

SC/66b/RMP/06

Report of the Norwegian 2015 survey for minke whales in the Small Management Area EW Norwegian Sea and NASS-2015 extension survey in the Small Management Area CM Jan Mayen area

Nils Oien



INTERNATIONAL
WHALING COMMISSION

Report of the Norwegian 2015 survey for minke whales in the *Small Management Area* EW – Norwegian Sea and NASS-2015 extension survey in the *Small Management Area* CM – Jan Mayen area

NILS ØIEN

Institute of Marine Research, P.O.Box 1870 Nordnes, N-5817 Bergen, Norway
nils@imr.no

ABSTRACT

As part of a six-year program over the period 2014-2019 with the aim to get a new estimate of minke whale abundance in the Northeast Atlantic in a timely manner with regard to RMP, the Norwegian Sea comprising the *Small Management Area* EW, was surveyed with one vessel during the summer 2015. Three blocks were surveyed and received a reasonable good coverage. In addition, a NASS-2015 extension survey was conducted in the Jan Mayen area. A total of 4,343 nautical miles of primary search effort was conducted within the surveyed blocks. The most common species sighted were minke whales, fin whales and sperm whales. In addition, sightings were made of white-beaked dolphins, killer whales, humpback whales, blue whales, harbour porpoises, white-sided dolphins and Northern bottlenose 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 mosaic 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), a feature which they share in common with other surveys 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 survey periods 1996-2001, 2002-2007 and 2008-2013 is that the program has been quite successful (Skaug et al. 2004, Bøthun et al. 2009, Solvang et al. 2015) in the mentioned respects. Norway decided to continue with a new series of sighting surveys in the northeast Atlantic over the period 2014-2019 (Øien 2013) with the aim of presenting a new estimate of minke whale abundance in 2020. The survey conducted in the summer 2015 was the second one in this survey series.

In addition, discussions had been going on within NAMMCO to coordinate national surveys during summer 2015 and to search for funding for extending the surveys to waters considered important to the success of a regional understanding of distribution and occurrence of the target species of the national surveys (NAMMCO 2015, item 9.1). The NASS-2015 steering committee suggested that the Jan Mayen area would be a very valuable addition to the national surveys to get a synoptic coverage of the target species in important feeding areas. Thus a relocation of survey effort was finally made such that the Jan Mayen area could be surveyed as part of NASS-2015.

AREAS SURVEYED IN 2015

When the plans were presented in 2013 (Øien 2013), we suggested to preferably cover one *Small Management Area* during one year's survey as a rule. The original survey plan for the Norwegian surveys was to cover the Norwegian Sea in summer 2015, the *Small Management Area* EW. This area was last covered in 2011. As a contribution to NASS-2015 the survey was extended to the Jan Mayen area, covering the northern and eastern parts of the *Small Management Area* CM outside the Icelandic EEZ. This area was last surveyed in 2010.

In 2008 we made a change to the block (stratum) definitions we had been using previously, as the number of blocks had increased to a number which made it difficult to distribute survey effort in an efficient way. Changes in the *Small Management Area* structure in 2003 (IWC 2004) also led to modifications which were motivated of the wish to keep some consistency throughout a survey period and make comparisons with previous surveys easier. The implemented block structure

as used also in 2011 for EW was also used in 2015. For the Jan Mayen area, the block structure was modified to fit the Icelandic EEZ. Blocks as used are shown in Figure 1.

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 through the years to the software to make relevant data recording of especially weather covariates easier. Digital recording of speech is made directly to disk. This system has proved very useful and easy for transcription and checking. Double platform effort is used exclusively for primary search, and the observers are organised into teams of two persons. This has been consistent in all our surveys since 1997.

Primary search effort requires that Beaufort ≤ 4 and meteorological visibility ≥ 1000 m and is mainly determined by minke whales being the target species of the surveys. Survey effort conducted in higher Beaufort is considered secondary and with only one platform (usually the lower one) manned.

The available survey effort has been used to construct a set of transects based on a continuous 18 hour run per day and setting the usual full watch (primary search effort) when sighting conditions are according to the survey protocol.

On an opportunistic basis, biopsy sampling and photo identification are conducted during the sighting surveys.

CRUISE SUMMARIES

The vessel which was chartered for the 2015 survey was M/S *Fisktrans* (FTR) with a total length of 57.3 meters. The survey was conducted over the period 22 June to 30 August. On board the vessel, K.A. Fagerheim, L. Kleivane, and N. Øien acted as team leaders.

The 2015 total survey area was divided into six survey blocks (Figure 1), however the block EW4 did not receive any survey coverage due to time constraints. The survey was divided into three parts of which the second period from 13 July to 2 August was dedicated to the Jan Mayen area.

In the Norwegian Sea about 55 % of the planned transect was covered in primary search mode. This coverage is about the same as in 2011 in the Norwegian Sea. For the Jan Mayen area about 50 % of the planned transects were covered in primary search mode.

Collected data

In total, “*Fisktrans*” was able to survey about 4,343 nautical miles, which was somewhat higher than we had anticipated at the planning stage based on earlier experience of weather and conditions. We were able to survey all the blocks with exception of EW4 with a reasonable coverage. Realised primary search effort in the five blocks surveyed in 2015 is shown in Figure 1.

A summary of the number of groups of whales sighted during the 2015 survey when on primary search effort is given in Table 1. Distributions of primary sightings of minke whales, fin whales, humpback whales, blue whales, sperm whales, killer whales, harbour porpoises, Northern bottlenose whales and dolphin spp. are shown in Figures 2-8.

Distance and angle estimation tests were conducted on 18 August 2015.

Summary

The survey achieved a good coverage both of the Small Management Area EW as well as the blocks in the Jan Mayen area.

For the Norwegian Sea the total impression is few sightings and many of them off the coast of northern Norway. There were relatively few minke whale sightings thinly distributed over the area but none in coastal areas south of Vestfjorden. Fin whale sightings were recorded off North Norway and there were perhaps more fin whale sightings in that area than in earlier surveys.

For the Jan Mayen area relative few baleen whale species were seen. However, minke whales were mainly seen in the northeastern part of the block CM3.

A preliminary estimate of minke whale abundance in the 2014 and 2015 survey areas is given in Solvang et al. (2016) to this meeting.

FUTURE SURVEY ACTIVITY

The survey in the Norwegian Sea in 2015 was the second one in the planned six-year cycle 2014-2019 of survey activity to provide a new minke whale abundance estimate in a timely manner (Øien 2013). In 2016, the plan is to survey completely the *Small Management Area* CM – the Jan Mayen area, but some additional coverage will also be conducted within the

Norwegian Sea (EW). In 2017 it is planned to survey the Barents Sea, which will require access to the Russian EEZ to get a reasonable coverage of main minke whale feeding areas.

ACKNOWLEDGEMENTS

We are very grateful to the vessel 'Fisktrans', the observers and the team leaders on the vessel for dedicated and pleasant cooperation in conducting the research. The hard work spent by K.A. Fagerheim and S. Hartvedt on validating and coding the survey data is much appreciated.

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Table 1

Number of groups of whales seen from the upper and lower platforms during primary search, and realised primary search effort (nautical miles) by survey stratum, during the 2015 survey. Observations made during the 'F' effort conducted in conditions outside the boundaries defined are given in parentheses.

Species	Platform	Survey block					Total
		EW1	EW2	EW3	CM1a	CM3	
<i>Minke whale</i>	<i>Upper</i>	8	11	11	4	25	59
	<i>Lower</i>	9	10 (+1)	13	3	26 (+3)	61 (+4)
<i>Fin whale</i>	<i>Upper</i>	46	2	0	1	6	55
	<i>Lower</i>	35	1	0	0	4	40
<i>Blue whale</i>	<i>Upper</i>	0	0	0	0	2	2
	<i>Lower</i>	0	0	0	0	1	1
<i>Humpback whale</i>	<i>Upper</i>	10	3	0	0	1	14
	<i>Lower</i>	4	3	0	0	2	9
<i>Harbour porpoise</i>	<i>Upper</i>	7	0	0	0	0	7
	<i>Lower</i>	8	0	0	0	0	8
<i>White-beaked dolphin</i>	<i>Upper</i>	31	0	0	0	0	31
	<i>Lower</i>	26	0 (+3)	0	0	0	26 (+3)
<i>White-sided dolphin</i>	<i>Upper</i>	2	0	0	0	0	2
	<i>Lower</i>	1	0	0	0	0	1
<i>Lagenorhynchus sp.</i>	<i>Upper</i>	8	0	2	0	0	10
	<i>Lower</i>	2	0	0	0	0	2
<i>Killer whale</i>	<i>Upper</i>	3	8	5	0	6	22
	<i>Lower</i>	1 (+1)	4 (+1)	3	1 (+2)	10	19 (+4)
<i>Northern bottlenose whale</i>	<i>Upper</i>	0	0	0	1	0	1
	<i>Lower</i>	0	0	0	2	0 (+2)	2 (+2)
<i>Sperm whale</i>	<i>Upper</i>	5	20	3	9	1	38
	<i>Lower</i>	5 (+1)	12	3	10	2	32 (+1)
<i>Large whales</i>	<i>Upper</i>	3	4	0	0	2	9
	<i>Lower</i>	8	1	1	0	6	16
Total, groups	Upper	123	48	21	15	43	250
	Lower	99 (+2)	31 (+5)	20	16 (+2)	51 (+5)	217 (+14)
Realised primary effort	<i>Nmi, T</i>	1618	834	607	339	944	4342
Secondary effort	<i>Nmi, F</i>	167	272	39	84	241	643

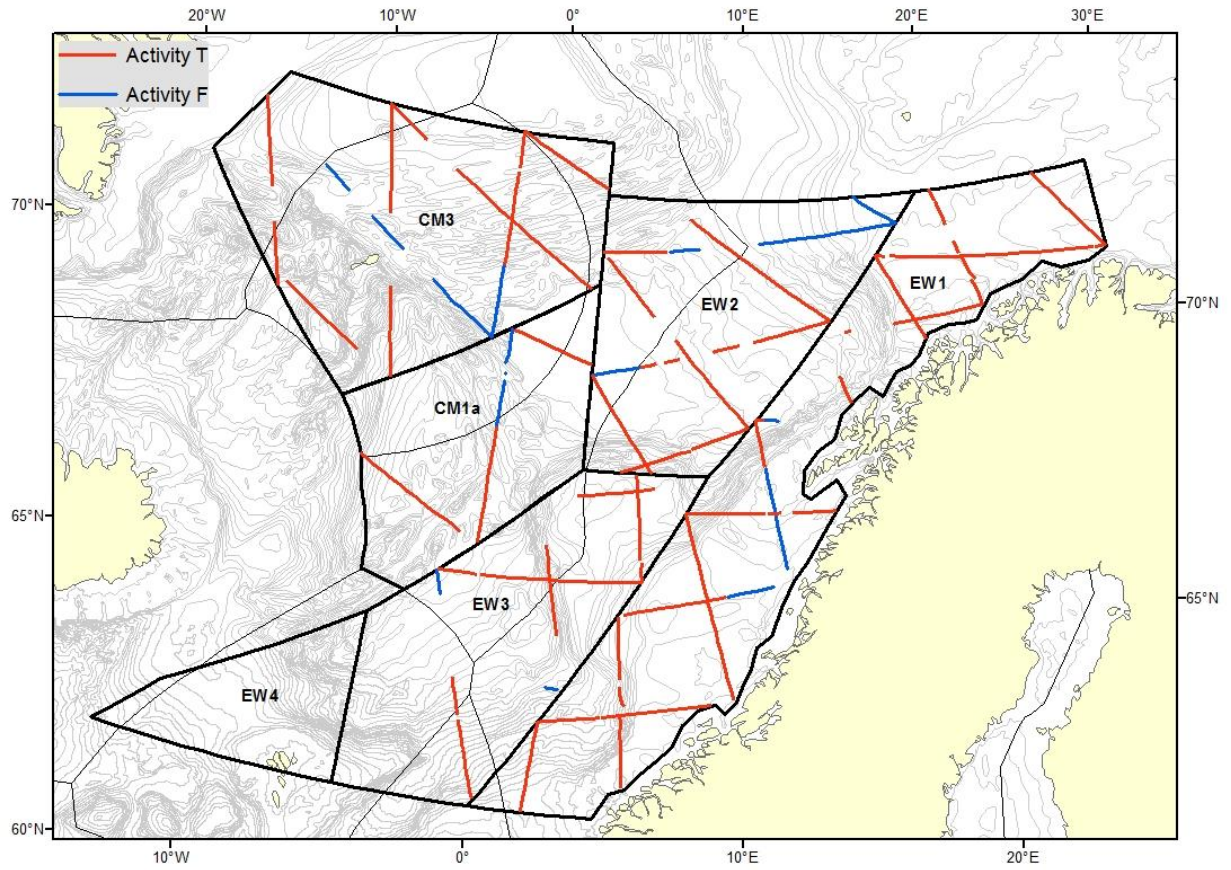


Figure 1. The EW *Small Management Area* with the block structure, EW1-EW4, adopted for the survey. The extension survey was conducted in the blocks CM3 and CM1a which are parts of the CM *Small Management Area*. Realised transects with primary search effort have been added as red lines; the blue lines represent secondary platform 2 effort.

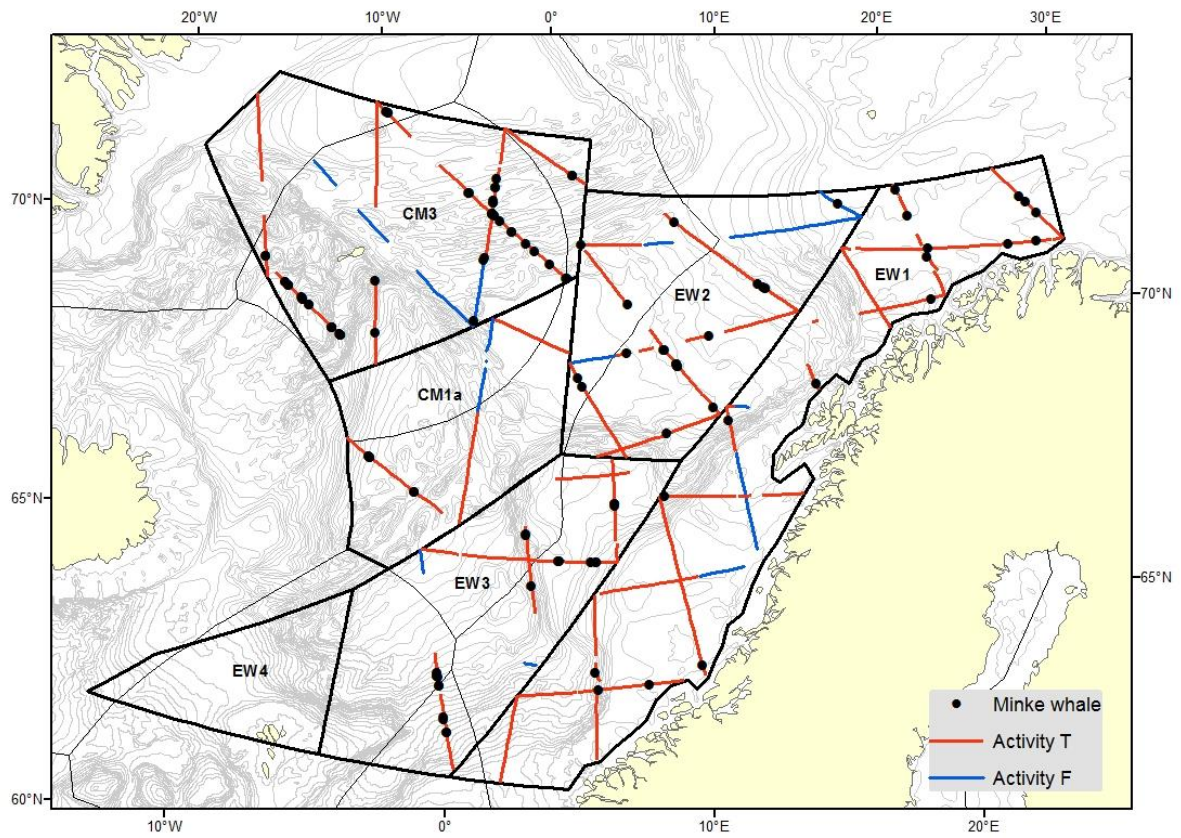


Figure 2. Primary sightings of minke whales (filled black circles).

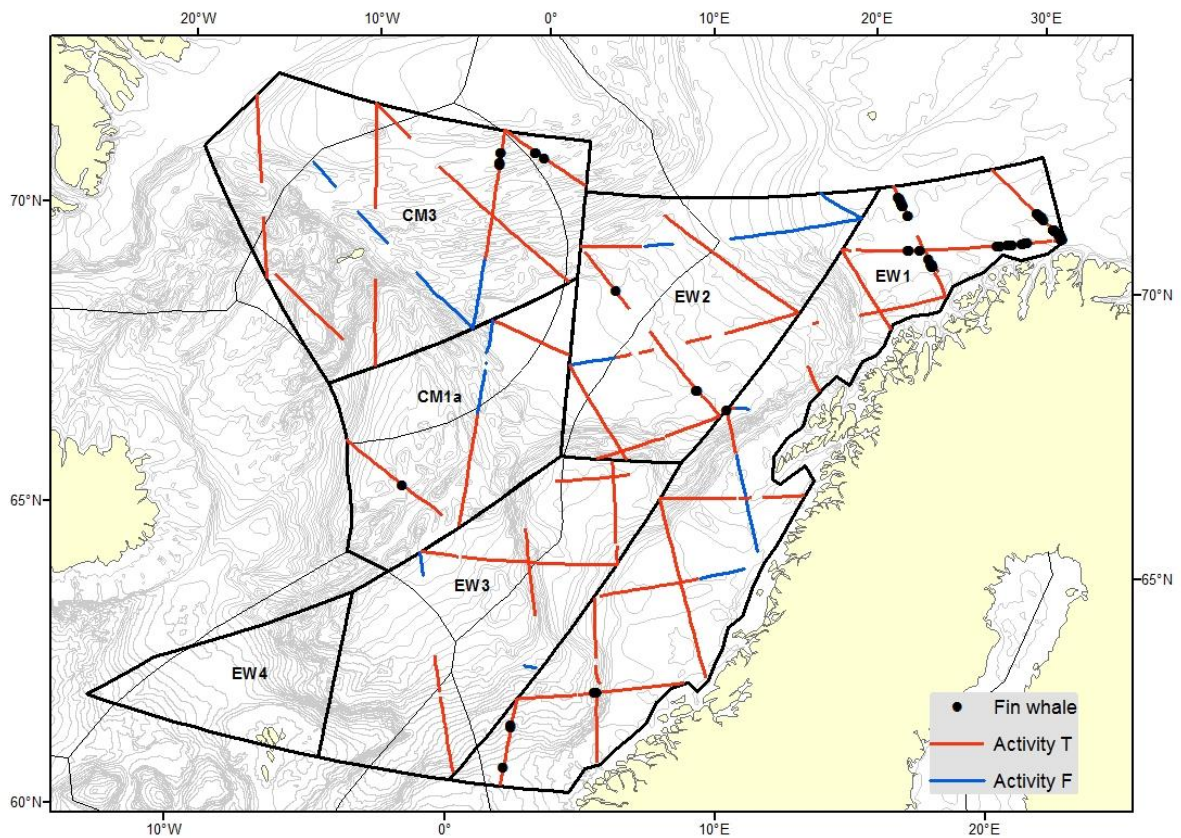


Figure 3. Primary sightings of fin whales (filled black circles).

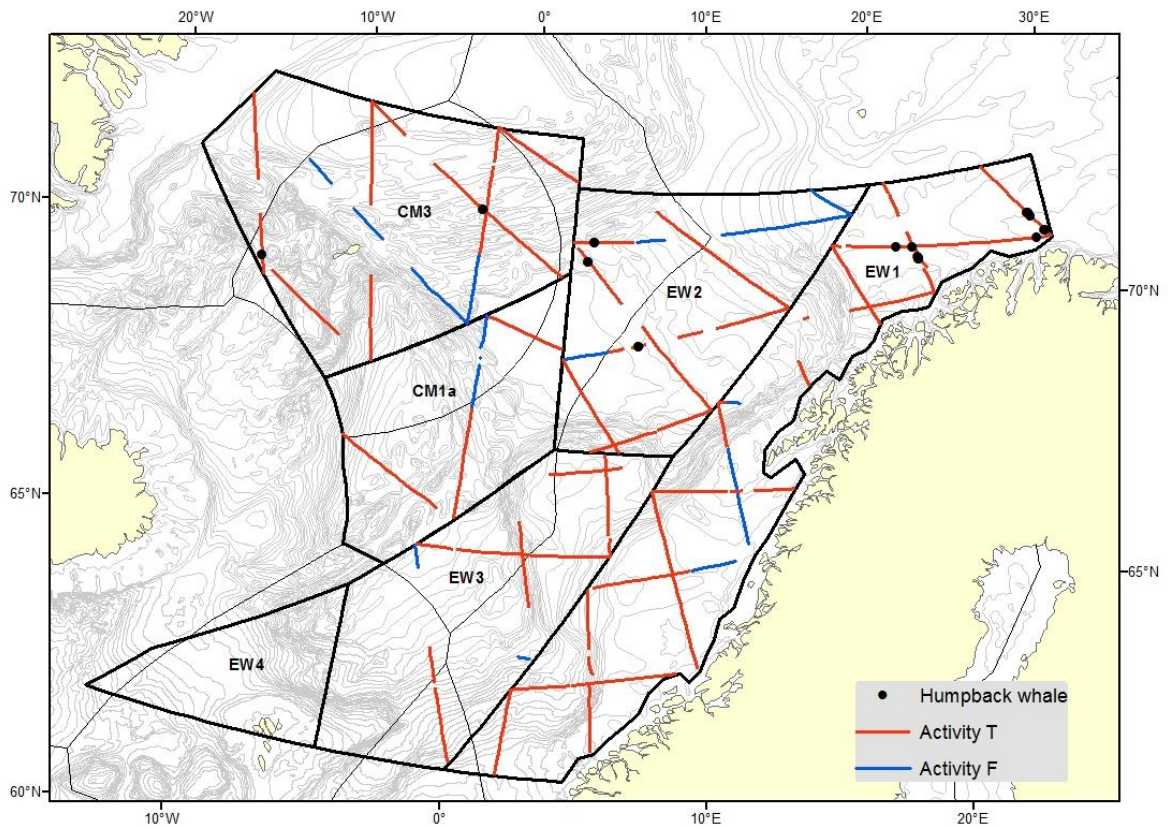


Figure 4. Primary sightings of humpback whales (filled black circles).

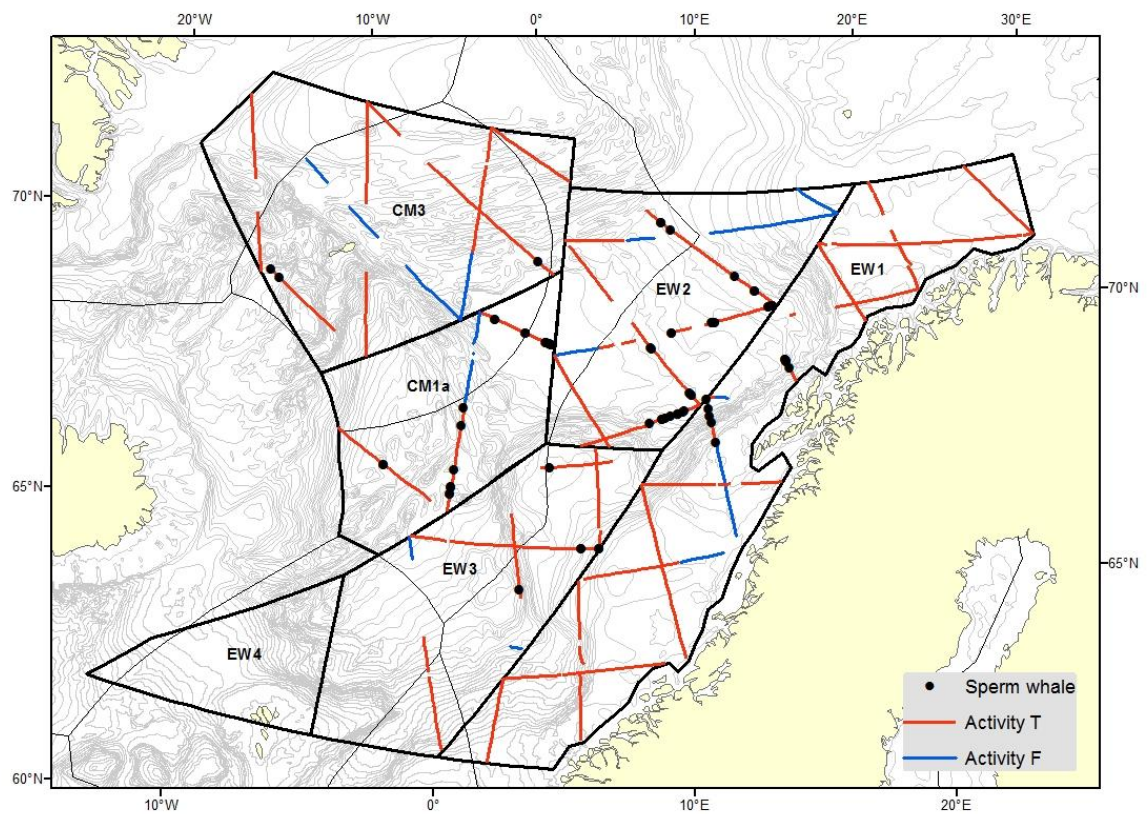


Figure 5. Primary sightings of sperm whales (filled black circles).

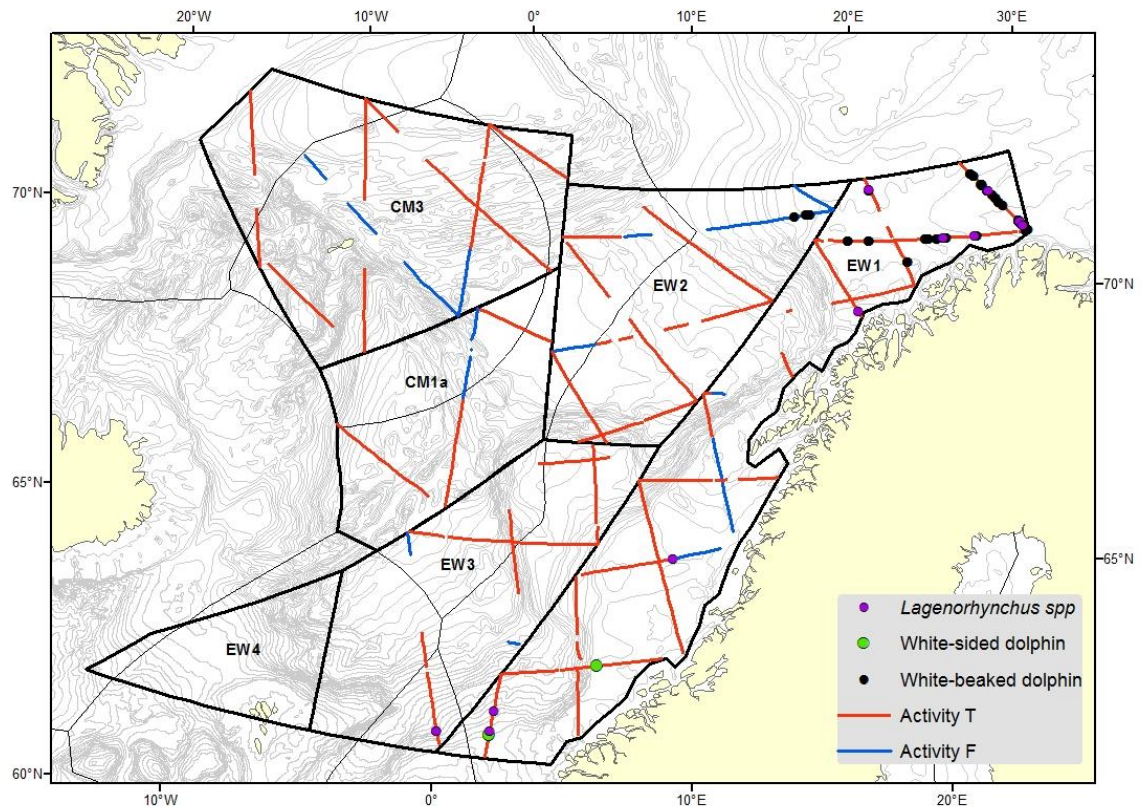


Figure 6. Primary sightings of white-beaked dolphins (filled black circles), white-sided dolphins (filled green circles) and undetermined *Lagenorhynchus* spp. (filled purple circles).

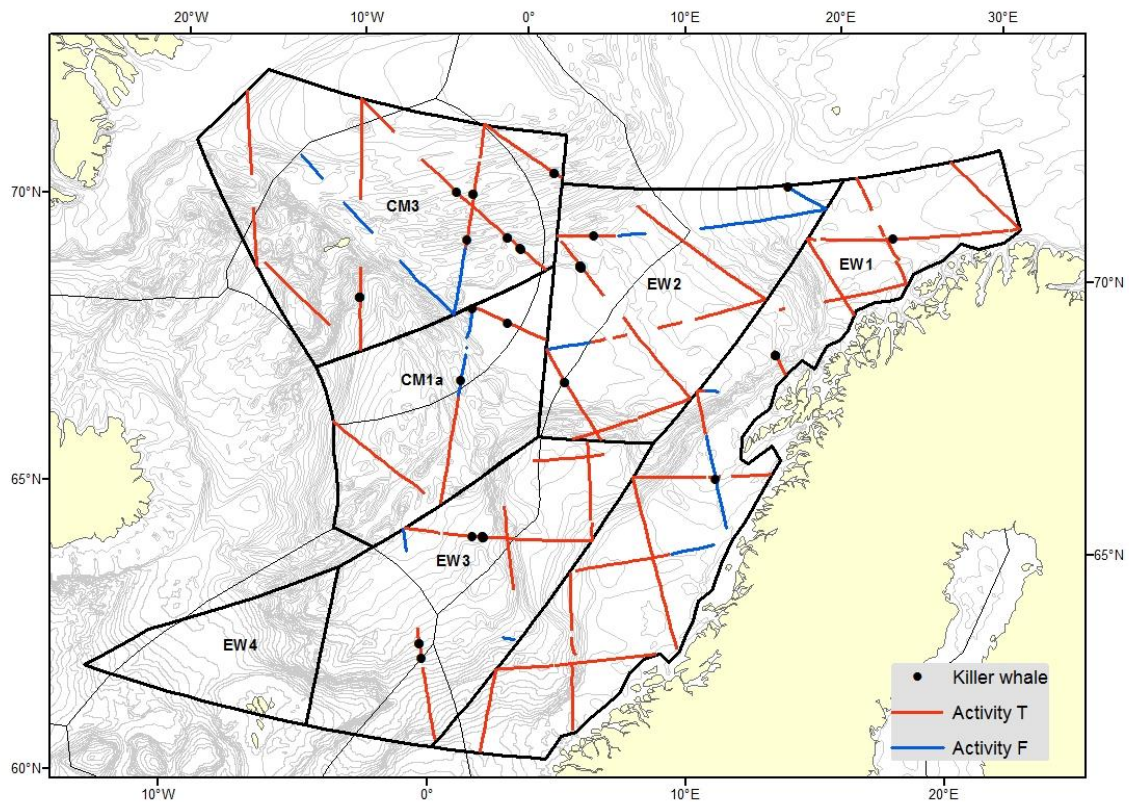


Figure 7. Primary sightings of killer whales (filled black circles).

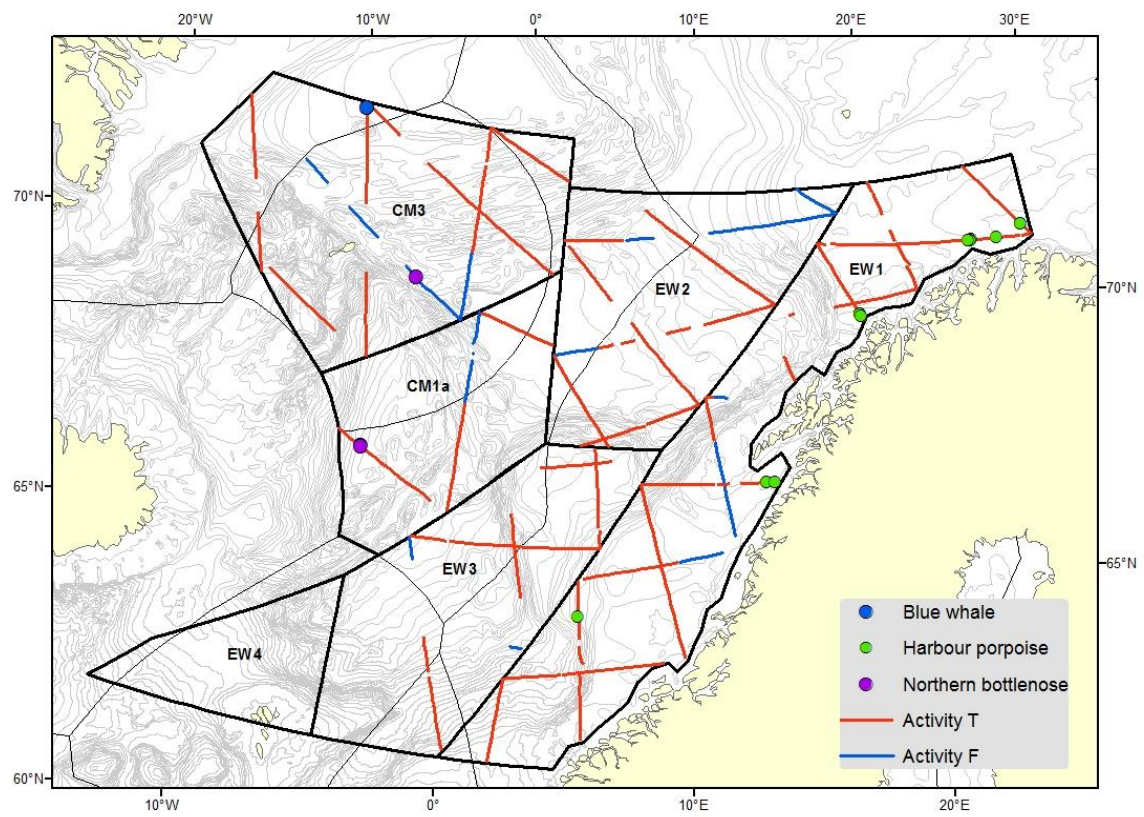


Figure 8. Primary sightings of harbour porpoises (filled green circles), Northern bottlenose whales (filled purple circles) and blue whale (filled blue circle).