

Masterplan Wind – Seabirds Cruise Report January 2011

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Report number C012/11



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Cover Photos: Common Guillemot, Razorbill and Atlantic Puffin in winter plumage (Richard Witte)

Distribution maps: Rob van Bemmelen

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Summary

Witte R.H. & A.P. Witte, 2011.

Masterplan Wind – Seabirds. Cruise Report January 2011.

IMARES Report C012/11; 28 pp.

This cruise report provides an overview of the 10th survey in a series of seabirds at sea surveys that will be carried out in 2010 and 2011 over the Dutch Continental Shelf (DCS) of the North Sea and adjoining waters. This 10th survey in the series was carried out in January 2011. Two seabird observers joined a cruise that was aimed at surveying plankton, by taking plankton samples at more or less hourly intervals. In between the plankton stations, the ship steamed full speed (speed ranging from 11-16 knots) and seabirds were surveyed during all daylight hours while the ship was steaming.

During the week, a total of 205 counting bouts of on average five-minutes each were conducted. These stretched over a total of 471 km and covered, at a strip width of 300 m, a total survey area of 141 km² (Table 1). A total of 1.033 birds, 8 marine mammals (5 Harbour Porpoises, 2 unidentified dolphins, 1 Grey Seal), and 3 balloons were recorded (Table 4). Weather conditions were mostly moderate, bad light conditions had (as usual) a negative impact on the probability to detect seabirds and porpoises in particular. Survey conditions, however, were better than in November and December. Related to the total area surveyed this 10th survey was more successful than the previous two because the survey was not broken off due to bad weather. Of the total 141 km² 80% could be surveyed with seastate conditions of four or less.

Bird- and marine mammal ship-based surveys on the Dutch Continental Shelf in January are very scarce and knowledge on winter distribution therefore is limited. The most important findings of this cruise were that in January species richness is quite poor and especially at the Oystergrounds numbers are very poor. Due to weather conditions no reliable information on marine mammal numbers could be gained.

1 Introduction

This cruise report presents the seabird and marine mammal data collected during the 10th “fish eggs and fish larvae” survey, in a series of 12 monthly surveys from April 2010 till March 2011. These surveys cover the entire Dutch Continental Shelf (DCS); the first two surveys also covered waters south and west of the DCS. The grid with sampling stations for the “fish eggs and fish larvae” survey was adjusted after these surveys in order to focus more on the DCS; e.g. the westernmost stations were shifted to the east. The primary research topic during all cruises is plankton research (fish eggs and fish larvae), but the vessel conducting these surveys is an excellent platform for additional research on other vulnerable biota, such as seabirds. The plankton work is carried out 24 h per day, i.e. also at night. Seabirds can only be surveyed during daylight, so the aim of the project is to survey seabirds during all daylight hours. Coverage of the area is therefore less than 100% as the survey ship continues working during the night.

Again the MW Tridens was used as observation platform. Poor weather with wind (up to 7 Bft, (heavy) rain, fog, cloudy and without sunshine made observations hard. Due to lack of light and poor weather conditions no full day observations could be conducted.

The route was sailed in normal order but unfortunately the Tridens left Scheveningen harbour on Monday evening when it was already too dark for bird observations and returned Friday night. Therefore no coastal observations could be made. Also the Dogger Bank area was sailed during night-time unlike the original plan.

2 Aim of the project and methods used

The aim of the project is to provide seabirds at sea data for as much of the DCS as possible, at a high level of observational detail. The data collected during these surveys are to be compared with aerial survey data, collected for the Masterplan Wind by Bureau Waardenburg and a long-term set of earlier aerial data collected by Rijkswaterstaat. During the shipboard surveys, seabirds and marine mammals are surveyed using standard ESAS ship-based survey techniques (fully described in the first cruise report in this series, see Leopold et al. 2010).

As usual with the MS Tridens the birds observation box was situated on the top deck during the survey. This provided good forward and sideward views (both sides of the ship's track line). Eye-height of the observers was measured as 15 meters. A marked stick was used to identify the distance count strips (A,B,C,D and E). During strong head winds and heavy rains or fog (< 300 m sight) reliable counts were not possible.

3 Results

3.1 Narrative

Monday 10-01-2011

Due to a collision between a coaster and oil tanker at the Noordzeekanaal at the height of the Mercury Haven on Friday 7th January the MS Arca suddenly had to leave and was therefore no longer available for this cruise. Subsequently, the MS Tridens was deployed. Departure was postponed until Monday evening due to logistic reasons. The MS Tridens left Scheveningen harbour slightly before 19.30 hrs. Because it was dark already when leaving on Monday no birds and marine mammals were counted.

Tuesday 11-01-2011

Overnight the MS Tridens first went south, alongshore into Belgian coastal waters, passing the Maasvlakte, Voordelta and several Belgium offshore wind farms during the night. In the early morning was turned northwest, into the Channel and at sunrise the ship was positioned on 52° 45'N 2° 14'E. Seastate was 3 Beaufort and quickly increased to 6 in the afternoon. Till late afternoon it was fully cloudy with a drizzle and sometimes light to more heavy rains providing moderate to poor observation conditions .

No porpoises were detected but the day's first observation was a grey seal. Starting at the northern part of the Brown Ridge (Bruine bank) within 15 minutes after the start of the observations two greater divers (White-billed diver *Gavia adamsii* or Great Northern diver *Gavia immer*) were seen. They were swimming at a distance of over 500 m but most likely due to our observation vessel they flew away in south-eastern direction. As usual auks, guillemots, kittiwakes and great black-backed gulls were commonly present with lower numbers of fulmar and gannets and occasionally some other species like puffin, little auk, herring gull and common gull.

Entering the deeper waters (Silver Pit) just south of the Dogger Bank, wind increased strongly and despite the increase in auk observations numbers remained low due to bad sighting conditions, although the first beam of sunlight for the day was helpful. One fishing vessel nearby resulted in a local increase of kittiwakes, gannets, fulmars and several other gull species.

Wednesday 12-01-2011

As foreseen Wednesday was a windy day with seastate 4-5 and therefore moderate observation conditions. Unfortunately the Dogger Bank area had been passed already during night. Due to head winds and heavy rain showers bird counts did not start before 11:30 (GMT). However, the first sighting of the day was a far swimming harbour porpoise and one hour later an unidentified diver (black- or red throated) in winter plumage was seen flying. At the middle of the day two balloons were seen floating, one lilac and one purple. Just to please Mardik. Early in the afternoon the ship was surrounded by kittiwakes and herring gulls associated with some fulmars, gannets and great black-backed gulls. Those animals gave the impression that many animals were around but they tried to mislead the bird observers by sticking to the MS Tridens. Nevertheless a reasonable number of guillemots and kittiwakes were counted this day. Around sunset the rich area northwest of the Brown Ridge was reached. Besides high numbers of guillemots were seen lining up and group size increased to a maximum? Of 16. Besides a harbour porpoise two dolphin dorsal fins were seen just before getting dark.

Thursday 13-01-2011

Thursday was calm (sea state 2-3) and foggy with just a few birds (amongst others three little auks) around and one sighting of a harbour porpoise. During daylight the ship travelled north of the Cleaverbank, mostly at or near the Oystergrounds. In the early afternoon, due to less than 300 m sight for one hour no observations could be conducted. Unfortunately the Frisian Front area was passed in the dark again.

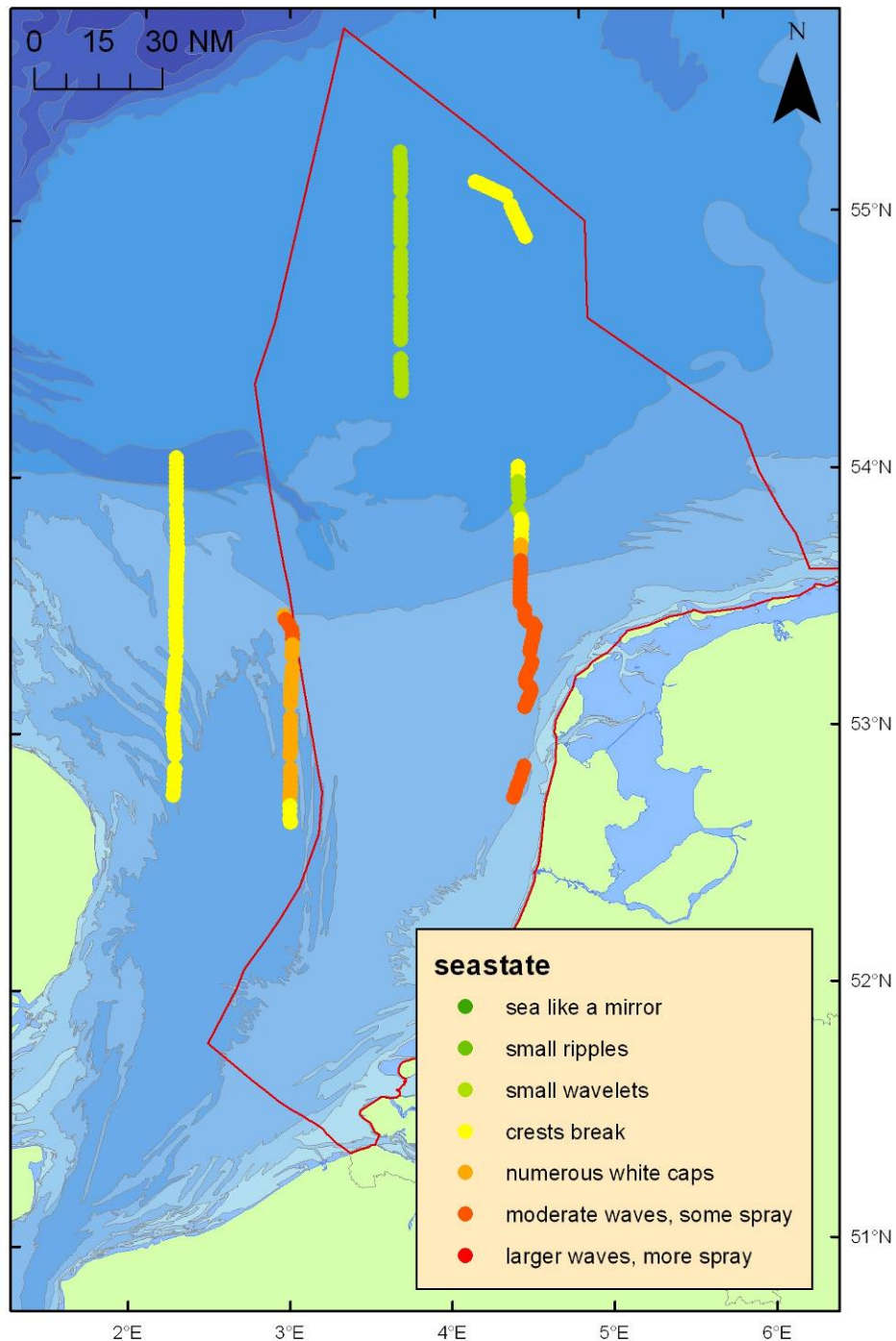
Friday 14-01-2011

The 5-minute counts could be conducted between eight o'clock (GMT) in the morning and a quarter past three in the afternoon when counts stopped due to heavy rain. Visibility started at less than 2 km but increased to over 10 km just before lunch. Sea state first decreased from 3 to 2 but quickly increased to 5 at 09:30 to remain for the rest of the day. Sightings were dominated by guillemots, black-legged kittiwakes and herring gulls.

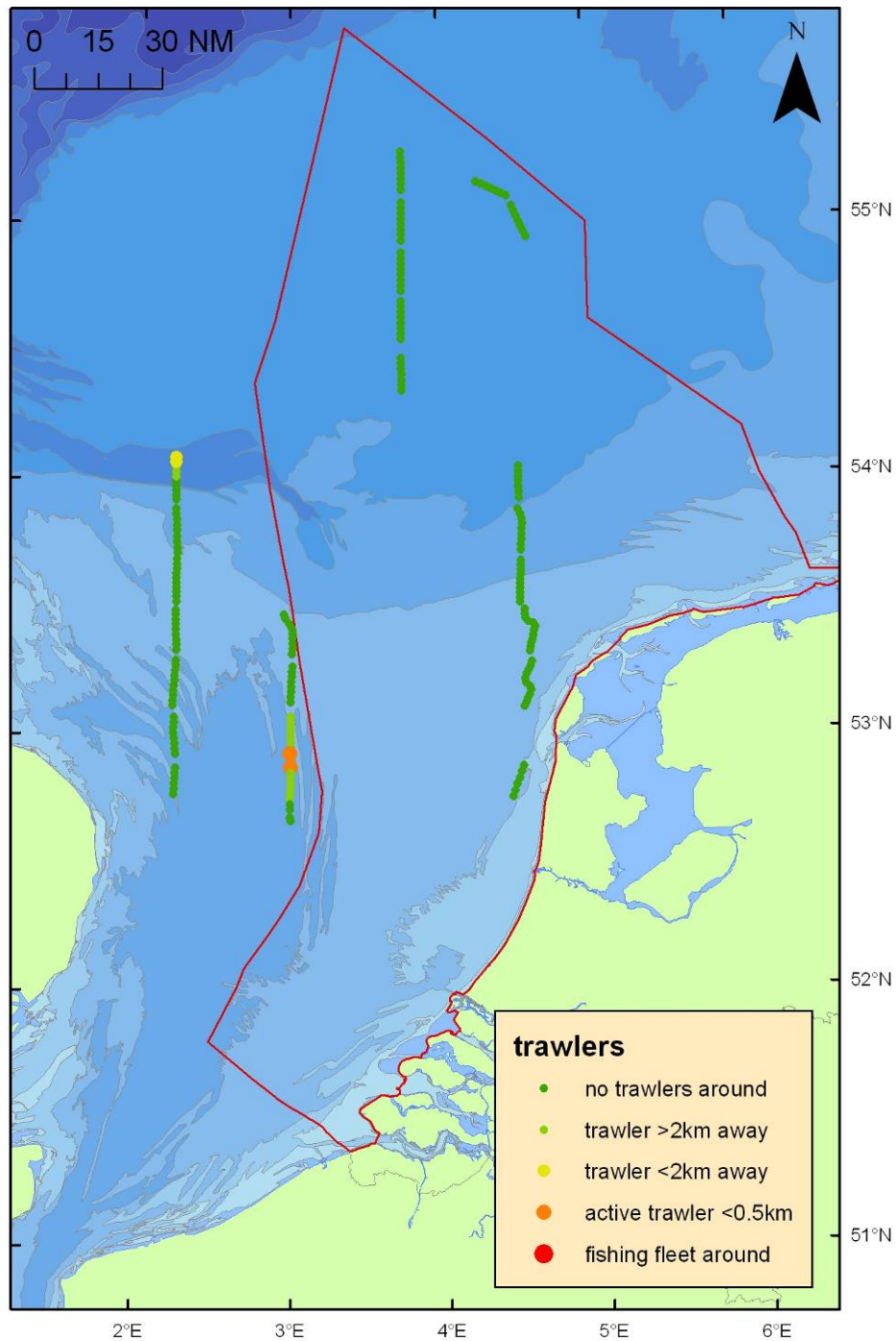
Table 1 *Total survey effort per seastate.*

Seastate (Beaufort)	Surveyed area (km²)	Surveyed distance (km)
0	-	-
1	-	-
2	32.1	106.9
3	59.1	197.1
4	21.1	70.2
5	29.0	96.6
≥6	-	-
	141.3	470.9

Overleaf, the surveyed tracks are plotted against the seastates encountered along the route (first map), and the presence of active fishing (second map).



Effort and seastates. Seabirds and marine mammals were surveyed along the plotted routes. Beaufort seastates along the survey route are presented.



***Floating matter.** Active trawlers seen during the survey.*

3.2 Detection probabilities

Detection probabilities are reviewed here for objects that were seen mostly on or in the water (as opposed to in flight): Common Guillemots and Razorbills. These birds are normally rather hard to detect on the water as they often occur in small groups and are dark-backed, which makes them hard to spot under less sunny conditions and at greater distances. Guillemots (and other auks) dive at the approach of the vessel.

Among the auks, only Guillemots and Razorbills were seen in sufficient numbers to produce detection probabilities (Table 2), in order to estimate the number of missed animals. The overall detection probability could vary; in other words the number of detected animals in the first two sub-bands of the 300 m wide strip could vary with different conditions. Most likely light conditions in relation to sea state plays an important role in this. Remarkably the percentage of missed Guillemots (26%) during the January survey is lowest across all related surveys despite the bad light conditions (Table 3).

Table 2 *Numbers of sightings (irrespective of group size) of Common Guillemots and Razorbills, in relation to perpendicular distances during the entire January survey.*

		Common	
	Band	Guillemot	Razorbill
Observed	A	74	8
	B	63	6
	C	92	10
	D	74	5
	Sub Total	303	29
Missed	C	45	4
	D	63	9
	Sub Total	108	13
	Total	411	42
	Percentage missed	26%	31%

Table 3 Percentage missed Common Guillemots during all surveys.

Survey	Percentage Missed Common Guillemots	Total number	N / km ²
April 2010	31	291	0.84
May 2010	41	174	0.44
June 2010	35	1735	4.94
July 2010	42	513	1.38
August 2010	49	426	1.46
September 2010	44	99	0.71
October 2010	30	249	0.95
November 2010	47	135	1.38
December 2010	37	342	4.06
January 2011	26	411	2.91
<i>Average</i>	<i>40</i>	<i>438</i>	<i>1.77</i>

Table 4 Summary of all birds, mammals and other items recorded during the counts.

		Day in January				
Species		11	12	13	14	total
Birds						
White-billed/ Great Northern diver	<i>Gavia adamsii / immer</i>	2				2
Red- / Black-throated diver	<i>Gavia stellate / artctica</i>		1		1	2
Northern Fulmar	<i>Fulmarus glacialis</i>	26	23	4	3	56
Northern Gannet	<i>Morus bassanus</i>	31	9	1	8	49
Common Gull	<i>Larus canus</i>	2	2		8	12
Lesser Black-backed Gull	<i>Larus fuscus</i>	2	4		1	7
Herring Gull	<i>Larus argentatus</i>	9	30	4	26	69
Great Black-backed Gull	<i>Larus marinus</i>	21	6	2	16	45
Black-legged Kittiwake	<i>Rissa tridactyla</i>	163	107	25	35	330
Common Guillemot	<i>Uria aalge</i>	102	162	9	113	386
Common Guillemot / Razorbill	<i>Alca torda / Uria aalge</i>	26	1	1	5	33
Razorbill	<i>Alca torda</i>	26	4		6	36
Little Auk	<i>Alle alle</i>	1		3		4
Atlantic Puffin	<i>Fratercula arctica</i>	2				2
Total		413	349	49	222	1033

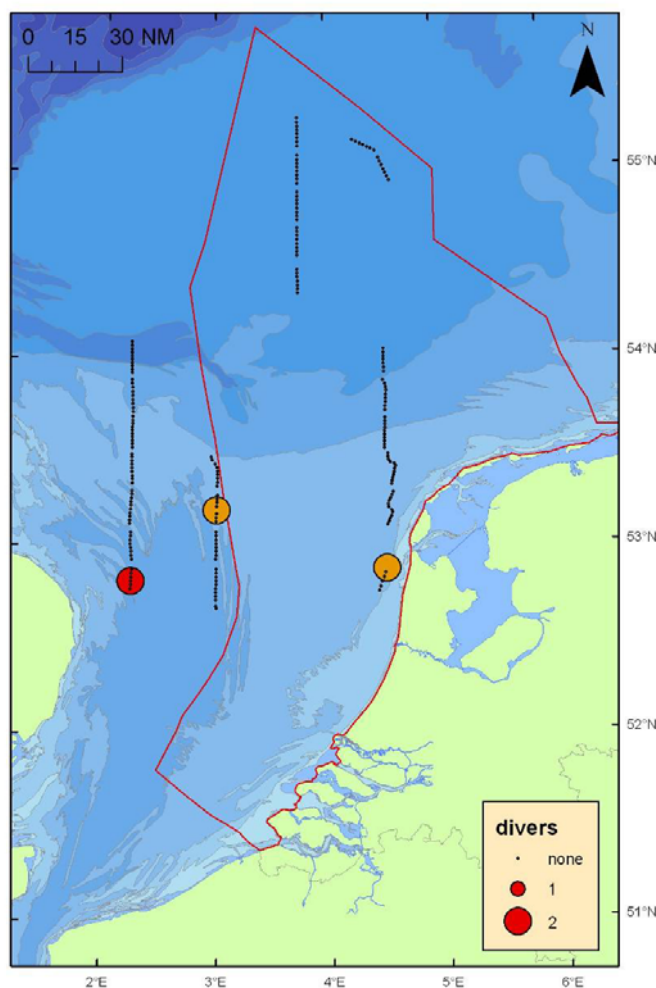
		Day in January				
Species		11	12	13	14	total
Mammals						
unidentified dolphin			2			2
Harbour Porpoise	Phocoena phocoena		2	1	2	5
Grey Seal	Halichoerus grypus	1				1
Total		1	4	1	2	8
Other						
Balloon			2		1	3
Counts with no birds/mammals		6	4	24	6	40
Counts with birds/mammals		56	32	29	50	167

3.3 Distributions

On the distribution maps on the next pages, the margin of the Dutch Continental Shelf (DCS) is indicated by a red line and on-effort (=sailing while surveying seabirds and marine mammals) indicated by grey dots. Depth contours are represented in blue shades.

1. Rare birds

During the previous surveys several bird species were seen in sufficient numbers to warrant a distribution map in the cruise report. In winter some species largely or wholly reside outside the study area and number of sightings are too few to map.



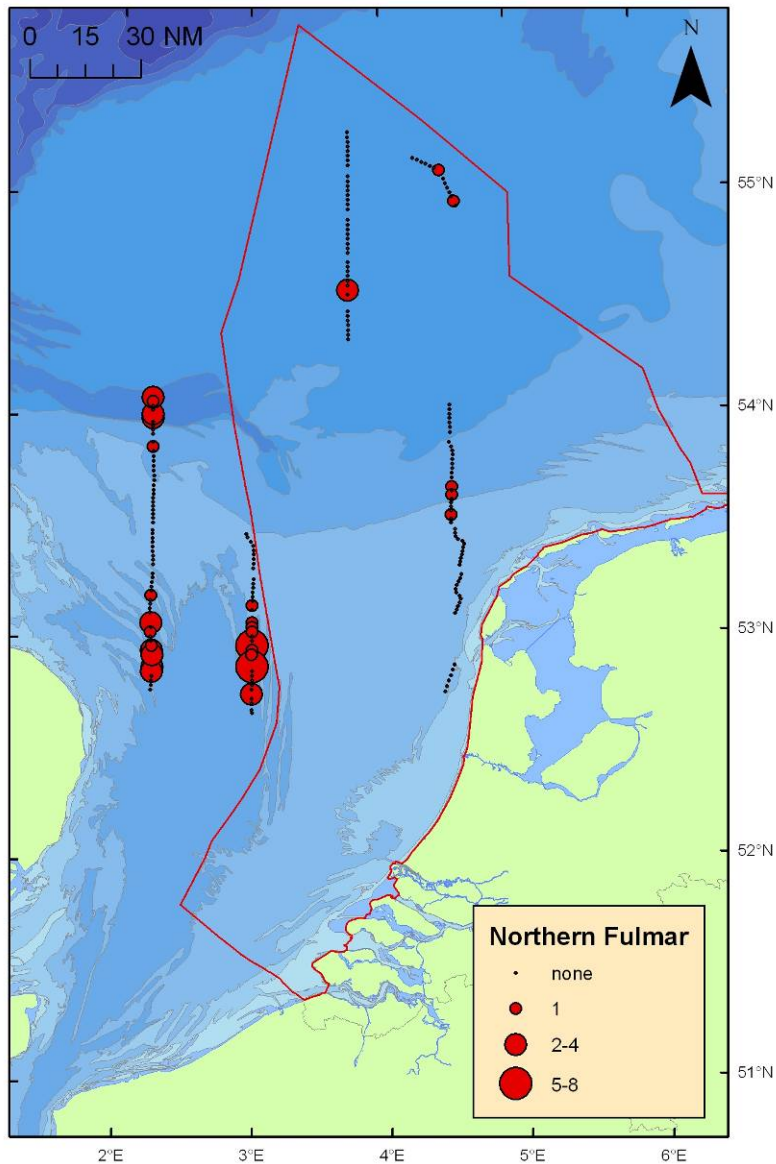
Records worth mentioning are two unidentified large divers (White-billed - *Gavia adamsii* or Great Northern Diver *G. immer*) flying away for the approaching observer vessel near Winterton Ridge (NE of Yarmouth). In April 2010 one adult summer white-billed diver was seen at Elbow spit (Dogger Bank) (Leopold *et al.* 2010).

Besides also two single small unidentified divers (Red-throated *G. stellata* or Black-throated diver *G. arctica*) were seen.

Red= White-billed- or Great Northern Diver, orange = Red - or Black throated Diver

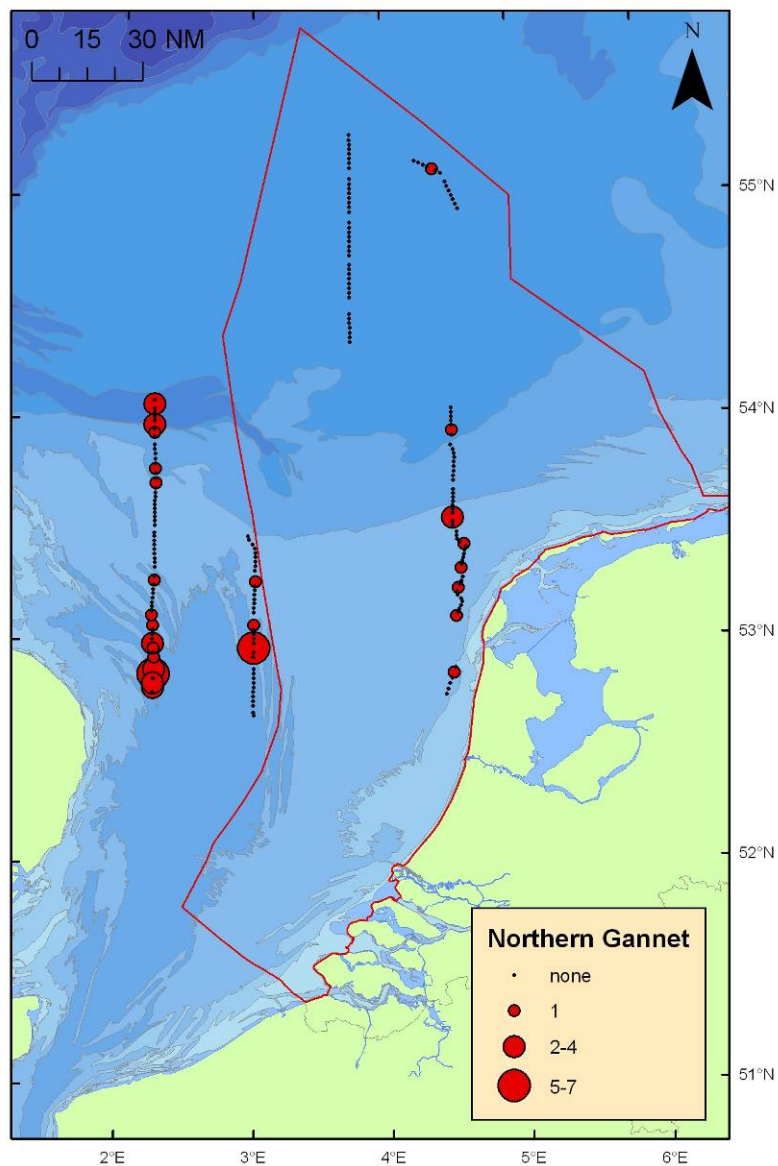
2. Northern Fulmar

Fulmars were mostly seen in deeper waters west of the Dutch Continental Shelf. Most birds belonged to the light colour-phase; six birds belonged to the dark morph which breeds mainly in the Arctic.



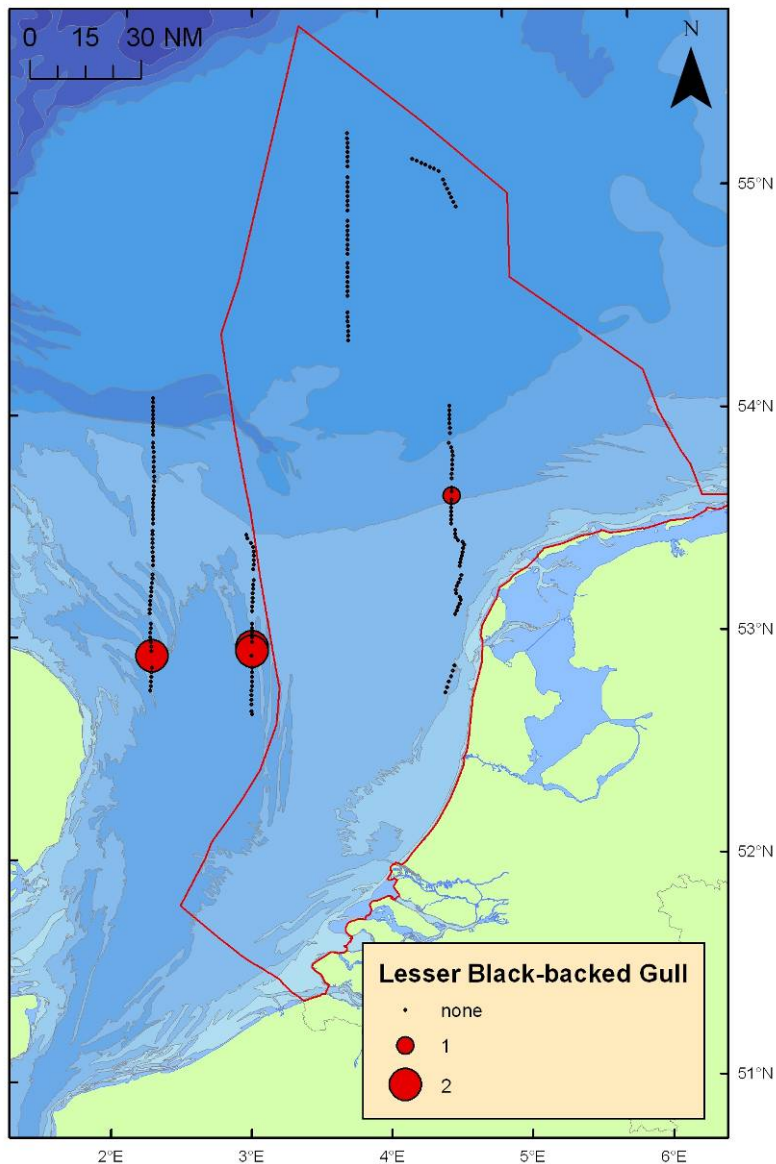
3. Northern Gannet

Most Northern Gannets were seen along the westernmost transect. Minor concentrations were seen west of the Wadden Sea Islands. Surprisingly, gannets were almost absent at the Oystergrounds. Gannets were mostly seen as singles or in small groups. Most were seen flying without a clear heading, apparently searching for prey. Besides a few individuals in age class I4 (immature 4 years) all observed gannets were adults.



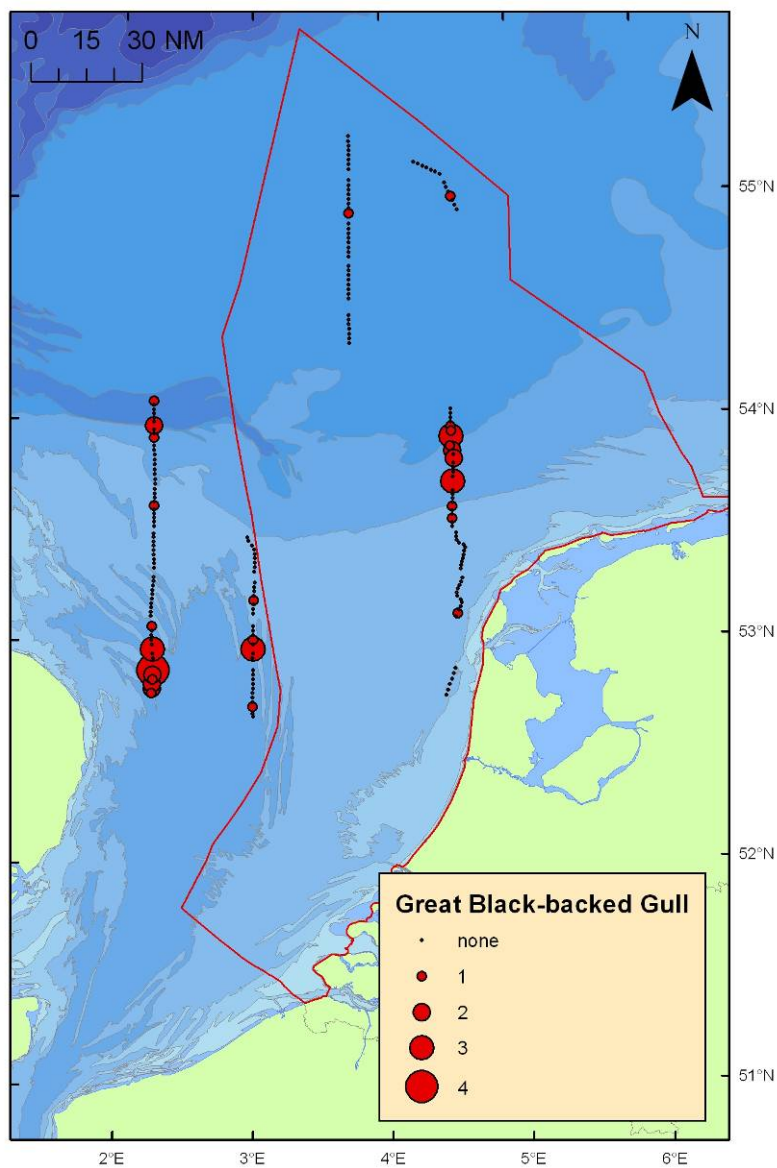
4. Lesser Black-backed Gull

Lesser Black-backed Gulls winter in the south, however some stay near the breeding grounds and others return very early in the year. Therefore low densities can be recorded in winter. For instance in the period December –January 1985-1993 70 animals were observed in the shown area (2.156 km² surveyed, mean density 0.03 / km²) (Camphuysen & Leopold 1994). Therefore a total of seven animals this time (141 km² surveyed mean density 0.05 / km²) is higher than on average.



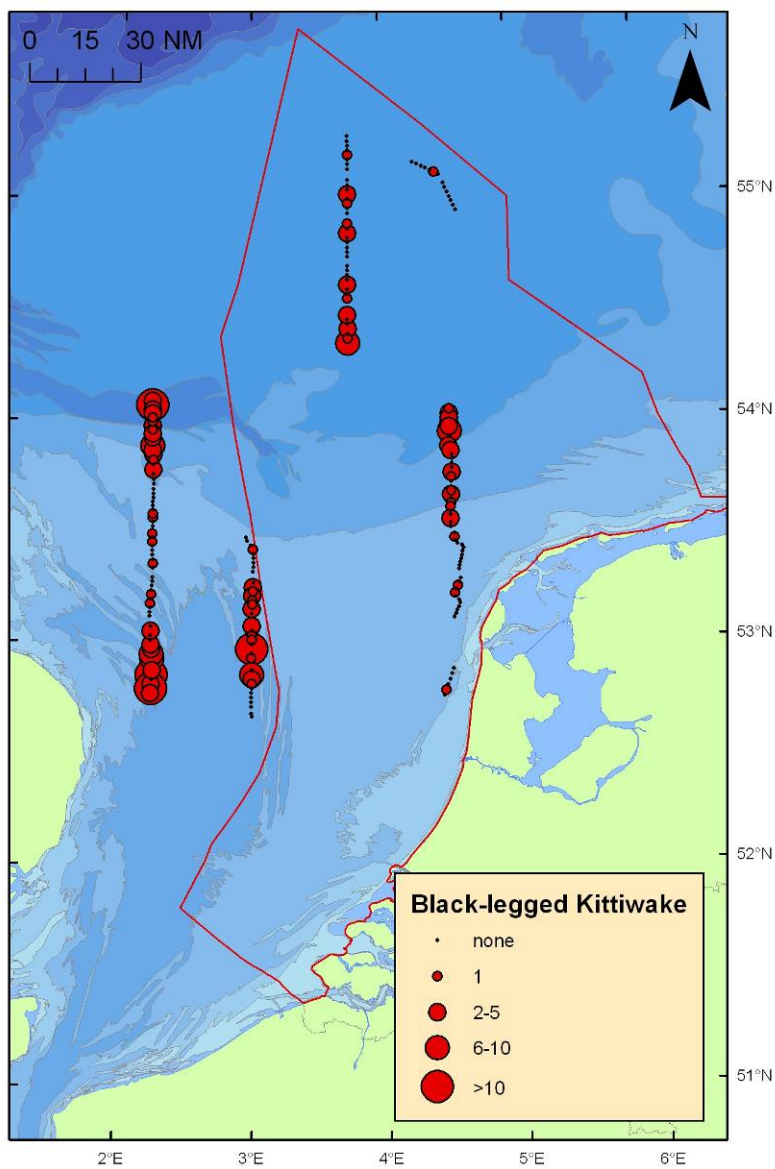
5. Great Black-backed Gull

Normally, highest number are seen in winter. However this time just 45 Great Black-backed Gulls were counted meaning ($0,3 / \text{km}^2$) clearly less than during the surveys in October ($4,5 / \text{km}^2$) and November ($2,5 / \text{km}^2$) and also even less than in December ($0,5 / \text{km}^2$). The highest densities during this trip were found at the Frisian Front and near Owers Bank.



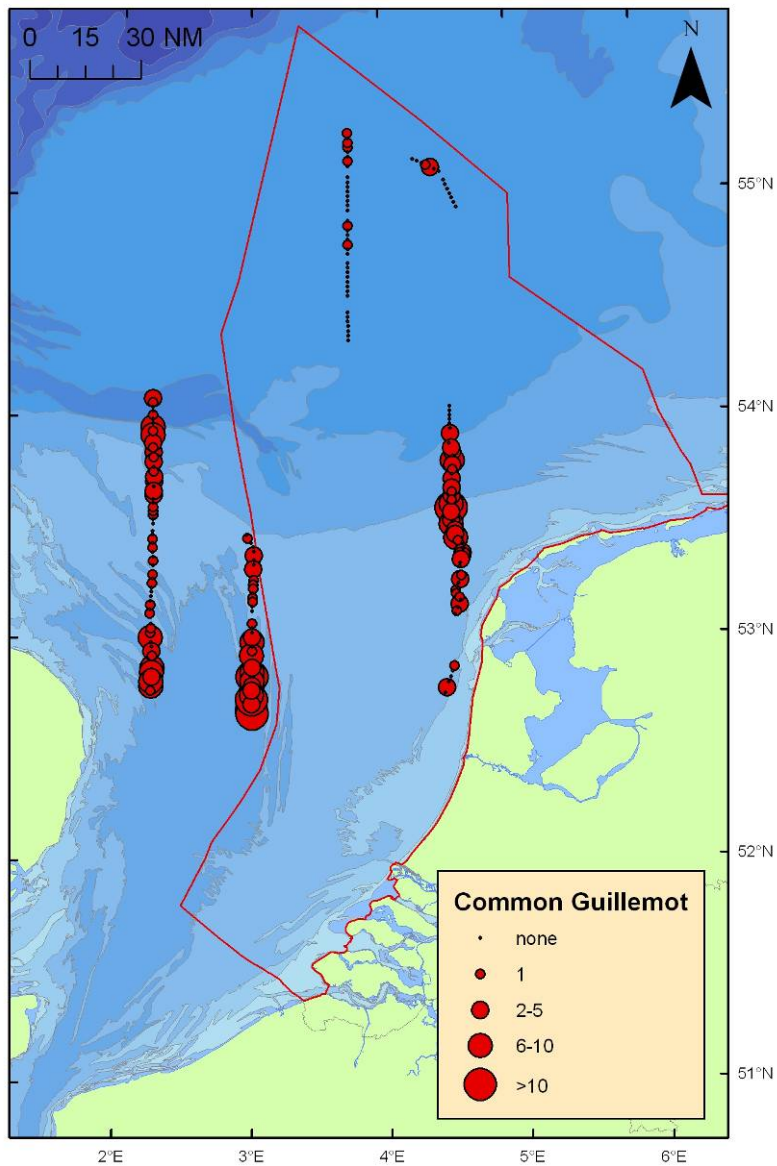
6. Black-legged Kittiwake

Black-legged Kittiwakes were widely distributed along the track lines. The highest densities were found near the Outer Silver Pit, Owers Bank and west of the Brown ridge but this species was also present at the Frisian Front and Oyster grounds. Remarkably, 42% of the aged animals as immature while 20% is normal (Camphuysen & Leopold 1994).



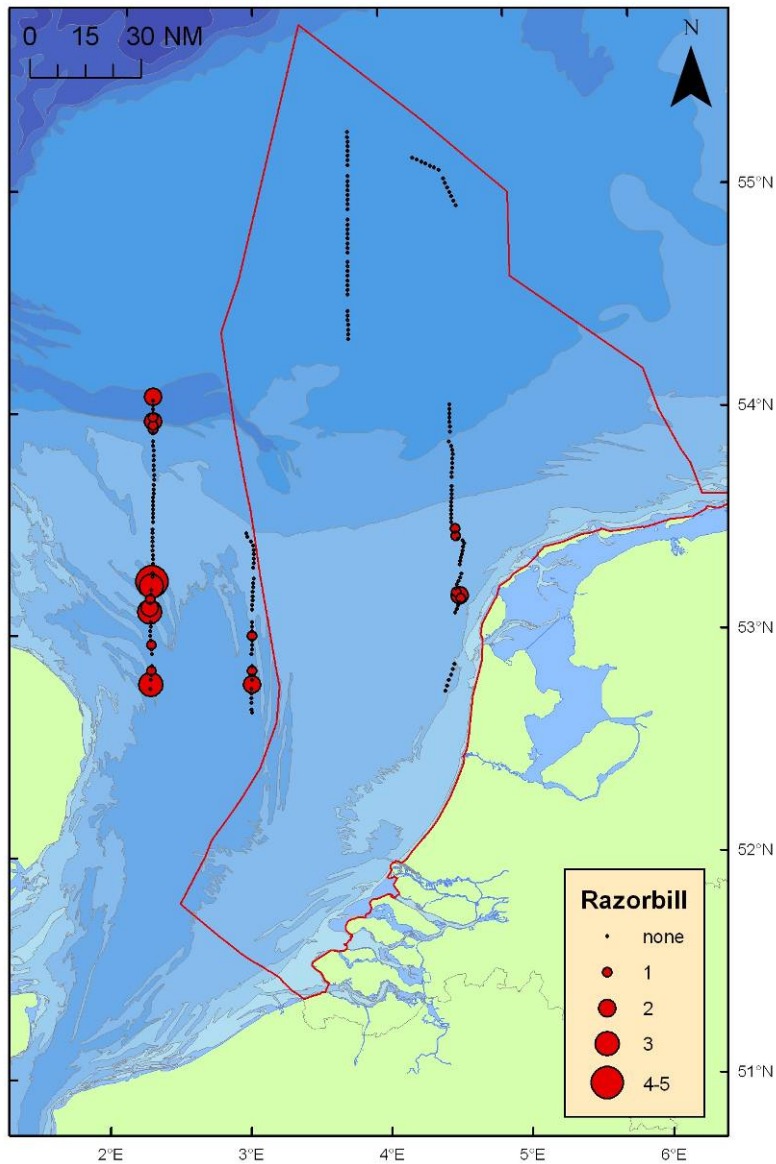
7. Common Guillemot

At the Oystergrounds Guillemots were relatively rare. Most animals were seen at - and south of the Frisian Front, south of the Outer Silver pit and west of the Brown ridge. The majority of Guillemots were already in breeding plumage (64%, n = 160).



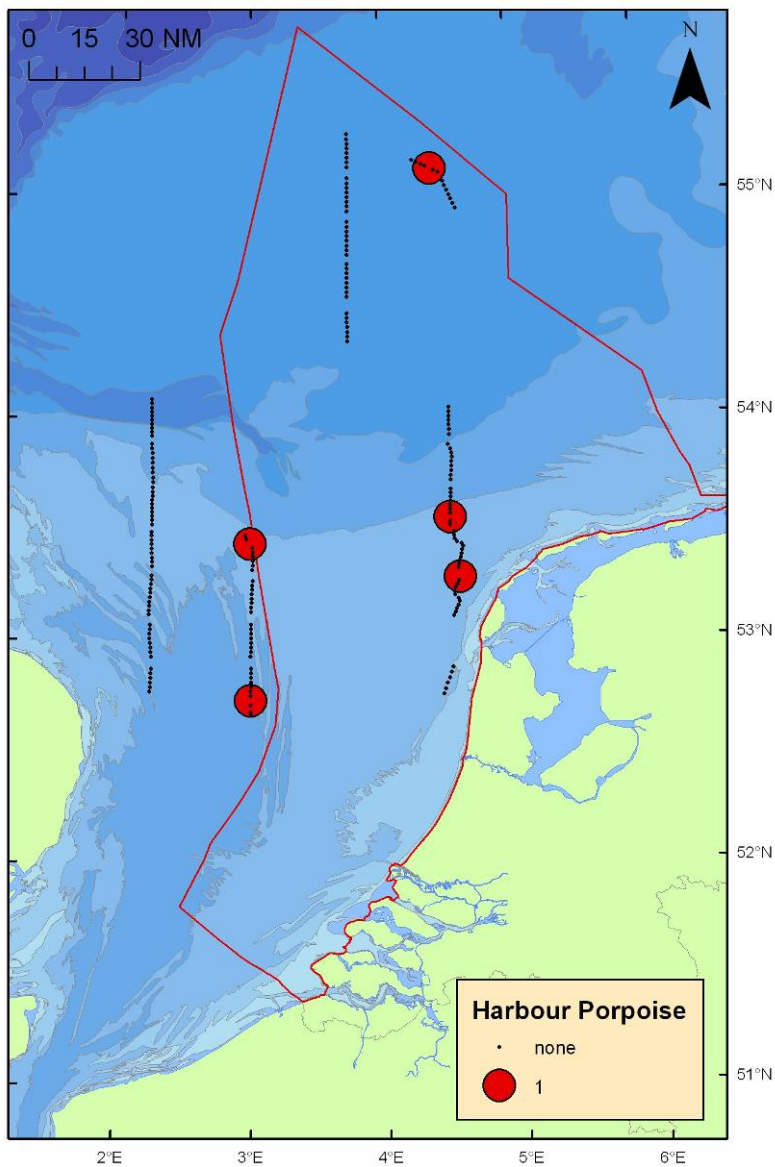
8. Razorbill, Atlantic Puffin and Little Auk

Razorbills were generally seen along the most westerly transect line and were clearly absent from the Oystergrounds. Only two Puffins were seen; near Outer Silver Pit area. In total four Little Auks were observed of which three were seen at the Oystergrounds.



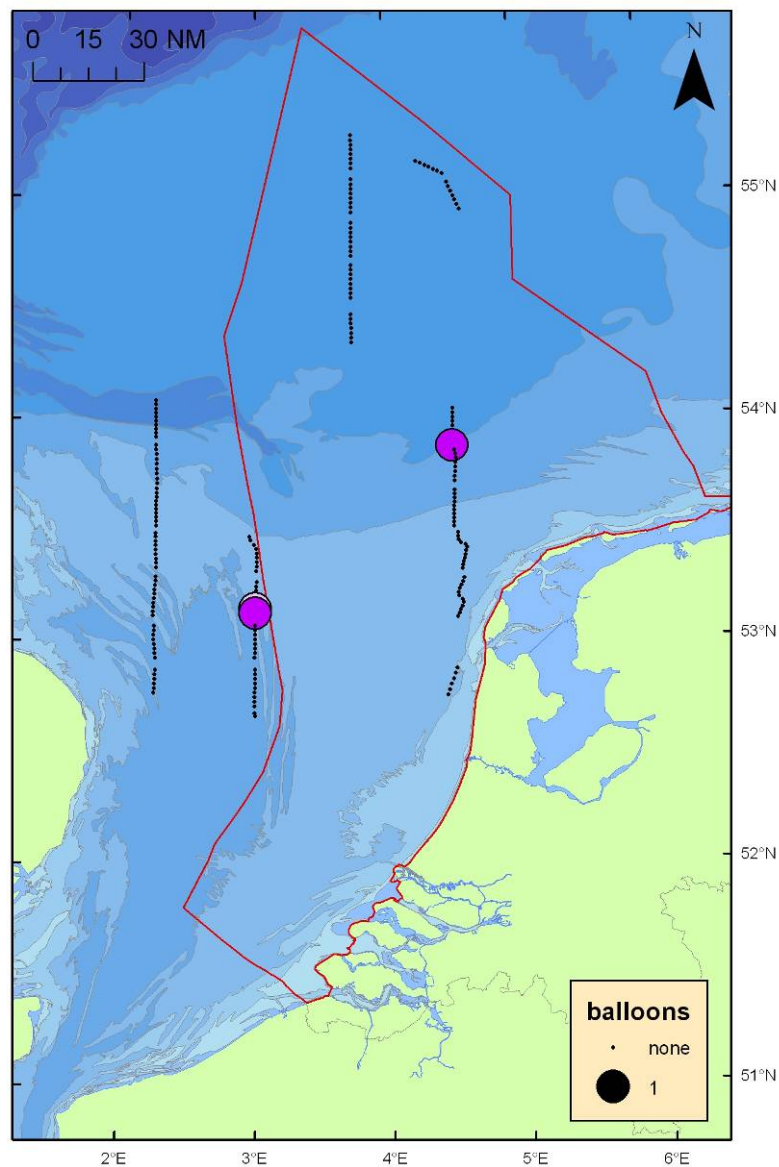
9. Harbour Porpoise

Harbour Porpoises were difficult to spot under the prevailing weather conditions. In total, five animals were seen, widely distributed over the survey area. Best sighting conditions for harbour porpoises are during seastate 2 or less. During the January survey seastate was mainly 3 or higher (77% of survey time). However two porpoises were seen during seastate 3 and three during seastate 5 while none were seen during the seastate 2 conditions.



10. Balloons

Only three balloons were seen across the study area showing that it is no "balloon season".



The colour gives the (main) colour of the balloons.

4 Conclusions

This 10th survey was more successful than the previous two (November and December). Weather conditions were mostly average but the survey was not broken off due to bad weather and therefore in total 141 km² could be surveyed with 80% under seastate condition four or less.

Bird- and marine mammal ship-based surveys on the Dutch Continental Shelf in January are very scarce and knowledge on winter distribution therefore is limited. The most important findings of this cruise were that in January species richness is quite poor and especially at the Oystergrounds numbers are very poor.

5 Acknowledgements

We like to thank Rijkswaterstaat (Ministry of Infrastructure and the Environment) for the opportunity of conducting these surveys, that will add substantially to our knowledge of the occurrence of seabirds on the DCS and adjoining waters. Despite the constraints for observations working on board of the MS Tridens was a pleasant experience, due to the good working conditions supported by the captain and crew of the Tridens, by the RWS 'meetleider' and by our fellow IMARES scientists.

6 Quality Guarantee

IMARES utilises an ISO 9001:2008 certified quality management system (certificate number: 57846-2009-AQ-NLD-RvA). This certificate is valid until 15 December 2012. The organisation has been certified since 27 February 2001. The certification was issued by DNV Certification B.V. Furthermore, the chemical laboratory of the Environmental Division has NEN-AND-ISO/IEC 17025:2005 accreditation for test laboratories with number L097. This accreditation is valid until 27 March 2013 and was first issued on 27 March 1997. Accreditation was granted by the Council for Accreditation.

7 References

- BirdLife International, 2004. Detailed species account from Birds in Europe: population estimates, trends and conservation status (BirdLife International 2004)
- BirdLife International, 2011. Species factsheet: *Gavia adamsii*. Downloaded from <http://www.birdlife.org> on 17/01/2011. Recommended citation for factsheets for more than one species: BirdLife International (2011) IUCN Red List for birds. Downloaded from <http://www.birdlife.org> on 17/01/2011.
- Camphuysen, C.J. & M.F. Leopold, 1994. Atlas of seabirds in the southern North Sea. IBN Research report 94/6, Nioz-report 1994-8.

Cruise reports

- Leopold M.F., Verdaat H. & van Bemmelen R. 2010. Masterplan Wind – Seabirds. Cruise Report **April** 2010. IMARES Report C054/10.
- Leopold M.F. & R. van Bemmelen, 2010. Masterplan Wind – Seabirds. Cruise Report **May** 2010. IMARES Report C065/10.
- Geelhoed S.C.V. & H. Verdaat, 2010. Masterplan Wind – Seabirds Cruise Report **June** 2010. IMARES Report C091/10.
- Bemmelen, R. van & G.O. Keijl, 2010. Masterplan Wind – Seabirds Cruise Report **July** 2010. IMARES Report C092/10.
- Geelhoed S.C.V. & G.O. Keijl, 2010. Masterplan Wind – Seabirds Cruise Report **August** 2010. IMARES Report C111/10.
- Leopold M.F. & R.H. Witte, 2010. Masterplan Wind – Seabirds. Cruise Report **September** 2010. IMARES Report C116/10.
- Geelhoed S.C.V. & H. Verdaat, 2010. Masterplan Wind – Seabirds Cruise Report **October** 2010. IMARES Report in prep
- Leopold M.F. & H. Verdaat, 2010. Masterplan Wind – Seabirds. Cruise Report **November** 2010. IMARES Report in prep
- Geelhoed S.C.V. & R.H. Witte, 2010. Masterplan Wind – Seabirds Cruise Report **December** 2010. IMARES Report in prep

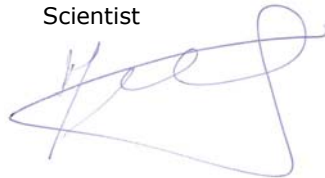
8 Justification

Rapport C012/11
Project Number: 430.25015.02

The scientific quality of this report has been peer reviewed by the a colleague scientist and the head of the department of IMARES.

Approved: MF Leopold
Scientist

Signature:



Date: 2 February 2011

Approved: Drs. J. Asjes
Head of Department

Signature:



Date: 2 February 2011

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