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Valuing coastal recreation and the visual intrusion from commercial activities in Arctic Norway

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ABSTRACT

The coastal zone in the Arctic is being extensively used for recreational activities. Simultaneously, there is an increasing pressure from commercial activities. We present results from a discrete choice experiment implemented in Arctic Norway, revealing how households in this region make trade-offs between recreational activities and commercial developments in the coastal zone. Our results show that, although people prefer stricter regulation of commercial activities, they welcome expansion in marine industries like aquaculture and marine fishing tourism. We also find evidence of high willingness-to-pay for new jobs; and this may partly explain the preferences for the commercial facilities in spite of the visual intrusion they create. On the other hand people expressed a clear dislike for littering of the beaches. Hence, the message to policy makers is to allow for commercial development in the coastal zone, but only under strict regulations, especially related to measures reducing the amount of marine debris.

1. Introduction

User conflicts in the coastal zone of Norway can be expected to increase as activities such as aquaculture and marine fishing tourism are claiming more space (Jentoft and Buanes, 2005; Hersoug and Johnsen, 2012; Borch, 2009). The need for increased access to space is often justified in terms of the economic importance of these industries. Thus, activities that have no apparent economic value attached to them, such as recreational use, risk being overlooked in decision-making processes. While recreational uses are frequently accounted for in the planning process through hearings, there is often a greater emphasis on commercial considerations as the economic impact is more explicit and easier to quantify (Nilsson et al., 2008; Hanley et al., 2003). However, the conversion to a more holistic and ecosystem-based approach to management, requires consideration of the wider range of ecosystem services provided by the coastal zone. In particular, there is a need for a better understanding of cultural ecosystem services (like recreation)to enable policy makers to include values related to such services in their decision-making. Valuation studies of willingness to pay (WTP) to preserve coastal zone areas for recreation can aid decision makers in securing sustainable use of coastal areas through the development of policies that are both economically efficient and socially acceptable (Fletcher et al., 2014).

The objectives of our study was to identify the public uses the coastline in Arctic Norway for recreation and to elicit public preferences for a range of possible coastal zone management alternatives. Contrary to many other populated coastal areas, Arctic Norway has a long coastline, of which large parts are relatively desolate, whereas others are quite densely populated with a range of users. This difference in population and users requires considered demand analysis, as from a policy perspective any divergence may lead to issues related to appropriate policy implementation. The study applies a stated preference environmental valuation method (Discrete Choice Experiment, DCE) to a random sample of households in Arctic Norway to elicit the relative willingness to pay for various environmental and economic attributes. The DCE aims to provide decision-relevant information for coastal zone management in a region with little scarcity of open space, as opposed to previous SP studies of coastal areas where open space is a scarce resource.

The paper is organized as follows: Section 2 presents the study area and related literature, Section 3 presents data and methodology,

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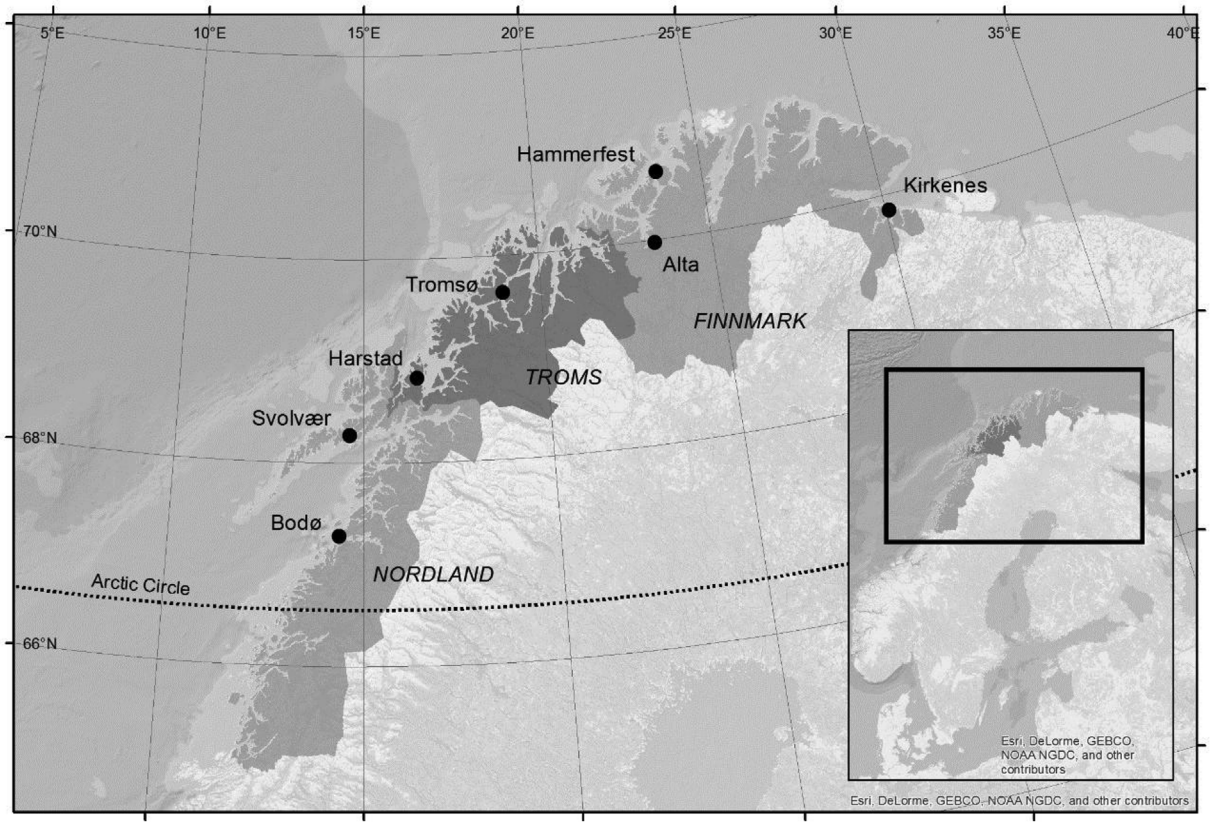

Fig. 1. Map of Norway and Arctic Norway.

Section 4 provides results, including a discussion of main policy implications, and Section 5 concludes.

2. Background

2.1. Study area

Our study area is the three northernmost counties of Norway; Nordland, Troms and Finnmark. As can be seen in Fig. 1 this region of Norway makes up about a third of the land area. The Arctic Circle bisects the region approximately 100 km south of the city of Bodø.

The majority of this area lies north of the Arctic circle and therefore belongs to the Arctic part of mainland Norway, henceforth Arctic Norway. This is a sparsely inhabited area with 490,000 inhabitants over 112,951 km^2. The total territorial waters of Norway are 145,463 km^2, and 83,444 km^2 of this is located off the coast of Arctic Norway (Kartverket, 2016).

Arctic Norway is topographically and biologically very varied. The coast is characterized by fjords, islands, mountains diving into the sea as well as rivers and lakes with abundant fish resources. We also find islands with bird cliffs fringed by narrow flat beaches and sand dunes. The marine ecosystem along the coast of Arctic Norway and into the Barents Sea is characterized as "a varied coastal ecosystem." The warm, nutrient rich water coming from the Atlantic makes up the basis for the abundant marine production supporting rich fisheries, in addition to numerous species of sea birds, whale and seal in the area (Meeren, 2009). These natural resources make the foundation for an important outdoor recreational culture in the region.

Fisheries and small-scale agriculture have historically been the most important economic activities in Arctic Norway. However, the area has become more economically diverse and industries such as aquaculture and tourism are developing. There are also plans for increased petroleum and mining/mineral activity in the region, but presently there are few people employed in these industries. For aquaculture, it is important to note that of 1060 aquaculture licences in production in Norway in 2015 only 380 are located in Arctic Norway (Directorate for Fisheries, 2016). Without taking into consideration the suitability of territorial waters for aquaculture, this implies that for each fish farm in Arctic Norway there are 219 km^2 of territorial waters available, compared to 91 km^2 for the rest of Norway. Hence, the density of fish farms is comparatively far lower than in other parts of the Norwegian coast.

Focus groups, run to develop the survey, identified that most people living in this part of Norway make use of the coastal zone (CZ) for recreational purposes. Based on input from the focus groups, the coastal zone was defined as "an area with proximity to or a view towards the sea, on the landside a maximum of 3 km from the littoral zone, and on the seaside defined by the baseline". Focus group participants also revealed that there is a broad understanding that commercial activities should have access to the CZ in order to generate economic wealth and jobs.

2.2. Existing literature

The existing literature on WTP for access to the CZ is huge, but focuses mainly on specific recreational activities. Surveys of recreational fishing, swimming and diving are the most numerous.[1] Often, the demand for a particular site (or sites) with specific characteristics is estimated (Freeman et al., 2014; chap. 9), and attempts have been made to simultaneously estimate the demand for a series of recreational sites in order to reveal substitution effects (Scarpa and Thiene, 2003). The majority of these studies focus on revealed preference methodologies where economic value is identified based upon actual behaviour. However, these methods can only identify values for attributes which

[1] For a selection of articles, see e.g. Navrud, 1992, Hanley et al., 2003, Rosenberger and Randall, 2016.