

Planning of annual partial sighting surveys over the six-year period 2008-2013 to estimate abundance of minke whales in the Northeastern Atlantic

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BACKGROUND AND OBJECTIVES

The management of Norwegian minke whaling is based on the Revised Management Procedure (RMP) developed by the IWC Scientific Committee (IWC 1994). RMP requires a monitoring program, as input data for RMP include time series of annual catches and of absolute abundance estimates with associated variance statistics. Abundance estimates for use in this context have been based on sighting surveys. Large-scale synoptic sighting surveys to estimate the abundance of minke whales in the Northeast Atlantic were conducted in 1988, 1989 and 1995 (Schweder et al. 1997). Based on the experiences from the 1995 survey in which 11 vessels and 140 people were involved, it was chosen to cover the northeast Atlantic by small-scale annual surveys over a six-year period (Øien & Schweder 1996). One obvious problem associated with this approach is how to account for the additional variance introduced in multiyear sighting surveys relative to a synoptic survey (Skaug 2000). The problem has been discussed in the Scientific Committee in recent years. The arguments for a multiyear sighting survey were that it would be more feasible to achieve common standards and better quality of data collection through more training of the observers and the scientists. Additional benefits were that the logistics would be simpler and costs could be shared over more years. Our experience so far is that the program has been quite successful in the mentioned respects. We therefore intend to conduct a new series of sighting surveys in the northeast Atlantic over the period 2008-2013 with a new estimate of minke whale abundance to be presented in 2014.

The main objective of these surveys is to obtain data for estimating the abundance of minke whales in the medium E area (that is, for small areas EB, ES, EW and EN) and the CM small area for calculating catch limits by the RMP at the end of the survey period. In addition, we expect to obtain abundance estimates for other cetacean species in these areas and spatial distribution and other data relating to the population biology of minke whales and other species.

SURVEY SCHEDULE

Over the survey period 1996-2001 and also for the current survey period 2002-2007 we have intended to cover small management areas within a year as a rule (Figure 1). This has given us information on distributional aspects within these areas, but made it difficult to catch up on movements between them. With the present scenario and effort available, we will probably not be able to survey more than about 3,000 nautical miles a year so this effort can not be spread over a very large area. As it is, the recession of ice in summer has made larger areas accessible north of Svalbard, in the northern Barents Sea and in the Greenland Sea. We will still keep the block structure we have used in earlier surveys (Fig. 2). Allocation of effort has to be postponed until the amount of effort available is decided.

DATA COLLECTION AND ANALYSIS

Data will be collected following basically the same procedures and protocols as started with and were used for the 1995 survey (Øien 1995) and for the surveys conducted over the periods 1996-2001 and the current survey period 2002-2007. On each vessel there will be two independent platforms and four observer teams each consisting of two persons (which will be kept the same as far as possible throughout the cruises). Watches will be organised into an 18 hours work schedule per day. All sightings will be recorded with a time stamp attached to them and all minke whales shall be tracked. The recording system used records the observer reports digitally to sound files on disk.

Distance and angle estimation training will be conducted regularly throughout the surveys. Angle estimation will be based on use of angle boards and radial distances will be judged by eye. Tests for validating these estimations will in general be done at the beginning, midway and at the end of the cruise.

Collection of dive time data will be considered as an integral part of the survey plan. We have based our collection of surfacing data so far on tracking VHF tagged animals, but other methods which emerge will be considered.

As in previous sighting surveys, these ones will also be conducted with July as core time. Cruise reports after each year's survey will be submitted to the IWC/SC.

Biopsy samples will be collected when possible both from minke whales and other cetacean species for which requests are made.

The abundance estimate analyses will be carried out according to the methods most recently outlined in Skaug et al. (2004), and with possible modifications and changes due to the multiyear nature of the data.

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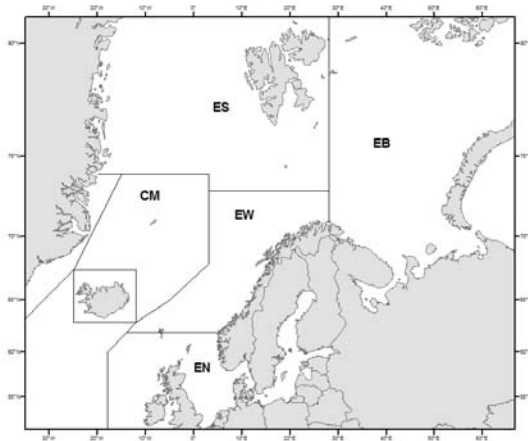


Figure 1. The current division in *Small Areas* of the area of interest to the Norwegian management of minke whales.

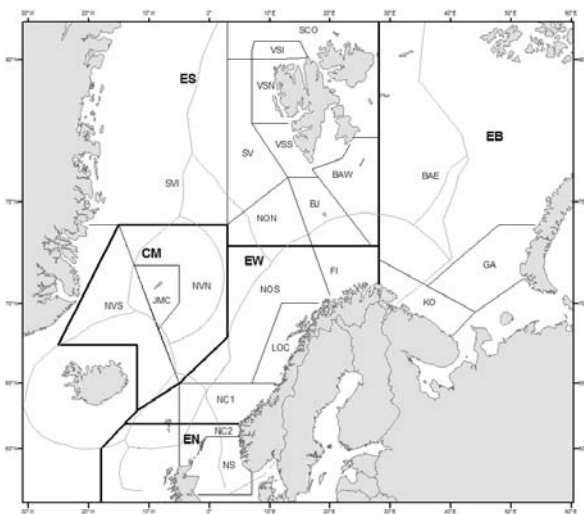


Figure 2. The current block division within the Small Management Areas.