Masterplan Wind – Seabirds
Cruise Report February 2011

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Report C017/11

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Cover Photos: Razorbills in moderate sighting conditions (Steve Geelhoed)
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Summary

Rob van Bemmelen & Steve Geelhoed, 2011.
Masterplan Wind – Seabirds. Cruise Report February 2011.
IMARES Report C017/11 30 pp.

This cruise report provides an overview of the 11th survey in a series of seabirds at sea surveys that was carried out in 2010 and 2011 over the Dutch Continental Shelf (DCS) of the North Sea and adjoining waters. This 11th survey in the series was carried out in February 2011 on board the Arca. 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, with a speed ranging from 10-15 knots. During all daylight hours while the ship was steaming seabirds and marine mammals were surveyed.

Seabirds could be surveyed during virtually all daylight hours. A total of 398 counting bouts of on average five-minutes each were conducted. These stretched over a total of 772.4 km and covered, at a strip width of 300 m (and a small part at 200m), a total survey area of 230.9 km^2 (Table 1). With seastates of mostly 4-5 Bft, weather conditions were mostly moderate, with some stretches of good conditions.

A total of 3198 birds of 25 species, 49 marine mammals or three species, and 11 balloons were recorded (Table 3). Given the relatively good to moderate conditions, the collected data is of good quality to assess seabird distributions. This is also shown by the detectability of swimming alcids, which was similar to previous surveys. The rare sighting of a Yellow-billed Diver might not be attributable to vagrancy – there is growing evidence for a small wintering population on the Dogger Bank. Common Guillemots were widespread with local concentrations. Razorbills were locally common and feeding flocks were frequently visited by Black-legged Kittiwakes. Nearly all sightings of Harbour Porpoises were from the southern half of the DCS.

1 Introduction

This cruise report presents the seabird and marine mammal data collected on board the Arca during the 11th "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.

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).

3 Results

3.1 Narrative

Monday 14-02-2011

The Arca left Scheveningen harbour ca 8.30 hrs and headed south to Belgian waters. The survey started after the first sampling station, and continued almost till sunset. Counting period 9.08-17.55 hrs. Sighting conditions were good till the afternoon with a seastate 2-3 and rain in the morning, followed by a seastate 2 and some sunshine till late afternoon. The last 2.5 hrs the wind increased, resulting in a seastate 3-4. Good numbers of Gannets, with a high proportion of resting animals. Others were seen actively searching or diving, sometimes in association with Harbour Porpoises of which 19 individuals were seen.

Tens of Red-throated Divers were encountered off the Dutch Delta and in Belgian waters. Numbers of Razorbills and Guillemots increased on the western (north-bound) leg of the survey. Four Starlings were the first signs of spring migration, as were 15 Lesser Black-backed Gulls.

Tuesday 15-02-2011

Northbound crossing the Dogger Bank towards the northern tip of the DCS. Counting period 8.17-17.15 hrs. Sighting conditions were moderate most of the day, with a seastate increasing from 4 till 5 Beaufort. In the morning the counting strip width was limited to 200 meter instead of the standard 300 meter strip width, when passing an area with dense fog. Afterwards the visibility improved considerably. Good numbers of auks (456 Guillemots and 157 Razorbills) were seen around the Dogger Bank, with 38 Puffins and 13 Little Auks worth mentioning. The larger auks were often accompanied by Black-legged Kittiwakes. The latter were often a good cue for the observers to find the auks. A White-billed Diver was picked up in front of the ship and could be seen well, when the ship passed at less than 200 meters. The virtual absence of Fulmars was remarkable. A lone Lapwing, Skylark, Redwing and Fieldfare were signs of spring migration. Despite the sighting conditions two Harbour Porpoises were seen.

Wednesday 16-02-2011

Going south in the central North Sea, and back north again. The seastate decreased from 4 to 2 Beaufort in the afternoon, resulting in good sighting conditions. Unfortunately, the equipment for the plankton survey had to be calibrated in the late afternoon. Therefore the sailing speed was reduced to 5 knots, rendering a bird survey impossible. Counting period: 8.17-16.56 hrs. Birds were patchily distributed, with some concentrations of large auks around the southern end of the Brown Ridge. A large proportion of the auks, in particular the Razorbills, were again associated with Kittiwakes. Some Little Gulls were seen, as well as 11 Lesser Black-backed Gulls. Harbour Porpoises were patchily distributed, with a few sightings before lunchtime, and the majority in the late afternoon.

Thursday 17-02-2011

Thursday started with dense fog, but the visibility improved during the day. The seastate on the other hand deteriorated from a 'small' 4 to 5 Beaufort in the afternoon. The vessel sailed from the northern tip of the DCS southeast and east towards the German border. Counting period: 9.41-17.24 hrs. Birds were scarce along most stretches. Some higher densities of Guillemots, with the odd Puffin or Razorbill, were noticed along the eastern flank of the Dogger Bank. Again no Fulmars, and no Harbour Porpoises. The latter could be largely contributed to the sighting conditions.

Friday 18-02-2011

One transect from NW of Texel to Scheveningen harbour, where the ship arrived at 20 hrs. A gloomy day, with an overcast sky, poor visibility and a seastate 4, decreasing to 3 in the afternoon. Sighting

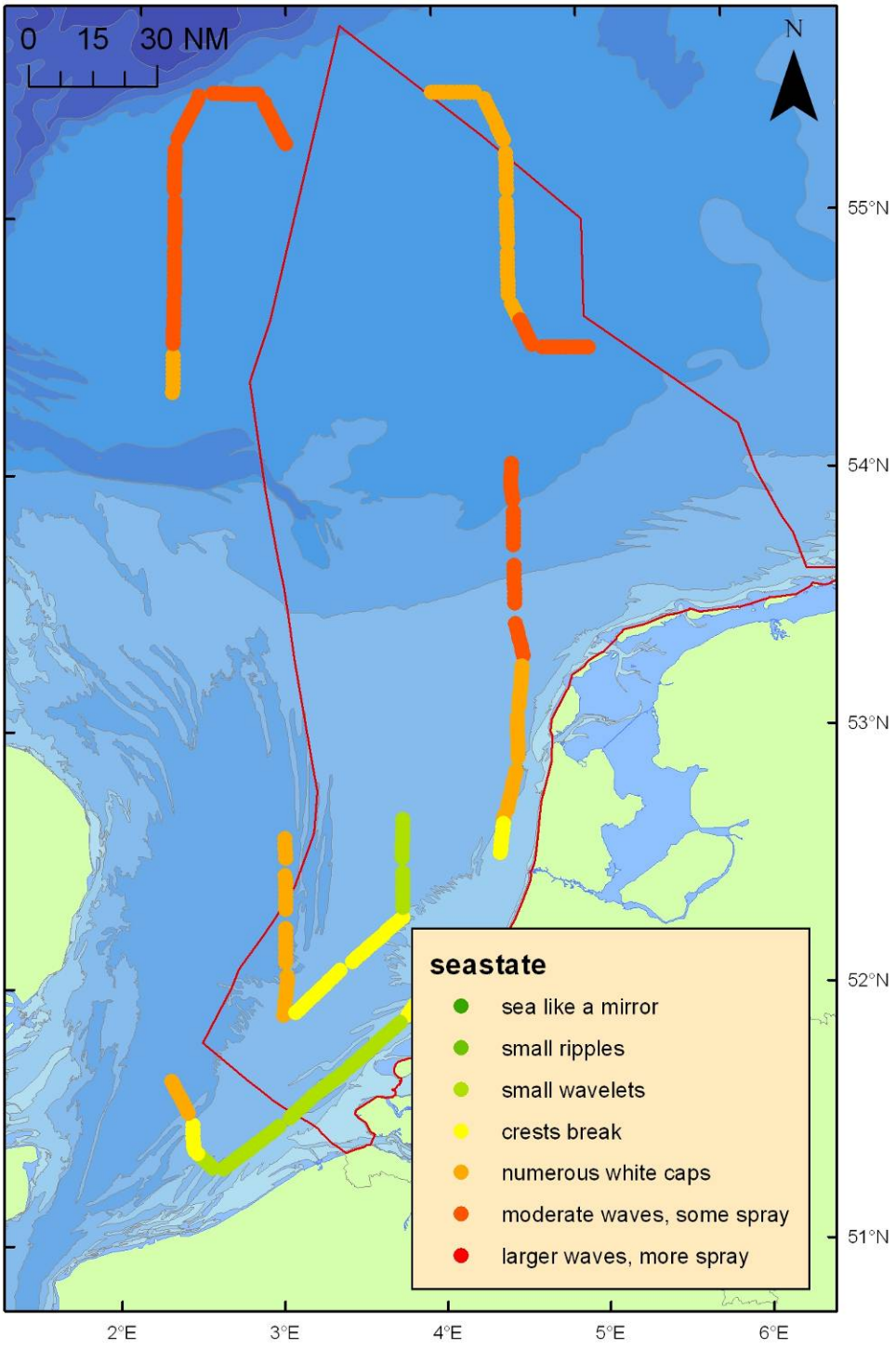
conditions were moderate. Counting period: 8.40-17.00 hrs. Birds were scarce along most stretches. Some patches of Razorbills, accompanied by Kittiwakes, Common Gulls or Little Gulls, were seen north and west of Texel. The last hour before sunset several resting Common Gulls were seen on the water off IJmuiden; the biggest group consisting of 230 individuals. Noteworthy are two Red-necked Grebes and a single, probable immature, Great Skua. Marine mammals were represented by a Grey Seal and five Harbour Porpoises.

3.2 Effort, conditions and sightings

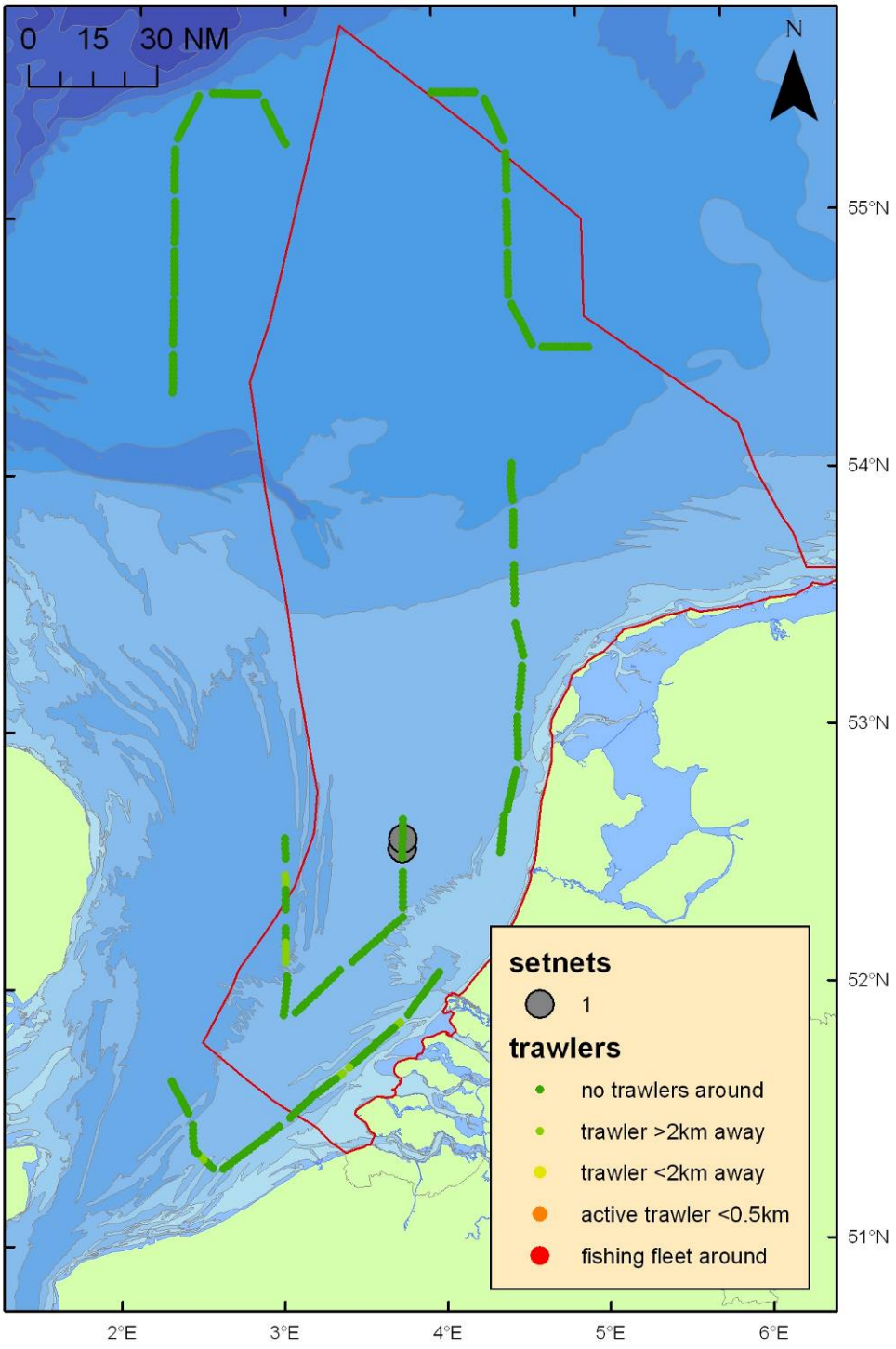
A total of 398 counting bouts of on average five-minutes each were conducted. These stretched over a total of 772.4 km and covered, at a strip width of 300 m (and a small part at 200m), a total survey area of 230.9 km^2 (Table 1). With seastates of mostly 4-5 Bft, weather conditions were mostly moderate, with some stretches of good conditions. Overleaf, the surveyed tracks are plotted against the seastates encountered along the route (first map), and the presence of active fishing (second map). A total of 3198 birds of 25 species, 49 marine mammals or three species, and 11 balloons were recorded (Table 2).

***Table 1**. Total survey effort per seastate.*

Seastate (Beaufort)	Surveyed area (km^2)	Surveyed distance (km)	Number of 5-minute counts
0			
1			
2	43.0	143.4	73
3	34.0	113.3	58
4	80.5	268.2	138
5	73.5	247.5	129
≥6			
	230.9	772.4	398



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 and set nets seen during the survey.*

***Table 2**. Summary of all birds, mammals and other items recorded during the counts.*

		Day in February					
Species		**14**	**15**	**16**	**17**	**18**	**total**
Birds							
Red-throated Diver	*Gavia stellata*	49				8	57
White-billed Diver	*Gavia adamsii*		1				1
Unidentified diver	*Gavia spec.*	2				3	5
Red-necked Grebe	*Podiceps griseigena*					2	2
Northern Fulmar	*Fulmarus glacialis*	3	1	4	23		31
Northern Gannet	*Morus bassana*	318	40	37	1	12	408
Eurasian Wigeon	*Anas penelope*					2	2
Gadwall	*Anas strepera*					2	2
Black Scoter	*Melanitta nigra*					5	5
Northern Lapwing	*Vanellus vanellus*		1				1
Great Skua	*Stercorarius skua*					1	1
Little Gull	*Hydrocoloeus minutus*	6		8		12	26
Black-headed Gull	*Croicocephalus ridibundus*			1			1
Common Gull	*Larus canus*	15	4	26	10	287	342
Lesser Black-backed Gull	*Larus fuscus*	15		11			26
Herring Gull	*Larus argentatus*	12	6	9	1	6	34
Great Black-backed Gull	*Larus marinus*	24	11	50	6	15	106
Black-legged Kittiwake	*Rissa tridactyla*	105	156	276	18	77	632
Common Guillemot	*Uria aalge*	188	427	254	130	63	1062
Razorbill / Common Guillemot	*Alca torda / Uria aalge*		4	1	8	1	14
Razorbill	*Alca torda*	25	157	81	13	95	371
Little Auk	*Alle alle*		13				13
Atlantic Puffin	*Fratercula arctica*		38		11		49
Eurasian Skylark	*Alauda arvensis*		1				1
Fieldfare	*Turdus pilaris*		1				1
Redwing	*Turdus iliacus*		1				1
Common Starling	*Sturnus vulgaris*	4					4
Number of individuals		766	862	758	221	591	3198
Number of species		12	15	11	9	14	25
Mammals							
Harbour Porpoise	*Phocoena phocoena*	19	2	20		5	46
Unidentified seal		1					1
Grey Seal	*Halichoerus grypus*					1	1
Harbour Seal	*Phoca vitulina*	1					1
Number of individuals		21	2	20	0	6	49
Number of species		2	1	1	0	2	3
Other							
Balloon			9	1	1		11
Counts with no birds/mammals		10	5	4		9	28
Counts with birds/mammals		76	80	71	73	68	368

3.3 Detection probabilities

Detection probabilities are reviewed here for birds that were seen mostly on or in the water (as opposed to in flight): Common Guillemots and Razorbills. The probability of detection of these birds generally declines with distance from the transect line. In addition, alcids often dive at the approach of the vessel. Recording distance from the transect line for each sighting allows estimation of the percentage of missed birds and therefore the estimation of the true number of birds present within the surveyed strip. Among the species recorded, only Common Guillemots, Razorbills and Atlantic Puffin were seen in sufficient numbers to produce detection probabilities (Table 3).

Note that this analysis is preliminary and does not include the estimation of factors potentially influencing the detection (beside distance from the transect line). These may include ship and seastate. In the final report, these factors will be included in the estimation of detection curves.

Table 3 *Numbers of sightings (irrespective of group size) of Common Guillemots and Razorbills, in relation to perpendicular distances during the entire January survey.*

	Distance band	Common Guillemot	Razorbill	Atlantic Puffin
Observed	A - 0-50m	188	72	11
	B - 50-100m	203	76	11
	C - 100-200m	316	80	16
	D - 200-300m	159	46	5
	Total seen	866	274	43
	3*AB	1173	444	66
Missed	C - 100-200m	75	68	6
	D - 200-300m	232	102	17
	Total missed	307	170	23
	Percentage missed	26	38	35

3.4 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.

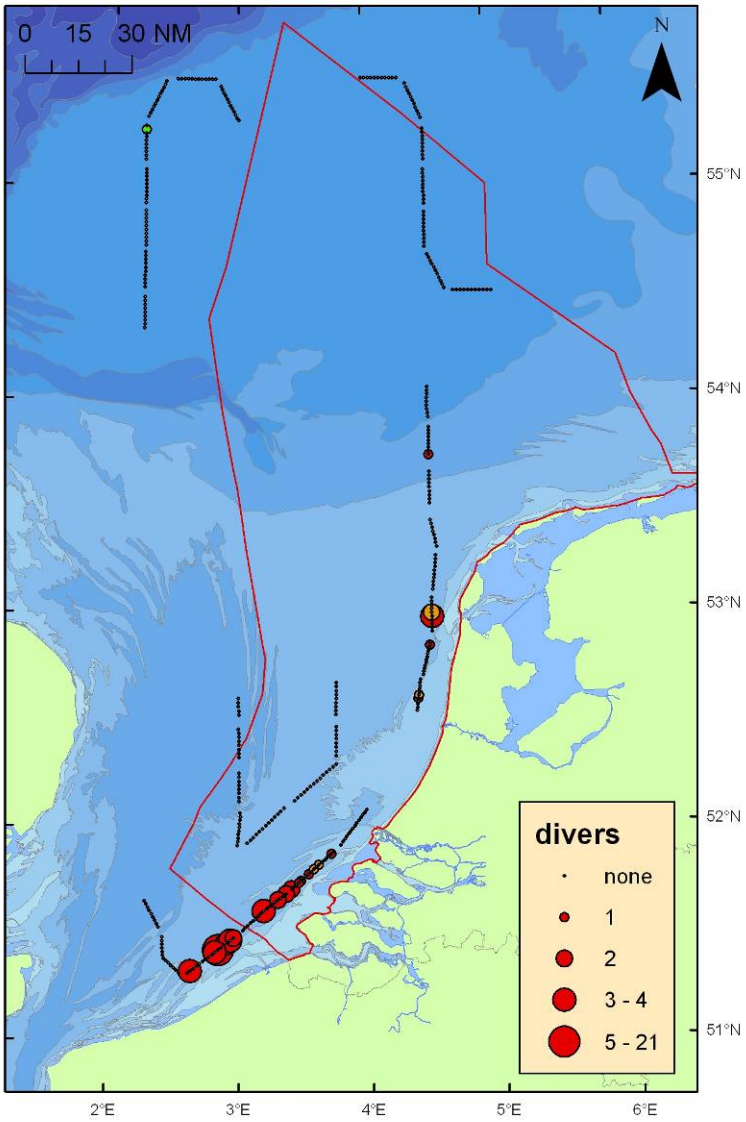
1. Rare species

   During the previous winter surveys several bird species were too scarce to warrant a distribution map in the cruise report. After the January survey, some species returned from their wintering grounds and were seen in sufficient numbers to present distribution maps. Noteworthy are observations of two Red-necked Grebes and a Great Skua on 18 February west of Texel.

2. Divers

Two species of divers were seen: Red-throated and White-billed Diver. Observations of Red-throated Divers were confined to the coastal zone of the Southern Bight and to a smaller extent southwest of Texel. As usual most were flushed form the sea surface by the approaching ship.

The White-billed Diver was seen on 15 February on the Dogger Bank. The bird was noticed in dorsal view in front of the ship, with both observers yelling *unisono* "Hey, what's that?! It's huge... White-bill!" The bird could be seen well when the ship passed at less than 200 meters (strip C). It seemed not disturbed by the ship at all, floating on the surface and looking a few times under water. It showed the typical build and shape of a large diver, with a big head held diagonally upwards. Distinctive plumage characters noted include the pale brown upperparts (with a hint of light scaling) and head, a distinctive, broad, dark collar (broken in the front), and a pale face and neck. The large bill was yellowish, with a small dark patch at the base of the culmen. The pale brown plumage indicate a first-winter bird.

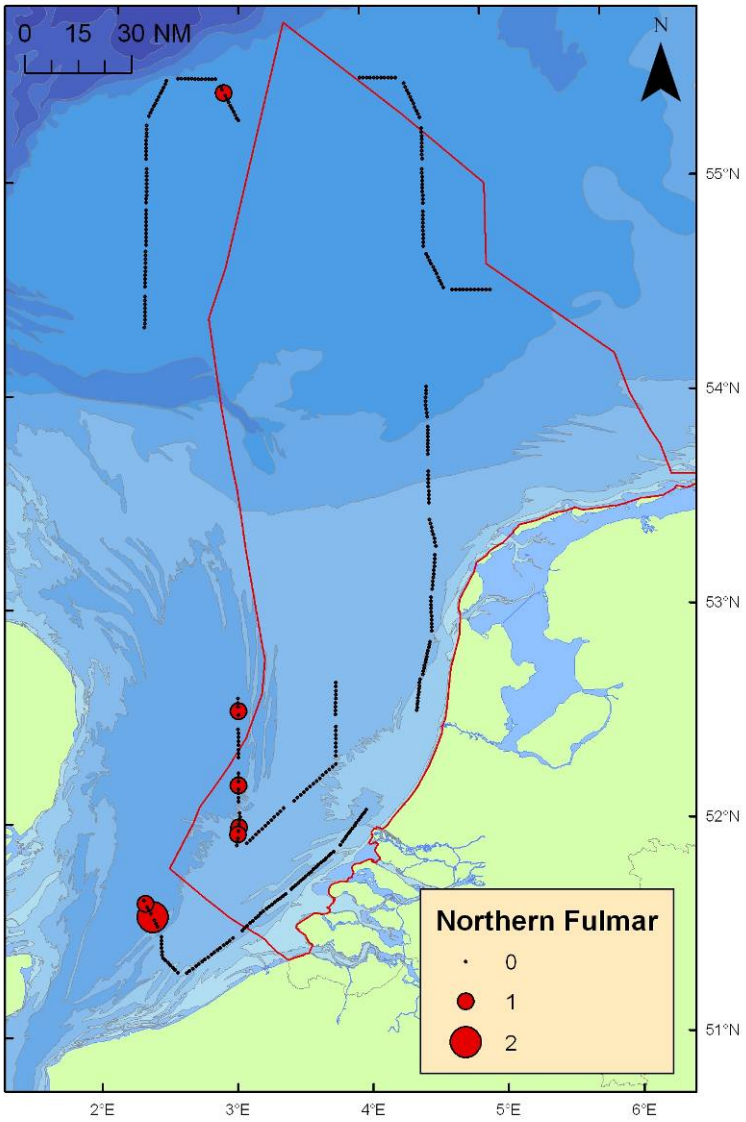


The record during the April 2010 survey and several records from British surveys in the Dogger Bank area (unpublished data), suggest the presence of a wintering area of this rare species. It is however unclear to what extent they occur on the Dutch part of the Dogger Bank. The species is known only as a vagrant in Dutch waters (van den Berg & Bosman 1999).

Divers Red dots shows Red-throated Divers, orange dots are unidentified small divers and the green dot at the Dogger Bank is the White-billed Diver.

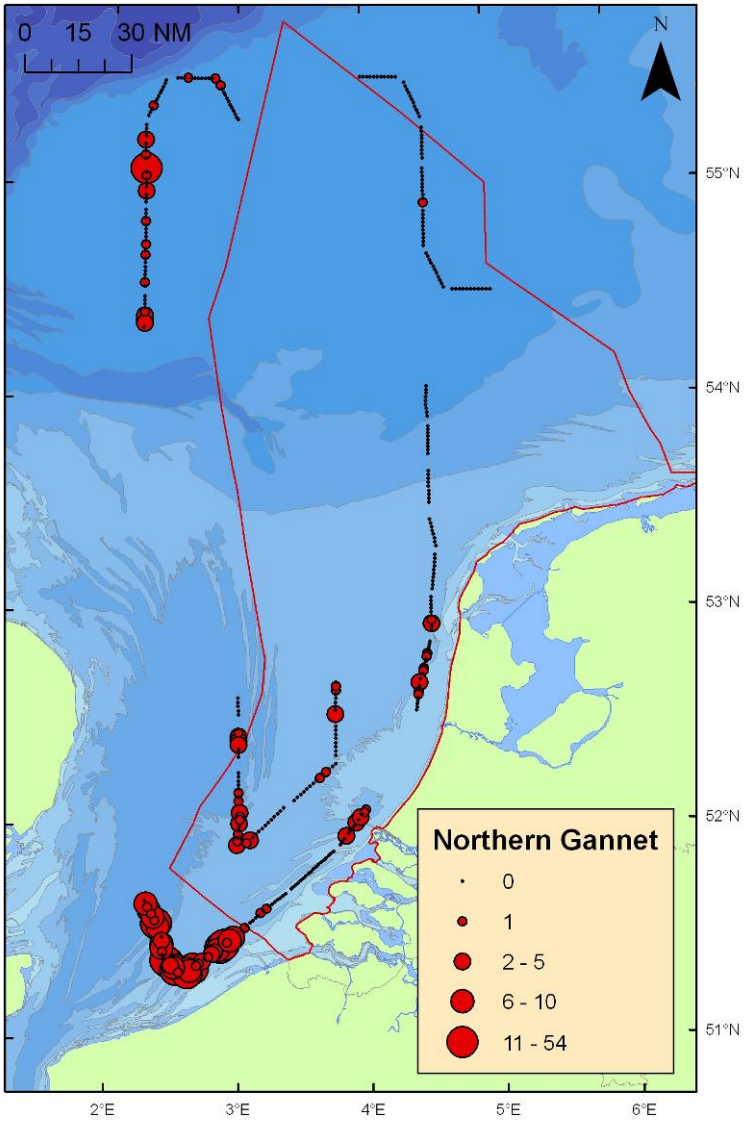
3. Northern Fulmar

Once again Northern Fulmars were very scarce, with only a few scattered records. Remarkably, the species was absent on the western transect and in the northern part of the study area, where highest numbers are usually found (van Bemmelen et al. 2010). Now, most individuals were seen in the southern parts of the area. All birds were of the light colour-phase.



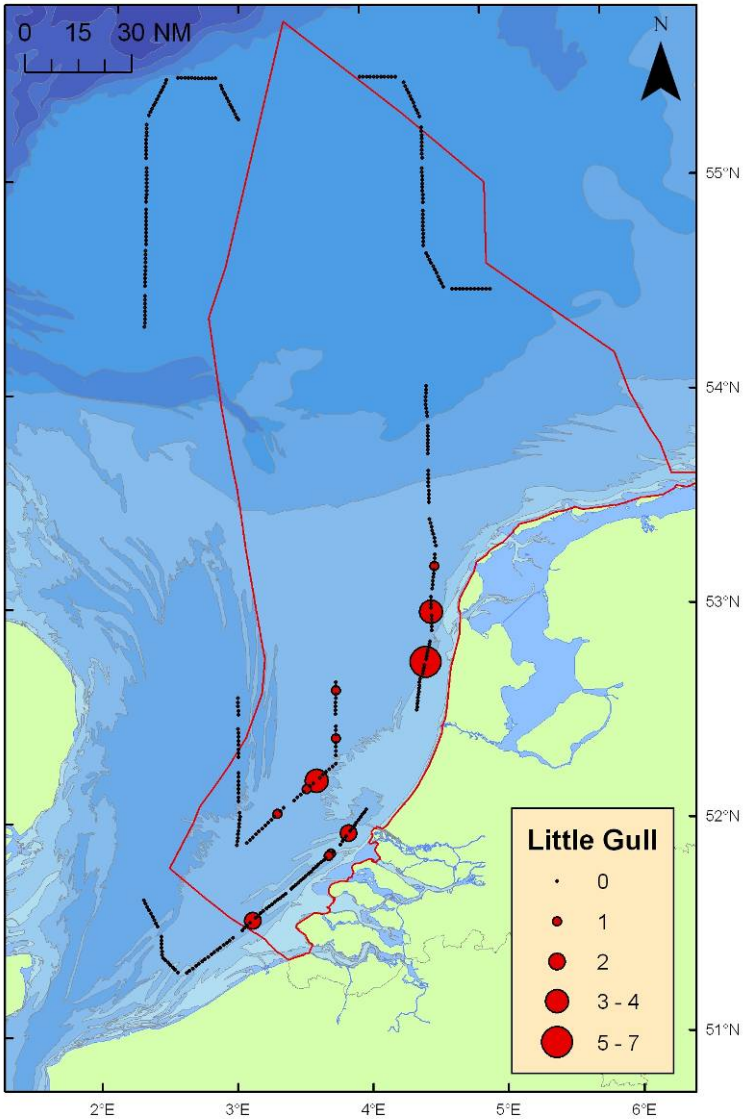
4. Northern Gannet

Most Northern Gannets were seen in the south-western part of the study area. Gannets were mostly seen as singles or in small groups. Most were seen flying without a clear heading, apparently searching for prey. The majority of the Gannets was adult (95%, n = 281). The remainder were mainly older immatures.



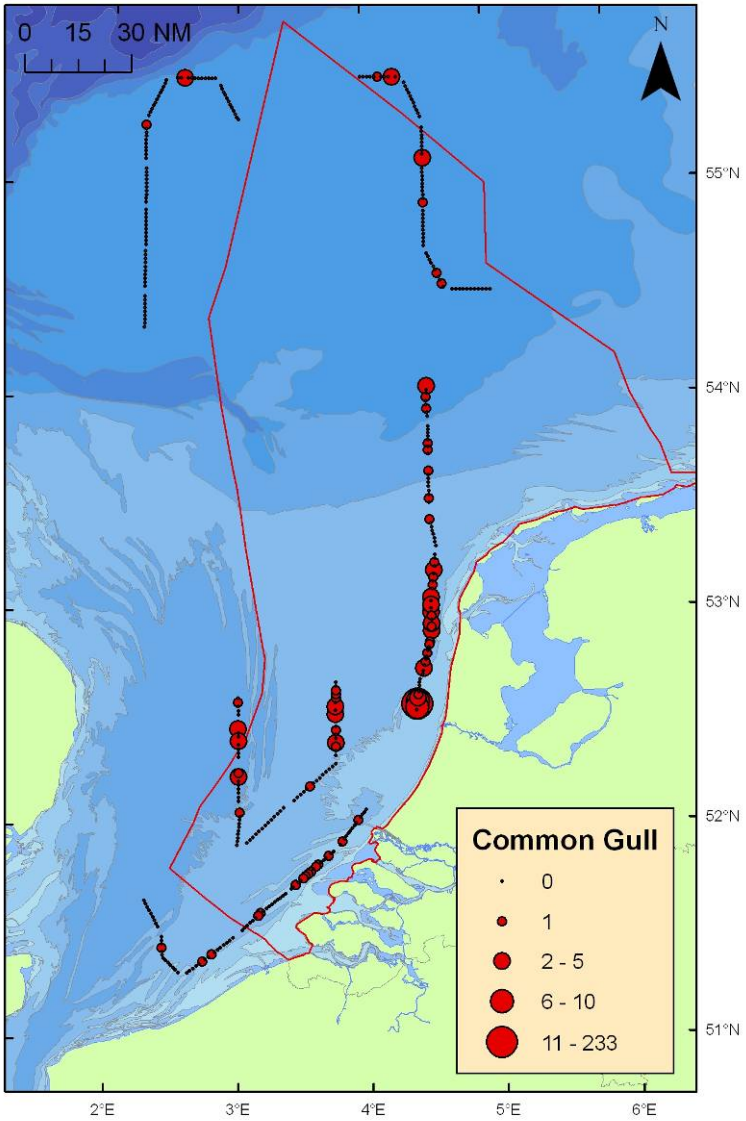
5. Little Gull

Small groups and single Little Gulls were seen in nearshore waters of the Southern Bight. Some of these associated with feeding Razorbills.



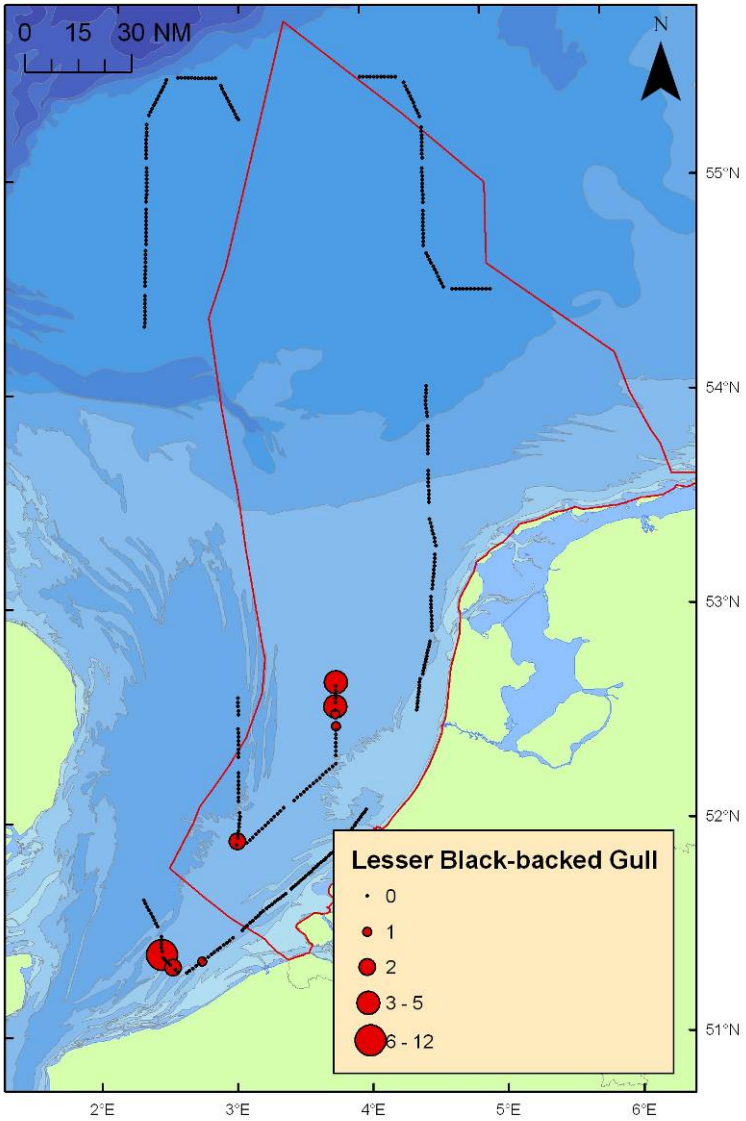
6. Common Gull

Common Gulls were common, even occurring in far offshore areas of the Dogger Bank and the Oystergrounds. In the late afternoon of 18 February, a large roosting flock of 230 birds (and several smaller flocks) were seen northwest of IJmuiden.



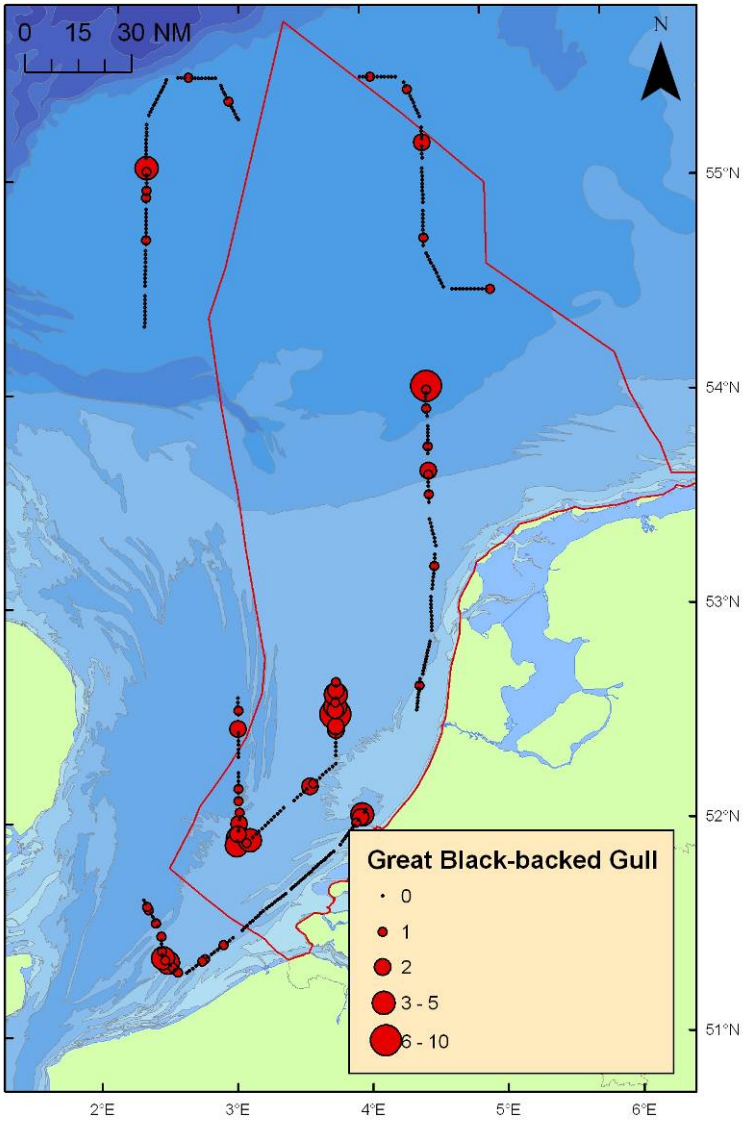
7. Lesser Black-backed Gulls

Though the numbers were still low, Lesser Black-backed Gulls were more numerous than the previous surveys. Records were restricted to the southern part of the DCS. The species is virtually absent in winter in the North Sea, wintering mostly on and around the Iberian peninsula. Returning adults can be seen from February onwards. All aged individuals were adult (n = 26), most likely breeders returned from their wintering grounds.



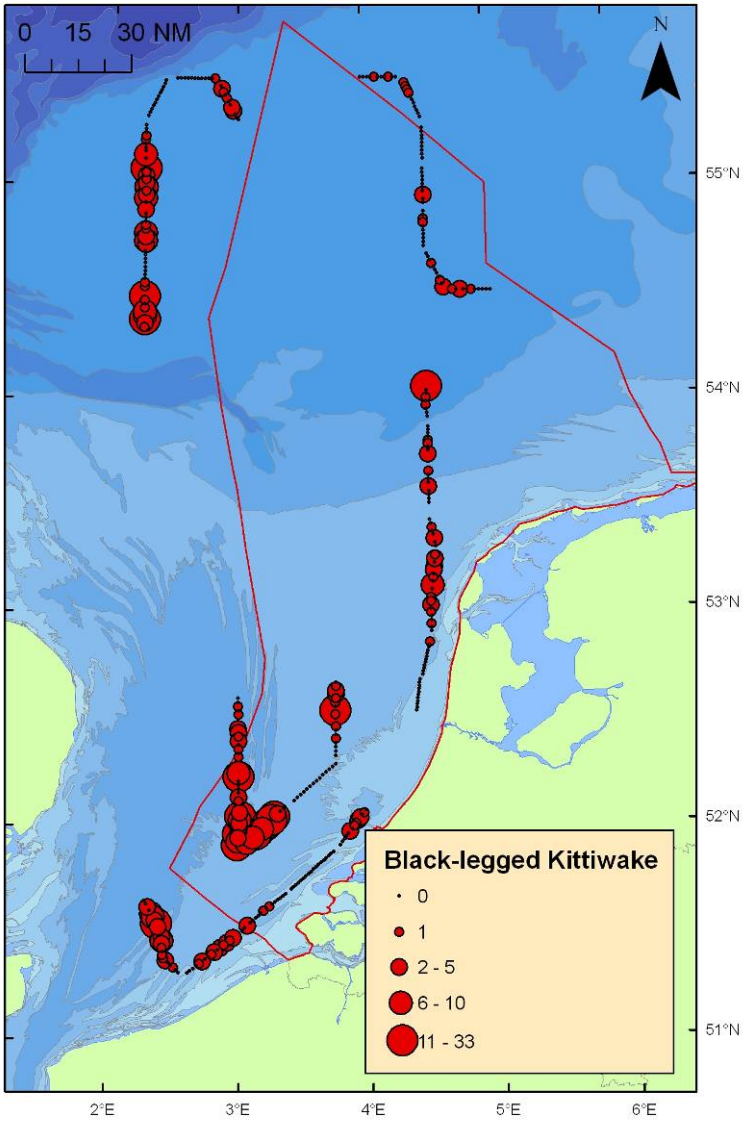
8. Great Black-backed Gull

The highest densities and most regular distribution during this trip were found in the southern part of the study area. Elsewhere, the distribution was more patchy and the densities were lower. Most birds were adults (58%, n=106).



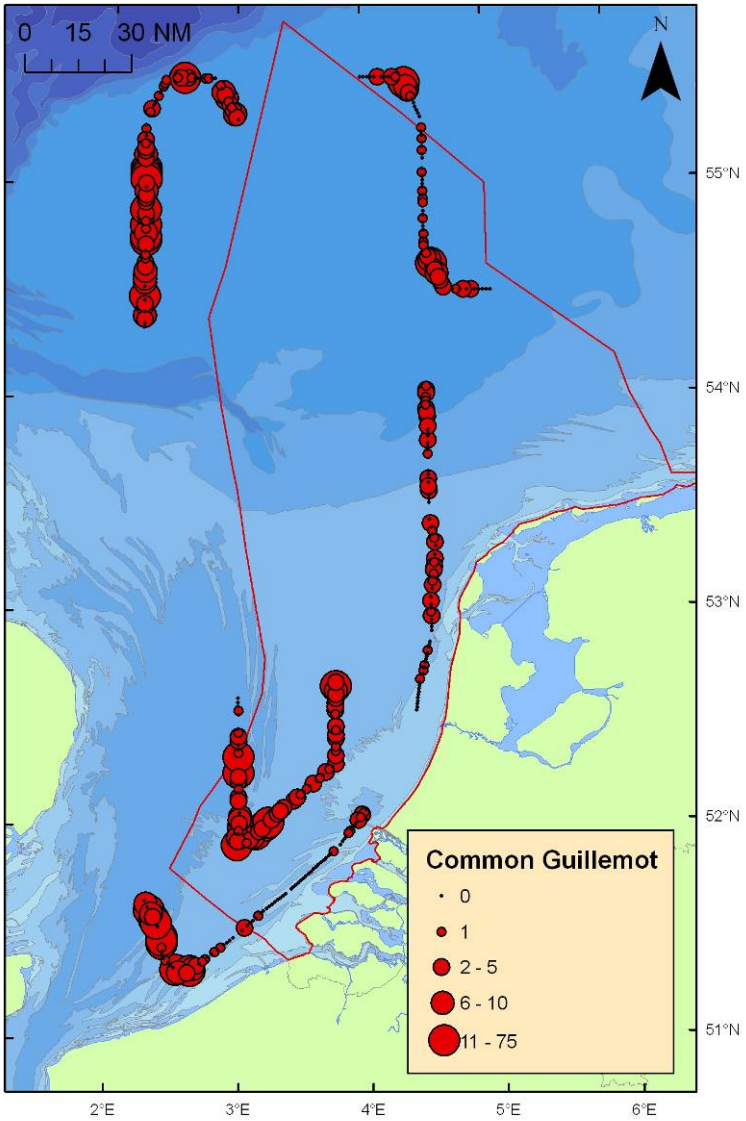
9. Black-legged Kittiwake

Black-legged Kittiwakes were widely distributed, with locally higher densities. Many Black-legged Kittiwakes were observed in association with feeding Razorbills, and higher densities of Black-legged Kittiwakes coincide with concentrations of Razorbills (compare the distribution map of that species). The majority of the birds was adult (80%; n=513).



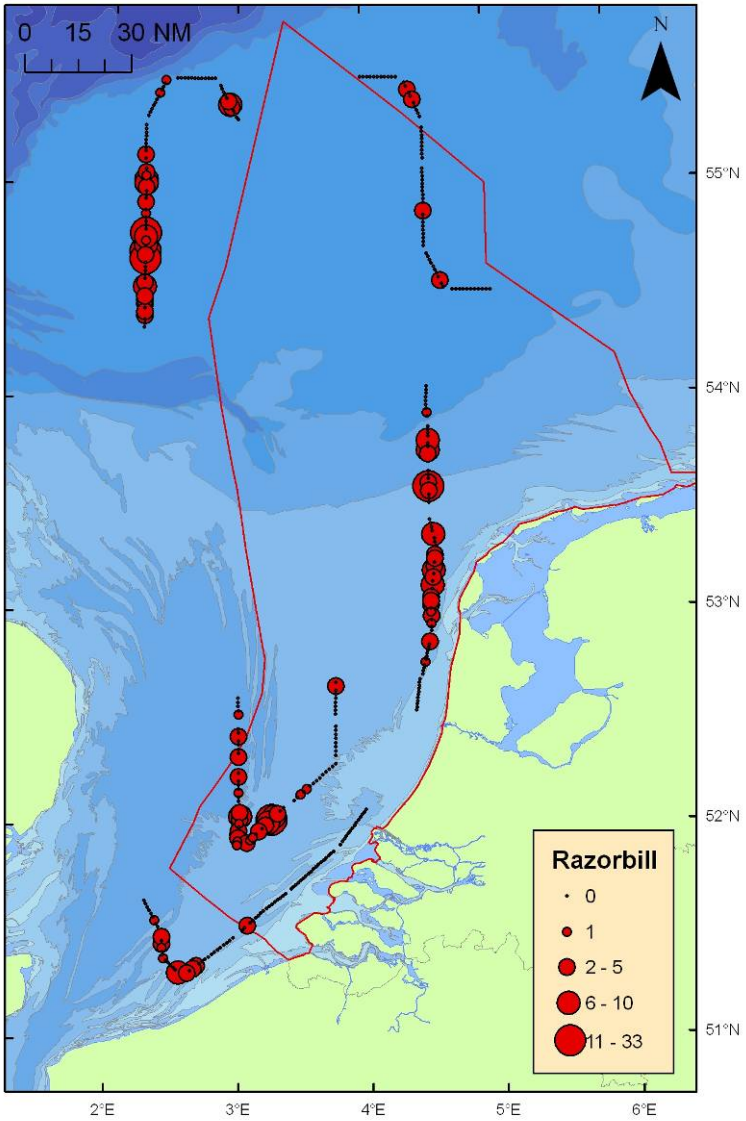
10. Common Guillemot

Common Guillemots were widely distributed across the study area, with higher densities on the western side of the Dogger Bank and in the Southern Bight. Low densities were encountered west of the Wadden Sea Islands and the Zeeuwse Banken. Overall, winter and summer plumaged birds were almost equally represented (48% each, with the remaining 4% being moulting birds; n=727). In January, the percentage of Common Guillemots in the southern North Sea is usually higher (cf Witte & Witte 2011, who reported 64% in breeding plumage). Around the end of January, adults depart to the breeding grounds, leaving immatures and non-breeding adults behind. Since these birds moult later, the percentage of breeding plumaged birds drops.



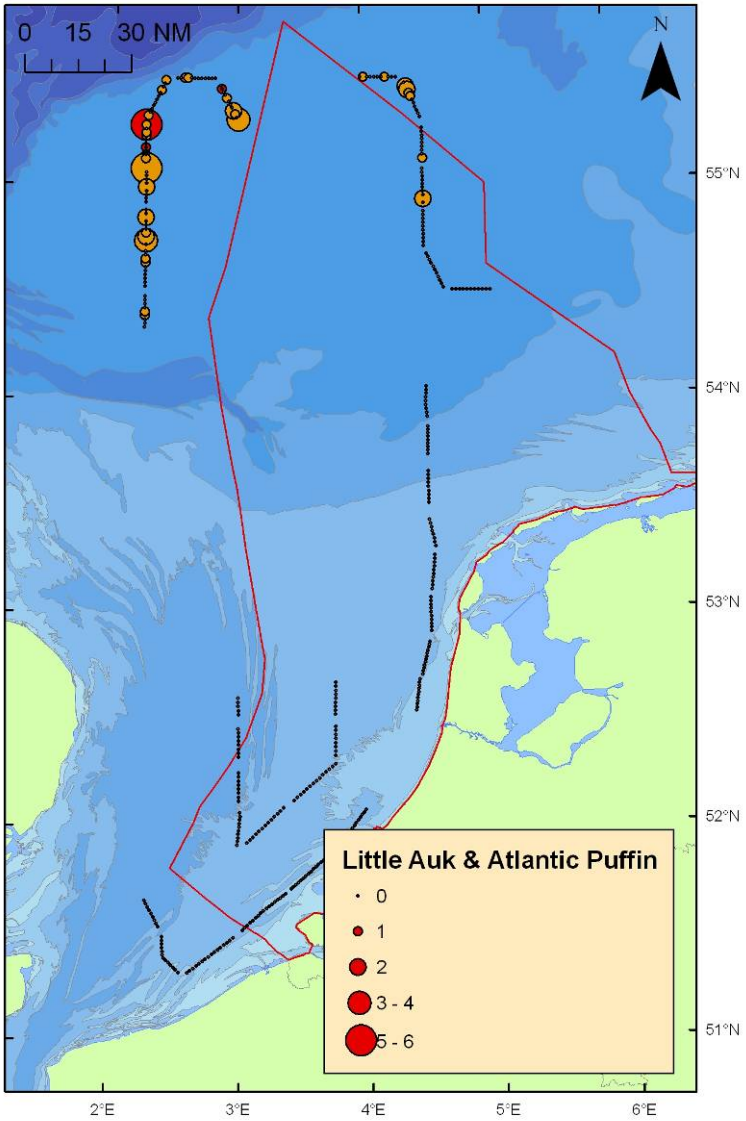
11. Razorbill

Razorbills were seen in large parts of the study area, but were virtually absent from the north-eastern part of the study area. Where they co-occurred with Guillemots the densities of Razorbills were lower, with the exception of an area northwest of Texel where 60% of the large alcids concerned Razorbills. Many feeding flocks of Razorbills were joined by Black-legged Kittiwakes (and sometimes Little and Common Gulls). Most birds were still in winter plumage (67%; n=287).



12. Atlantic Puffin & Little Auk

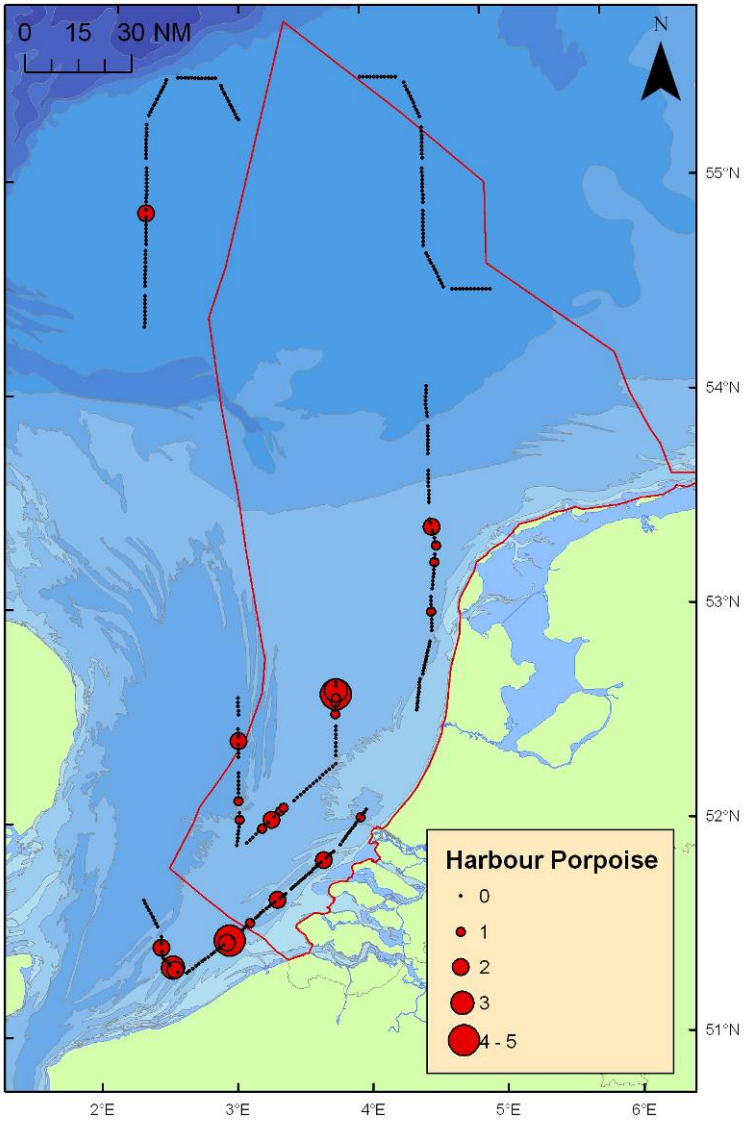
Little Auks were confined to the western part of the Dogger Bank area where 13 individuals were seen; in the same area, 38 Atlantic Puffins were also observed. Another 11 Atlantic Puffins were seen on the eastern flank of the Dogger Bank and the Oystergrounds. All Puffins were in winter plumage or moulting to summer plumage.



Small auks. Red dots show Little Auks, orange dots Atlantic Puffins.

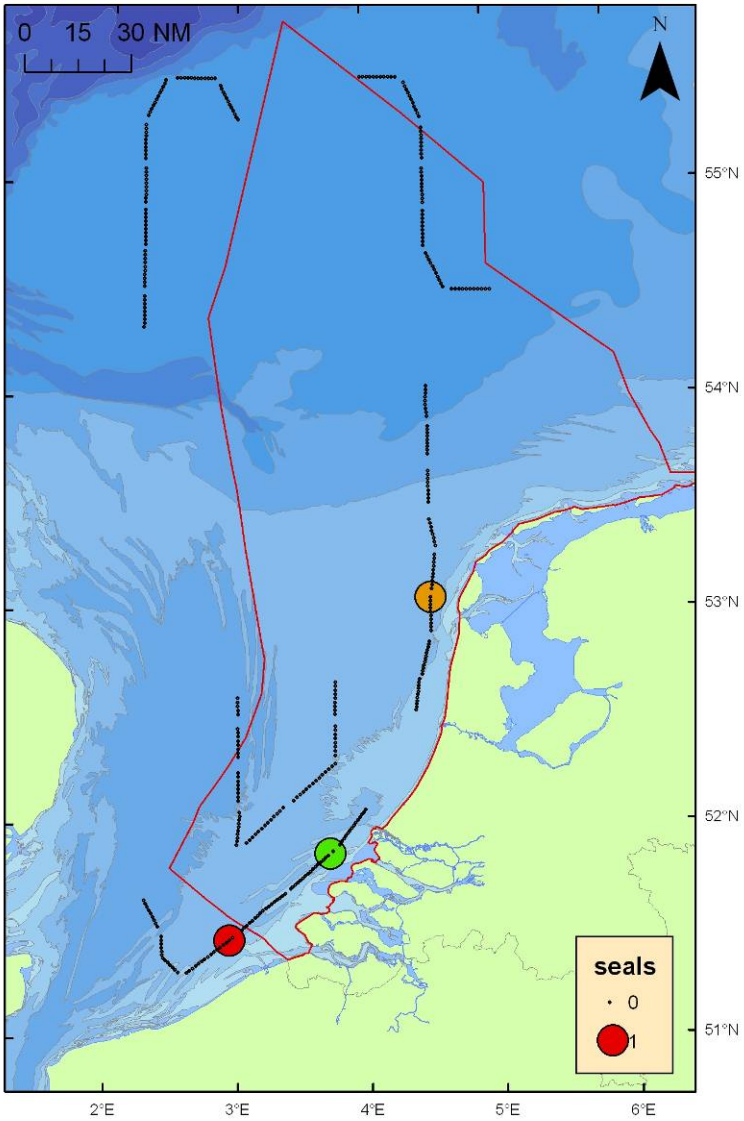
13. Harbour Porpoise

Harbour Porpoises were seen in low numbers, mostly south of 54°NB. Most sightings concerned singles (58%) or twosomes (35%). The largest pod size was three individuals. The concentration encountered in Belgian waters just across the border is in accordance with the results from an aerial survey by the BIN (Jan Haelters *in litt*). Only on the first day (the southernmost transect), seabirds were seen associating with porpoises. These concerned Northern Gannets (all four associations) and Black-legged Kittiwakes (two out of four associations).



14. seals

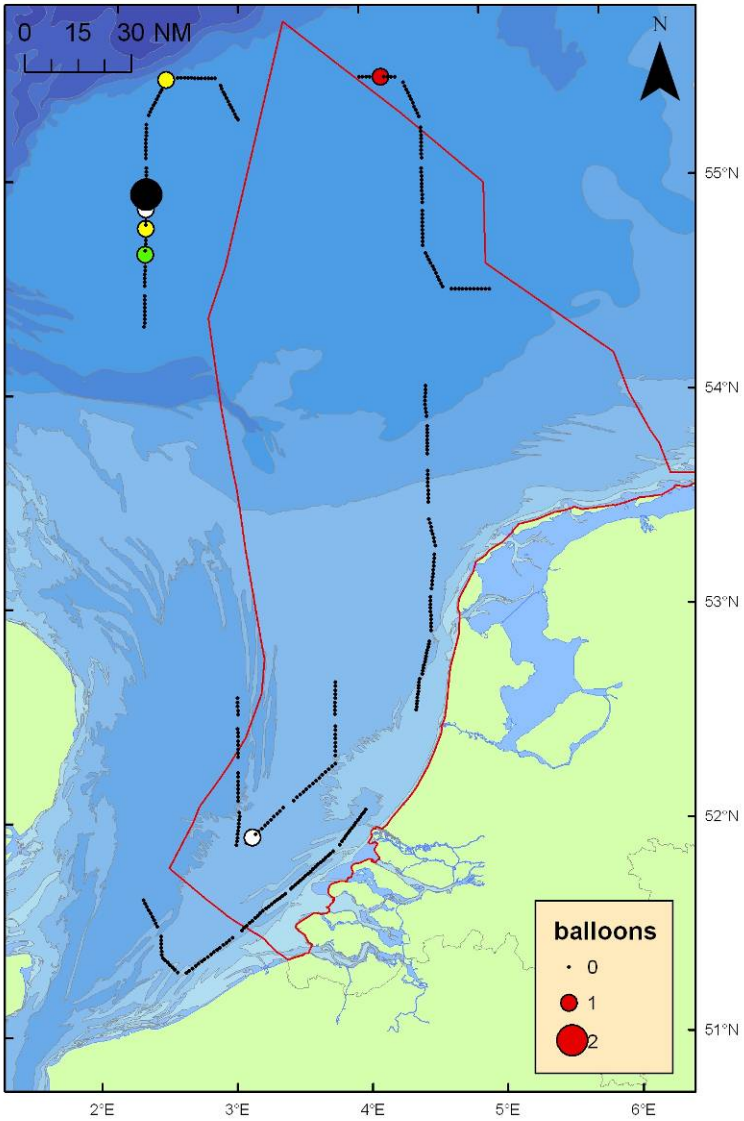
Three seals were observed in nearshore waters, of which one was left unidentified.



Seals. The red dot shows a Harbour Seal, the orange dot a Grey Seal and the green dot an unidentified seal.

15. Balloons

The conclusion in the January cruise report that mid-winter it is no "Balloon season" could not be fully confirmed. Numbers picked up a bit to a total of 11 balloons (7 clusters) during the whole week. A pair of red and white balloons on 15 February at the western Dogger Bank, appeared to be from TGI Friday's, a fast food chain with restaurants in the UK and Scandinavia.



Balloons The colour of the dots represents the colour of the balloons.

4 Conclusions

During this 11th survey, seabirds could be surveyed during virtually all daylight hours. Given the relatively good to moderate conditions, the collected data is of good quality to assess seabird distributions. This is also shown by the detectability of swimming alcids, which was similar to previous surveys. The rare sighting of a Yellow-billed Diver might not be attributable to vagrancy – there is growing evidence for a small wintering population on the Dogger Bank. Northern Fulmars were remarkably scarce. Common Guillemots were widespread with local concentrations. The percentage of birds in summer plumage had dropped since the January survey, illustrating the departure of birds to the breeding grounds. Razorbills were locally common and feeding flocks were frequently visited by Black-legged Kittiwakes. Nearly all sightings of Harbour Porpoises were from the southern half of the DCS.

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 Arca was a pleasant experience, due to the good working conditions supported by the captain and crew of the Arca, 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

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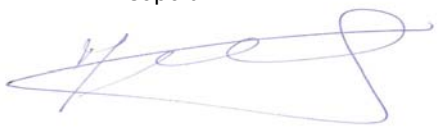
Justification

Rapport C017/11
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

Signature: 

Date: 24 February 2011

Approved: Drs. J. Asjes
Head of Fish Department

Signature: 

Date: 28 February 2011

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