection, which in turn requires combined efforts from within the natural and social sciences. In other words, disciplinary clarity and cooperation holds the key to more wholesome resource management. It is therefore of utmost importance that the gap between natural and social science traditions in resource management is reduced.

An important aspect is therefore that outdoor recreation monitoring and management activities remain an integrative part of resource management. Furthermore, outdoor recreation monitoring and management activities should neither be in competition with nor in contrast to other important area goals, such as nature conservation and protection or public health. This is a fundamental point to keep in mind if outdoor recreation monitoring and management activities are ever to be accepted as a priority in resource management. At the same time,

integration procedures should also work on several levels, that is, everything from a national level to a local management level. As the situation is now, priorities on outdoor recreation are often locked away within environmental authorities. The point in this case is not to claim total independence without any cooperation with any other land/sea interests, but rather to seek synergies, especially in cases where there are examples of joint interests, such as the link between environmental qualities and recreational qualities. As pointed out above, legitimacy for nature protection is also connected to visitor use and behavior: if it can be proved that people want, need, use and appreciate a certain level of nature quality, this information can be used to defend measures of nature protection. This is coupled to questions of what requirements people have in terms of environmental qualities when they engage in their recreational activities and how these factors differ between different visitor groups and interests. This emphasizes the importance of sharing knowledge between natural and social science educated resource managers, which in turn puts focus on disciplinary cooperation as a prerequisite for more and better integration between environmental and recreational interests and activities in resource management.

Terrestrial areas vs. marine areas

The growing need for integration of different disciplinary efforts on outdoor recreation monitoring and management activities in coastal and marine areas does not only come from the shared interest on the topic, but is also due to the utilization of different monitoring methodologies when applying monitoring activities in the field. This is, however, further challenged by the fact that while interdisciplinary and combined monitoring and management efforts are found in only a few studies from terrestrial areas, examples from coastal and marine areas are essentially none existing. This poses yet another challenge, since monitoring and management of marine based areas differs greatly from terrestrial areas due to different landscape contexts and conditions, effecting both the application of and results from both disciplinary and interdisciplinary monitoring and management efforts. New monitoring and management activities that are adapted to the landscape type characteristic for coastal and marine areas are therefore needed urgently.

In this regard, a problem with the development of outdoor recreation monitoring efforts in coastal and marine areas is that most monitoring methods used to study visitors and their impacts tend to be terrestrial based. Furthermore, most of the academic studies on outdoor recreation outdoor recreation monitoring and management are based on results and experience from terrestrial areas, such as urban, forests or mountain areas, where it is relatively easy to detect visitor numbers, activities and impacts. Ideally, the same results and experiences should be applicable to both terrestrial and marine areas. But in the case of coastal areas and at sea in particular, visitor monitoring and management present a special case and challenge because of: a) the marine environment where impacts are difficult to identify and trace, and 2) the open landscape character, which makes it difficult to monitor and track visitor activities.

As a result, methods to study and monitor visitors and their impacts in terrestrial areas are not directly transferable to coastal and marine based areas, which in turn also means that outdoor recreation monitoring and management activities are not on the same professional level or as well developed in coastal and marine areas as is the case in terrestrial areas. This fact again adds to emphasize the need for more and professionalized outdoor recreation monitoring and management activities that considers the unique landscape conditions characteristic to coastal and marine areas. In other words, what Nordic resource managers of coastal and marine areas need are *scientifically based* and *professionalized* monitoring and management strategies, rooted within both the *natural*- and *social sciences*, and with a distinct *marine* focus. Only when this is accomplished can successful management be attained.

New opportunities

The work with more focus on outdoor recreation monitoring and management activities in coastal and marine areas is not only an uphill process. In fact, the process can be eased if only a few, but important opportunities are kept in mind. First, there are possible advantages in introducing new technology to assist in outdoor recreation monitoring and management activities, such as for instance GPS, cell phone and drone technology. New technology has the benefit that it can minimize the costs and difficulties involved in working with outdoor recreation monitoring and management activities, while at the same time maximize the outcomes in terms of data quantities and qualities. Moreover, new technology can make integration between environmental and recreational monitoring easier and more accessible, which hopefully will encourage resource managers to work more with integration on a planning and management level also. From this point of view, new technology and better integration of biological and recreational interests go hand in hand.

Secondly, there is also an important potential in introducing managerial experimentation with outdoor recreation monitoring and management activities in coastal and marine areas. A part of this strategy could for example be to introduce new managerial methods, such as forecasting and intervention studies, with a main focus on predicting future trends and developments on outdoor recreation in coastal and marine areas. In this case, outdoor recreation monitoring and management activities switch from their usually re-active role and become pro-active activities with a focus mainly on problem prediction and problem solving rather than just problem affirmation. Other strategies could be to test different monitoring and management activities with assistance from academic resources. The result of these tests might lead to new important experiences that can be used to find more permanent solutions to outdoor recreation monitoring and management needs.

Third, another important task is to focus on as well as include citizen science as part of any future efforts on outdoor recreation monitoring and management in coastal and marine areas. The advantages of citizen science are several. For example, it is a practical way to gain large data sets relatively fast and without too many efforts from the management part. Moreover, citizen based knowledge is potentially also a cost effective way to obtain important data,

especially if the data is obtained via passive methods, such as a Facebook page or an online database. Finally, citizen science is also a way to have visitors feel an ownership in planning and management actions, which helps to increase management transparency and public support. Future efforts should therefore investigate how citizen science to a larger extent can be used not only on a more general resource management level, but particularly in relation to outdoor recreation monitoring and management activities.

Fourth, and last, an important task is also to use current and relevant political discussions to argue why more focus should be put on outdoor recreation monitoring and management activities in coastal and marine areas. For instance, one option could be to use the strong political focus on ecosystem services to emphasize the importance of cultural ecosystem services in the ecosystem framework and thus also in resource management, including outdoor recreation as a land/sea interest that should be reckoned with now and in the future. Furthermore, another option could be to use the ongoing planning discussions on ICZM and MSP in all Nordic countries to clarify the growing importance of outdoor recreation in coastal and marine areas and therefore also point to the necessity of more focus on outdoor recreation monitoring and management activities. Both political discussions are central for any future planning outcome that concerns the coast and the sea, which is why outdoor recreation needs to be cemented now as an important land/sea interest in its own right. In this work, outdoor recreation monitoring and management activities in coastal and marine areas play a key role.

6. A look beyond

The workshop identified important knowledge gaps on the matter of outdoor recreation monitoring and management in coastal and marine areas, but also presented solutions for filling some of the gaps. On this background, and as part of the final workshop discussion, one representative from resource management and one from policy making were asked to state a few words on their experiences of the day and what they consider to be important tasks in the future.

The resource manager concluded her experiences of the day by saying that it had been an interesting day with a lot of good knowledge shared between different stakeholders. Furthermore, it was also expressed that some of the results had managed to broaden her eyes and look to other neighbouring countries to find good examples on how to work more actively with outdoor recreation monitoring and management. Moreover, the potential in citizen science and new technologies, such as smart phones and the use of online media, was emphasized as interesting low-cost opportunities and user-driven tools that could be interesting to develop. She also realised that a discussion with the responsible authority will be necessary in order to come up with a strategy on: a) how to develop outdoor recreation monitoring and management now and in the future, and b) how to acquire financial support to work more professionally with outdoor recreation in coastal and marine areas.

The policy maker expressed that she was positivity surprised that lot of interesting work is currently going on in all four Nordic countries. Also in her case, citizen science was emphasized as a particular interesting idea and concept to be developed now and in the future. Furthermore, she also expressed interest in 'hot-spot' mapping, especially since there is a clear tendency that convergences between different land/sea interests often take place in hot-spot areas. In this case, she pointed to the usefulness of the Danish mapping tool, which could be developed into a hot-spot mapping tool and result in ideas about where to locate new protected areas in the future. Finally, she also pointed out that more focus should be given to how outdoor recreation aspects can be given more political support. Without political support, funding will be difficult to get, which thus emphasizes the need for a new political strategy.

Finally, in regards to the third workshop aim, a future goal is to turn the workshop into an active network group, which can communicate experiences on outdoor recreation monitoring and management in coastal and marine areas across disciplinary, administrative and national borders. As a first step, this present report was agreed upon as a workshop product available to all interested parties. Secondly, it was also agreed that some of the results from the workshop potentially could be worked into a paper publication or a set of articles that could target various relevant information forums. Third, it was also agreed that a mailing list should be kept alive in order to circulate future knowledge and experience among the participants. And fourth, it was also discussed that the report and the network group at a later point could be used to make a joint application for a larger research project on the topic on outdoor recreation monitoring and management in coastal and marine areas.

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Links

www.utmark.org – A Norwegian website for publications with relevance to outdoor recreation, both in Norway and in Scandinavia.

www.havfriluftsliv.dk – A recently started project in Denmark using an online based mapping tool to map outdoor recreation activities along the Danish coasts. A good approach to citizen based science, including more opportunities for further development of the model/program.

www.outdoors.fi – A Finnish website providing up-to-date information on the Finnish national parks and other hiking destinations and their facilities.

www.excursionsmap.fi – A Finnish website with details on where to find recreational opportunities and trips in the Finnish outdoors.

Appendix A

Workshop participant list

Sweden:	Prof. Peter Fredman, Mid Sweden University
	Prof. Lars Emmelin, Blekinge Institute of Technology
	Adjunkt Rosemarie Ankre, Mid Sweden University
	Lars-Ove Loo, PhD, Senior Researcher, Sven Lovén Center For Marine Research
	Anita Tullrot, PhD, Vice Director, Kosterhavet National Park
	Lena Tingström, Senior Analyst, Swedish Agency for Marine and Water Management
	Bengt Larsson, Västkuststiftelsen
	Neva Leposa, PhD Student, GU
Norway:	Dr. Odd Inge Vistad, Senior Research Scientist, Norwegian Inst. for Nature Research
Finland:	Marjo Neuvonen, Researcher, Natural Resources Institute Finland (Luke)
	Martti Aarnio, Senior Advisor, Metsähallitus, Parks & Wildlife Finland
Denmark:	Berit C. Kaae, Senior Researcher, University of Copenhagen
	Anton Stahl Olafsson, Assistant Professor, University of Copenhagen
	Andreas Skriver Hansen, PhD Student, Unit for Human Geography, GU
Organizing	Jenny Egardt, PhD Student, Department of Biology and Environmental Sciences, GU
Team	Prof. Marie Stenseke, Unit for Human Geography, GU
	Assoc. Prof. Per Nilsson, Department of Biology and Environmental Sciences, GU

Appendix B

Workshop program Tuesday 2 December 2014

Morning program (9.30-13.00)

9.30-10.00	Coffee
10.00-10.10	Welcome and introduction
10.10-10.30	First presentation (Sweden – Jenny and Andreas)
10.30-10.50	Second presentation (Norway – Odd Inge)
10.50-11.10	Third presentation (Denmark – Berit and Anton)
11.10-11.30	Fourth presentation (Finland – Marjo and Martti)
11.30-12.00	Questions to, and discussions of, the presentations
12.00-13.00	Lunch

Afternoon program (13.00-18.00)

13.00-13.10	Group formation and group discussions
13.10-14.00	First discussion round (focus on question 1+2)
14.00-15.00	Second discussion round (focus on question 3+4)
15.00-15.30	Coffee break
15.30-16.15	Follow-up of the first discussion round
16.15-17.00	Follow-up of the second discussion round
17.00-17.45	Closing discussion and the next step
17.45-18.00	Conclusions and reflections on the workshop product
18.00-19.00	Break
19.00 -	Dinner at Sjöbaren

Responsible persons of the day

The agenda: Andreas and Jenny

Note-keepers: Marie and Per

Group leaders: Peter Fredman (Group 1) and Lars Emmelin (Group 2)

Discussion groups

Group 1	Group 2
Peter Fredman (leader)	Lars Emmelin (leader)
Lars-Ove Loo	Anita Tullrot
Neva Leposa	Rosemarie Ankre
Bengt Larsson	Lena Tingström
Marjo Neuvonen	Martti Aarnio
Berit C. Kaae	Anton Stahl Olafsson
Andreas Skriver Hansen	Marie Stenseke
Per Nilsson	
Odd Inge Vistad	

Monitoring and managing outdoor recreation in coastal and marine areas – what do we know and what do we need to know?

Documentation from a Nordic workshop

This report is a summary report on the experiences and findings of the Nordic workshop on *Monitoring and managing outdoor recreation in coastal and marine areas* the 2nd of December 2014. The workshop was hosted by the Unit for Human Geography at the University of Gothenburg and invited researchers, practitioners and policy makers with expertise within the workshop theme to engage in fruitful discussions. A total of 17 persons participated; 12 participants from Sweden, 1 from Norway, 2 from Denmark and 2 from Finland.

The first aim of the workshop was to discuss the current status and importance of outdoor recreation monitoring and management in coastal and marine areas. It is a topic that has yet to find its place both within academia, as well as in resource management and policymaking. Secondly, the workshop was also a way to direct future research, management and policy efforts on the topic with a basis on sharing knowledge and experiences among the participants at the workshop. Third, the workshop was a good opportunity to create a platform for Nordic experts who are actively involved with outdoor recreation monitoring and management in coastal and marine areas either academically, in practice or as policy makers.

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