

Report of the Norwegian 2005 survey for minke whales in the *Small Management Area* CM around Jan Mayen

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ABSTRACT

As part of a six-year program over the period 2002-2007 with the aim to get a new estimate of minke whale abundance in the Northeast Atlantic, the areas around Jan Mayen in the Greenland Sea, the *Small Management Area* CM, was surveyed with two vessels during the summer 2005. There were three planned blocks with a planned basic coverage of about 2,000 nautical miles. In total about 2,100 nautical miles were searched with primary effort. The most common species sighted were minke whales (67 groups seen from the primary platform), humpback whales (33 groups), fin whales (27 groups) and sperm whales (18 groups). In addition sightings were made of killer whales, Northern bottlenose whales, blue whales and unspecified dolphins. Opportunistic collections were made of biopsy samples from one minke whale and two fin whales, and photo IDs were collected from 16 humpback whales.

MONITORING, SURVEY - VESSEL, ATLANTIC OCEAN, COMMON MINKE WHALE

INTRODUCTION 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, since 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 for the following years to cover the northeast Atlantic by small-scale annual surveys over six-year periods (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 et al. 2004). 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 from the six-year period 1996-2001 is that the program has been quite successful (Skaug et al. 2004) in the mentioned respects. Norway therefore decided to conduct a new series of sighting surveys in the northeast Atlantic over the period 2002-2007 (Øien and Skaug 2001) with the aim of presenting a new estimate of minke whale abundance in 2008. The survey conducted in the summer 2005 is the fourth one in this survey series.

AREAS SURVEYED IN 2005

When the plans were presented in 2001 (Øien and Skaug 2001), we suggested to cover small management areas in more than one year as a rule, by surveying blocks within such an area in different years. The reasoning behind was to get more information on distributional variations between areas. However, during the analyses made of earlier surveys conducted both synoptically and over a six-year cycle (Skaug et al. 2004) it became evident that the best approach would be to follow the strategy used during the years 1996-2001, that is, to cover *Small Management Areas* (SMA) preferably within one survey year. In 2005 the SMA CM, i.e. the areas around Jan Mayen in the Greenland Sea, was to be surveyed. During its *Implementation Review* at the annual meeting in 2003, the IWC Scientific Committee made some changes to the SMA division (IWC 2004) but those changes did not affect the CM SMA, and so the survey was conducted based on the block structure used in earlier surveys.

CRUISE SUMMARIES

The two vessels which participated in the 2005 survey were the Coastguard vessels *K/V Nysleppen* (NYS) and *K/V Thorsteinson* (THO). The survey was conducted over the period 30 June to 10 August (NYS) and 22 June to 2 August 2005 (THO). On board the vessels, G. Bøthun, P. Ensor (New Zealand), K.A. Fagerheim, L. Kleivane, G. McCallum and N. Øien acted as team leaders.

The 2005 total survey area was divided into three survey blocks (Figure 1). *NYS* was allocated for surveying the JMC and NVN blocks, while *THO* was allocated for the NVS and NVN blocks.

After transit from Norway during which distance estimation and procedure training were conducted, *NYS* started its survey activities in waypoint 3 in the NVN

block in the Norwegian Sea east off Jan Mayen. *NYS* arrives in WP 6 in NVN on 13 July, whereafter the vessel courses for WP 7 in the NVS block and heads for WP 6. On this leg ice was met and foggy conditions hampered the survey activity. On 17 July, after several days with fog the vessel started the return to Norway for crew shift. On 23 July, after a call in Tromsø, *NYS* was at WP 3 in NVN and started searching towards WP 2. On 29 July *NYS* started surveying in block JMC from WP 2 towards WP 3 and finished the primary transect in JMC with 98% coverage on 1 August. During the following days some primary effort was spent in block NVN before returning to Tromsø.

THO arrived at WP 1 in the NVS block on 25 June but very difficult weather conditions with strong winds and reduced sightability due to fog hampered the survey for its first half. After crew shift in Tromsø, *NYS* headed towards WP 2 in NVN and started surveying from there on 15 July. On 18 July *NYS* entered NVS again and spent the rest of the time there with the exception of a last survey day in NVS before returning to Tromsø.

The two vessels were able to survey about 2,073 nautical miles, which is about what we had anticipated at the planning stage (about 2,000 nautical miles) based on earlier experience of weather and conditions. The three blocks all received a reasonable basic coverage at the end. Realised primary search effort in the three blocks surveyed in 2005 is shown in Table 1 and Figure 2.

A summary of the number of groups of whales sighted from the primary platform during the 2005 survey when on primary search effort is given in Table 1. Distributions of primary sightings of minke whales, fin whales, humpback whales, blue whales, bottlenose whales and sperm whales are shown in Figure 2.

Distance and angle estimation training was conducted throughout the survey, and tests were conducted on *NYS* on 2 and 18 July and 1 August, and on *THO* on 16 and 21 July.

No instrumentations of minke whales were carried out during the sightings survey, mainly due to low and difficult availability of whales. However, VHF tags with diving loggers were tested on two fin whales but with no success since in one case the tag was broken in the application process and in the other case signals were received for less than half an hour. Biopsies were collected from one minke whale and two fin whales, altogether 3 individual whales. Fluke photos for individual identification were collected from 16 humpback whales.

SURVEY DESIGN, SIGHTING PROCEDURES AND DATA COLLECTION

The survey procedures followed were the same as in NILS-95 (Øien 1995, Schweder et al. 1997, Skaug et al. 2004). The equipment was basically the same as was used in the NILS-95 survey, but some modifications have been made to the software to make

relevant data recording of especially weather covariates easier. Analogue tape recorders which were used in earlier surveys have been substituted completely by digital recording directly to disk. This system has proved very useful and easy for transcription and checking. Double platform effort is used exclusively, and the observers are organised into teams of two persons. This has been consistent in all our surveys since 1997.

FUTURE SURVEY ACTIVITY

The summer 2002 was the first year in a new six-year period of survey activity (Øien & Skaug 2001). The plan is to survey the eastern Barents Sea (*Small Area EB*) during the summer 2006. An integral part of the survey activity is collection of dive time data for minke whales by use of VHF tagging. During the survey period in 2005 we were not able to collect any new dive time series. The efforts to collect more data will be continued, preferably in connection with the survey activity. Efforts will also be continued to conduct satellite tagging of minke whales, especially early and late in the feeding season to get information on migration in and out of the summering areas. On an opportunistic basis, biopsy sampling and photo identification will also be continued during the sighting surveys.

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Table 1

Number of groups of whales seen from the barrel during primary search, and realised primary search effort (nautical miles) by survey stratum, during the 2005 survey.

Species	JMC	NVN	NVS	Total
Minke whale	35	26	6	67
Fin whale	2	16	9	27
Humpback whale		1	32	33
Blue whale		1	3	4
White-beaked dolphin			10	10
Dolphins, unsp.		1	1	2
Killer whale	1	9	3	13
Northern bottlenose whale	3	1	3	7
Sperm whale	2	15	1	18
Large whale	3	11	8	22
Realised primary effort (nmi.)	302	854	917	2073

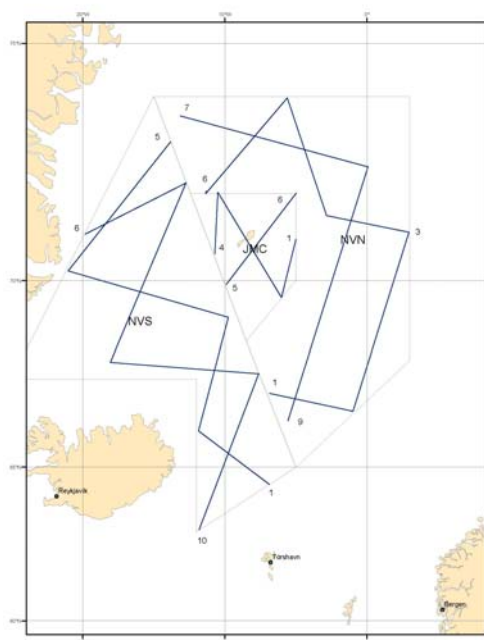


Figure 1. The blocks surveyed in summer 2005 with planned transects added. All blocks contribute to the *CM Small Area* (see IWC 2004 for *Small Area* definitions).

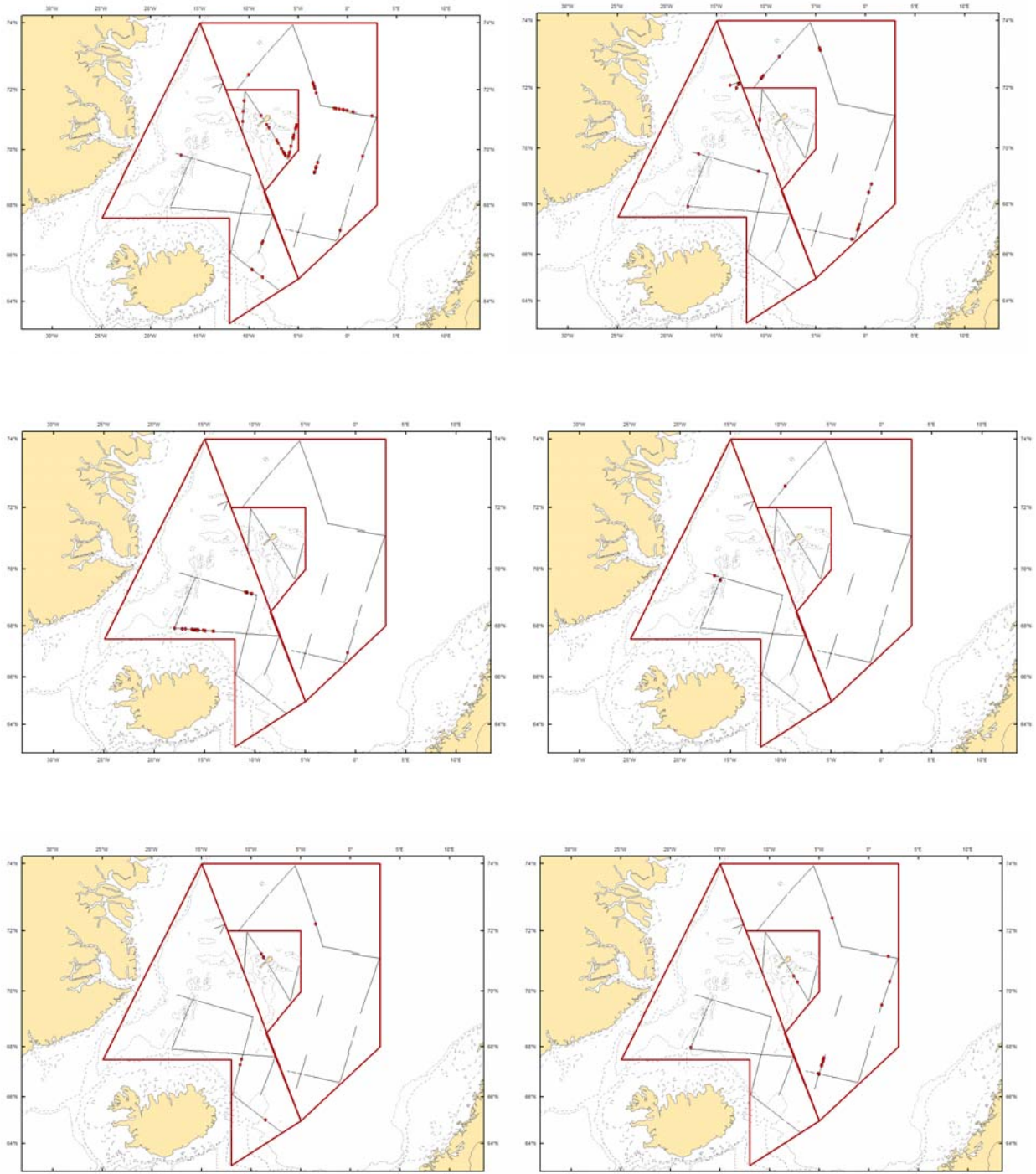


Figure 2. Primary sightings of minke whales (*upper left*), fin whales (*upper right*), humpback whales (*mid panel left*), blue whales (*mid panel right*), Northern bottlenose whales (*lower left*) and sperm whales (*lower right*). Lines within the block boundaries are realised primary serach effort during the 2005 sightings survey.