

11. MARINE MAMMALS

Summary of previous findings

Investigation of the Sea Watch Foundation cetacean sightings database suggests that there is no evidence that the construction and operation of North Hoyle Offshore Wind Farm has had any adverse impact on populations of cetaceans.

There are currently insufficient data from the grey seal haul out at West Hoyle Bank. However, casual records of both grey seal and harbour porpoise within the operational wind farm area and the movements of tagged grey seals through the operational wind farm demonstrate that individual animals are prepared to visit the wind farm site and apparently to forage actively within it.

11.1 INTRODUCTION

Although there is no formal requirement for monitoring of marine mammals at North Hoyle Offshore Wind Farm (OWF), for example under FEPA licence conditions, a relatively wide range of information on marine mammal activity in relation to the construction and operation of the wind farm has been collected during the course of other environmental monitoring and is available via other sources.

The purpose of this report is to summarise such data and create a central source of information. Centre for Marine and Coastal Studies Ltd (CMACS) has collated information from the following sources:

1. marine mammal sightings been noted by surveyors engaged on site-specific ornithological surveys*¹;
2. casual sightings by CMACS staff during other surveys in and around North Hoyle;
3. records maintained by the Hilbre Island Observatory;
4. information from scientific studies.

*¹ These data were extracted from ornithological survey records and provided to CMACS by npower.

A basic interpretation of sightings data is provided based on an initial preliminary analysis.

11.2 SUMMARY OF INFORMATION AVAILABLE

11.2.1 Site-specific Surveys

Marine mammal observations have been routinely recorded during ornithological line transect surveys at the North Hoyle OWF site and its surrounds between 2003 and 2006 (ongoing) during surveys by Ocean Marine (2003-2004) and ERM Ltd (2004-2006). Sea bird surveys were carried out as part of ongoing monitoring works in compliance with the conditions of the Food and Environment Protection Act (FEPA) 1985: Part II (as amended) issued to NWP Offshore for the North Hoyle OWF. Anecdotal marine mammal data of sightings and surface activity were recorded by the ornithologists on board the survey vessels.

Seabird surveys were undertaken on a monthly basis by ERM, although there were missing surveys (assumed due to poor weather) during December 2004 and February 2005. Both point and extended surveys (of 1-2 days duration) were completed within the North Hoyle

OWF site by Ocean Marine who also covered the Rhyl Flats and Gwynt y Môr OWF development areas. During some of these surveys only a reduced proportion of the North Hoyle OWF survey area was covered, it is assumed due to time, tidal or weather constraints. Some marine mammals sightings were made away from the standard North Hoyle survey area, for example in transit to and from surveys. This is commented upon where applicable.

The ornithological transect surveys began in February 2003, prior to any construction activity on the North Hoyle OWF and continued during the construction (March 2003-December 2003) and post-construction (January 2004) phases of development.

Date	Surveyor	% site surveyed	Date	Surveyor	% site surveyed
12-Feb-03	OM	100%	15-Oct-04	ERM	n/a
19-Feb-03	OM	100%	24-Apr-05	ERM	n/a
30-Mar-03	OM	100%	24-Jun-05	ERM	n/a
31-Mar-03	OM	100%	11-Dec-05	ERM	n/a
18-Jun-03	OM	100%	Monthly surveys were undertaken by ERM between Feb 2003 and Feb 2004. OM completed point and extended surveys (1-2 days) in the North Hoyle OWF area between March 2004 and Feb 2006. Some surveys only covered a % of the North Hoyle OWF site.		
20-Jul-03	OM	100%			
24-Sep-03	OM	40%			
15-Jan-04	OM	100%			
11-Feb-04	OM	100%			
14-Feb-04	OM	100%			
22-Apr-04	ERM	n/a			
27-Apr-04	ERM	n/a			
05-May-04	ERM	n/a			
05-Sep-04	ERM	n/a			

Table 11.1 Dates and survey company contracted to undertake ornithological surveys within the North Hoyle OWF site and its surrounds. The percentage of the site surveyed is also included for surveys undertaken by Ocean Marine (OM).

11.2.2 Summary of site-specific survey data

A total of 46 marine mammals were recorded during the 2003-2006 surveys (Appendix 11.1). Harbour porpoise and grey seal were the most commonly observed species and further detail on sightings of these species is provided below. Three separate sightings also recorded the presence of bottlenose dolphin, an unknown dolphin species (presumed common or bottlenose dolphin) and an unknown small cetacean which could not be confidently identified. These cetaceans were observed in relatively close proximity to the wind farm site in small numbers (one or two individuals, Figure 11.4).

Care must be taken in interpreting figures presented in this and following sections since there has been no standardisation of survey effort across the area shown (i.e. effort has been focused on obtaining sightings close to North Hoyle and not in other visible areas, although some casual sightings have been made during transit to and from the main North Hoyle survey area).



Figure 11.4 Other cetacean sightings recorded during ornithological line transect surveys in the North Hoyle OWF and its surrounds between 2003 and 2006.

11.2.3 Harbour porpoise (*Phocoena phocoena*)

Twenty-one harbour porpoise individuals have been recorded during ornithological surveys. A number of sightings have been of animals very close to the wind farm, although none before, during or after construction have been of animals within the wind farm array itself (Figure 11.5). The majority of sightings were of single porpoise; however occasionally pairs of this cetacean were observed.

Pairs of porpoise were observed east and south of the turbine array area during a survey in February 2003 (before wind farm construction) and April 2004 (after wind farm construction) respectively. A pair of harbour porpoise was also observed further a field west of the turbine array during a survey in February 2004. Sightings of harbour porpoise were otherwise distributed throughout the North Hoyle OWF survey area. The sighting of a pair of animals to the west in Figure 11.5 is understood to have been made casually during transit to or from the wind farm survey area.

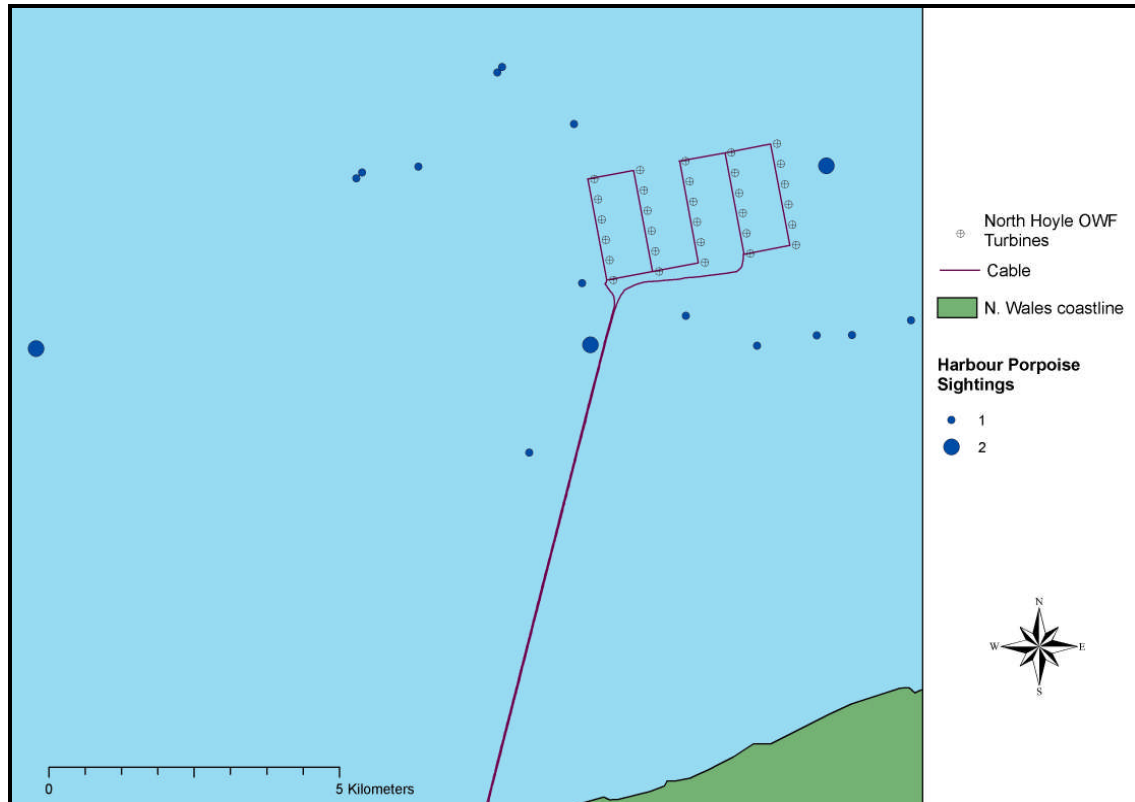


Figure 11.5 Distribution of Harbour porpoise sightings in the North Hoyle OWF area and its surrounds between 2003 and 2006.

Harbour porpoise were recorded in relatively high numbers during winter and early spring in 2003 (February-March) and 2004 (February-May) (Figure 11.6 and Figure 11.7), although no sightings were recorded over the same period in 2005. These observations were made before the start of construction activities in early 2003 and immediately after the completion of the wind farm in February 2004. Fewer porpoise were recorded during other months, although small numbers were observed during summer 2003 and autumn 2004. No harbour porpoise were observed during post-construction monitoring in 2005.

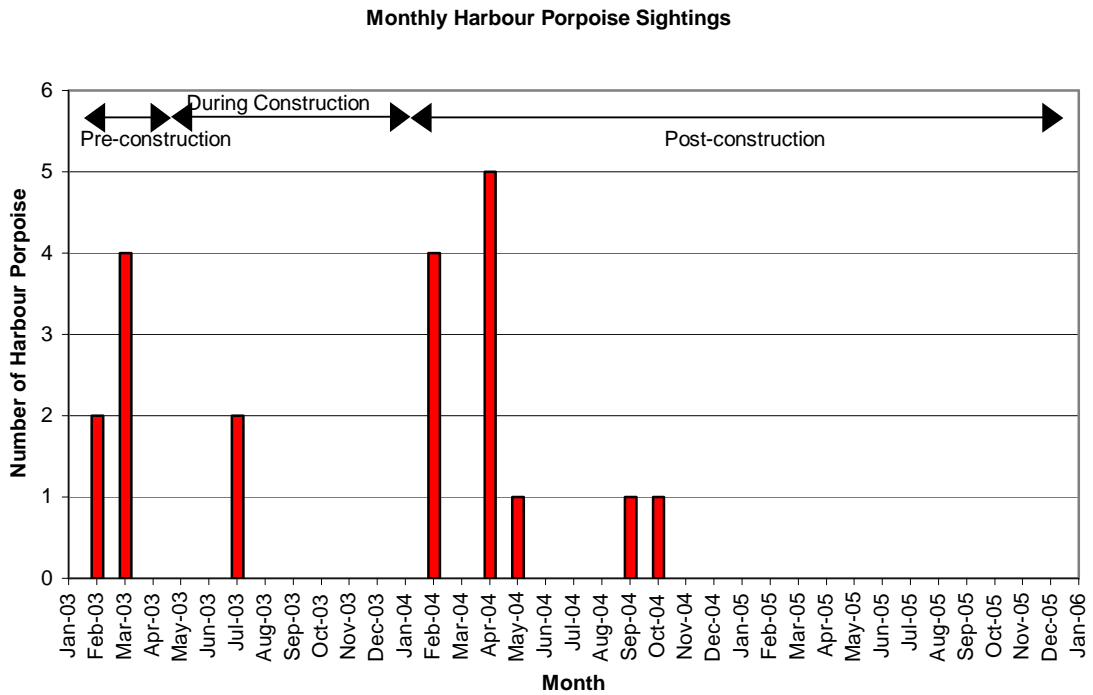


Figure 11.6 Number of Harbour porpoise recorded within the North Hoyle OWF area and its surrounds between 2003 and 2006.

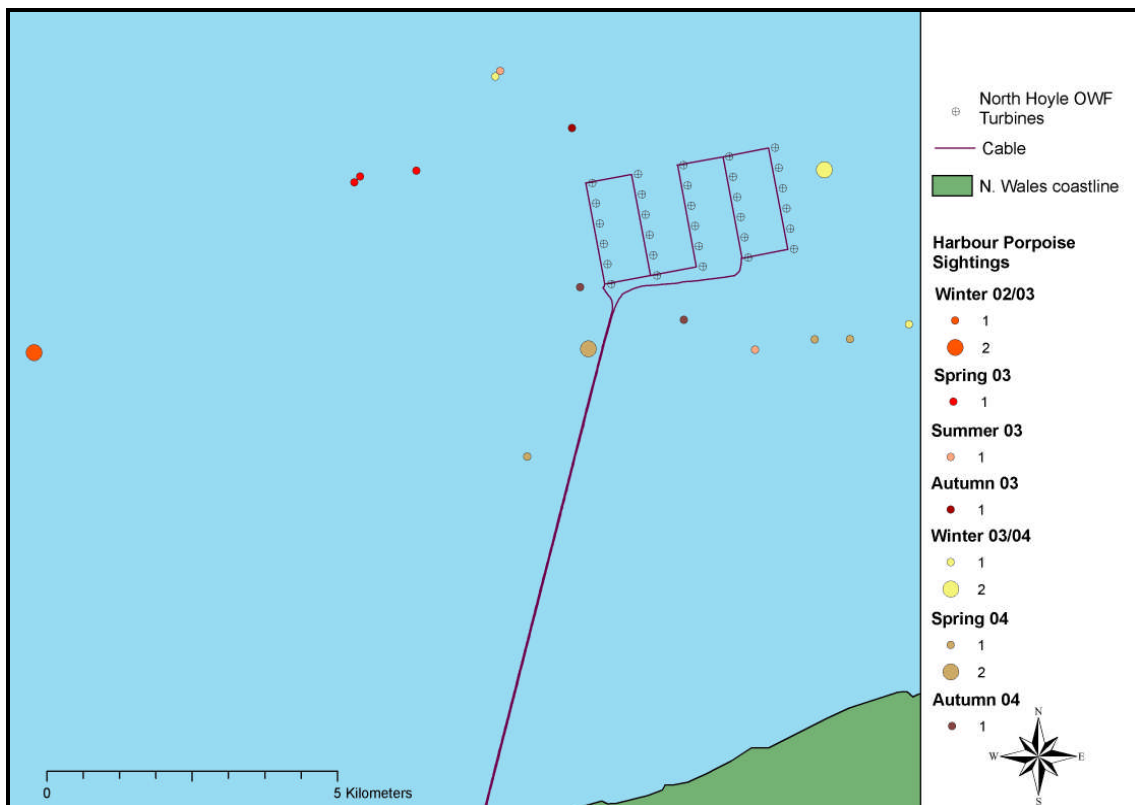


Figure 11.7 Seasonal distributions of Harbour porpoise sightings in the North Hoyle OWF area and its surrounds between 2003 and 2006.

11.2.4 Grey Seal (*Halichoerus grypus*)

Nineteen grey seal were observed during ornithological surveys. The majority of observations recorded single individuals; however on two separate occasions a pair of grey seal was seen in the vicinity of the North Hoyle Wind Farm. Many sightings were clustered around the edge of the North Hoyle Wind Farm array but very few were within the array and none near the centre of the array area (this observation also holds for the period before wind farm construction began). Sightings are summarised in Figure 11.8.

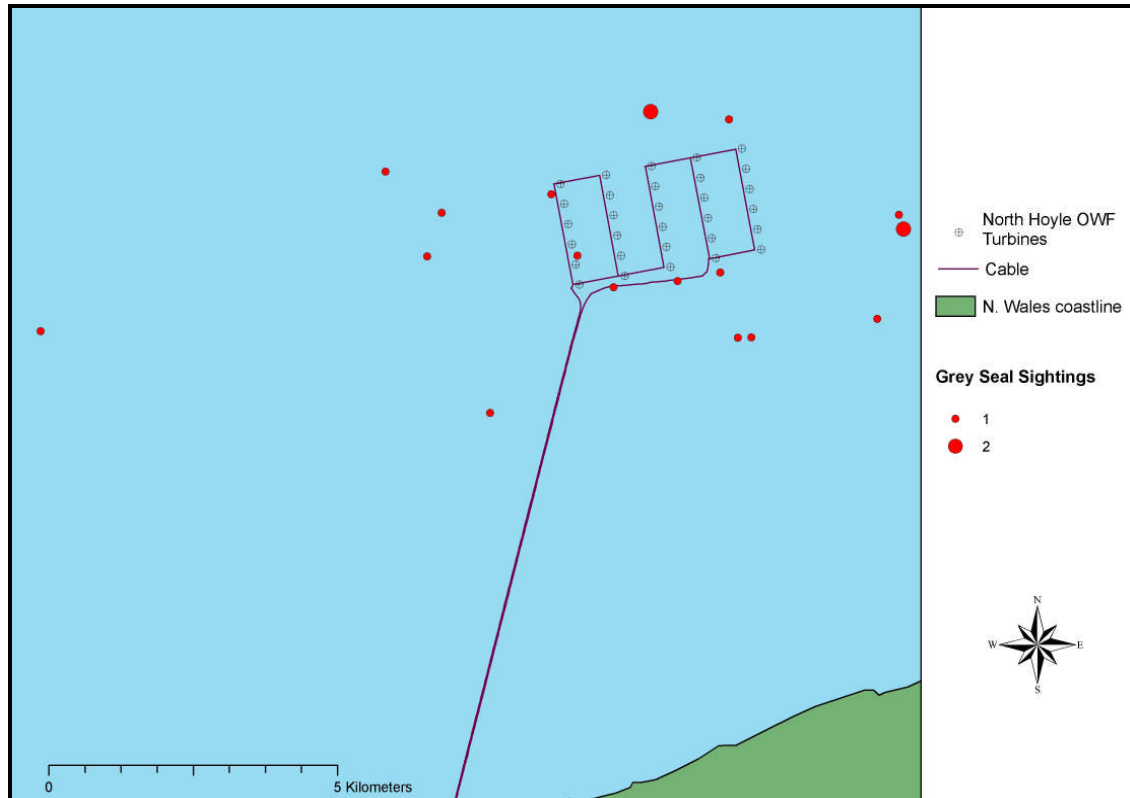


Figure 11.8 Distribution of Grey seal sightings in the North Hoyle OWF area and its surrounds between 2003 and 2006.

Grey seal were recorded in larger numbers during winter and spring of 2003 and 2004 (Figure 11.9 and Figure 11.10). However, there was an absence of sightings during the same time periods in 2005 (this is a similar trend to that noted for harbour porpoise). Grey seal were recorded in lower numbers and at a much lower frequency during the intervening months, with only a small number of single sightings during summer and autumn 2003. Two individuals were spotted on separate occasions in June and December 2005. Only two individual grey seal were observed during post-construction monitoring in 2005.

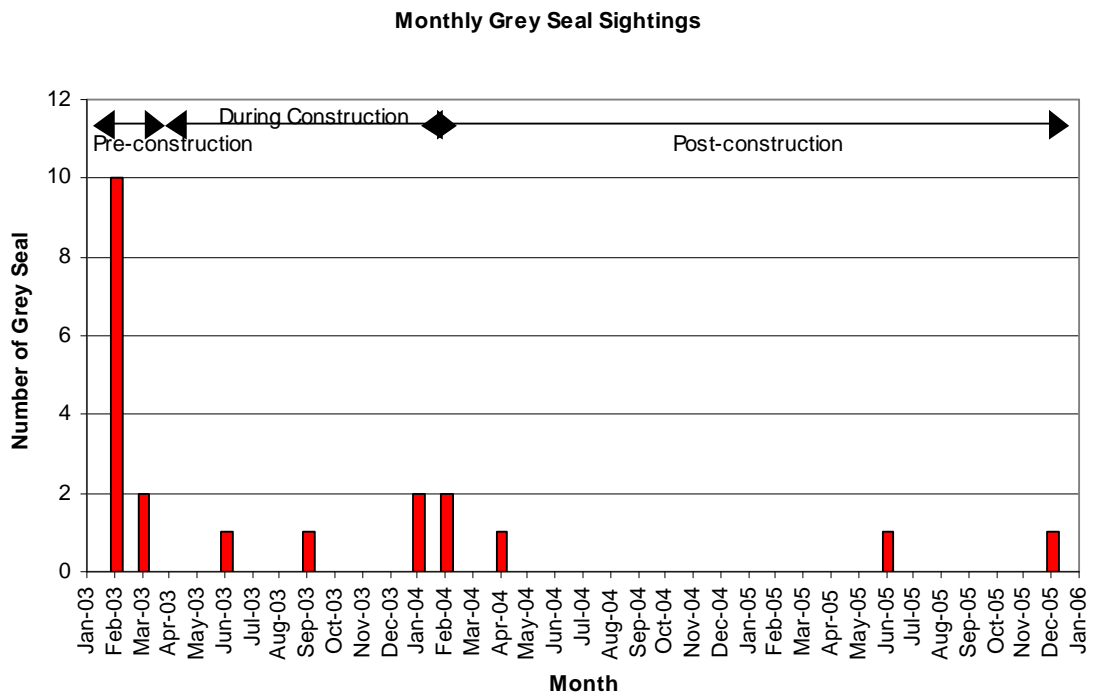


Figure 11.9 Number of Grey seal recorded within the North Hoyle OWF area and its surrounds between 2003 and 2006.

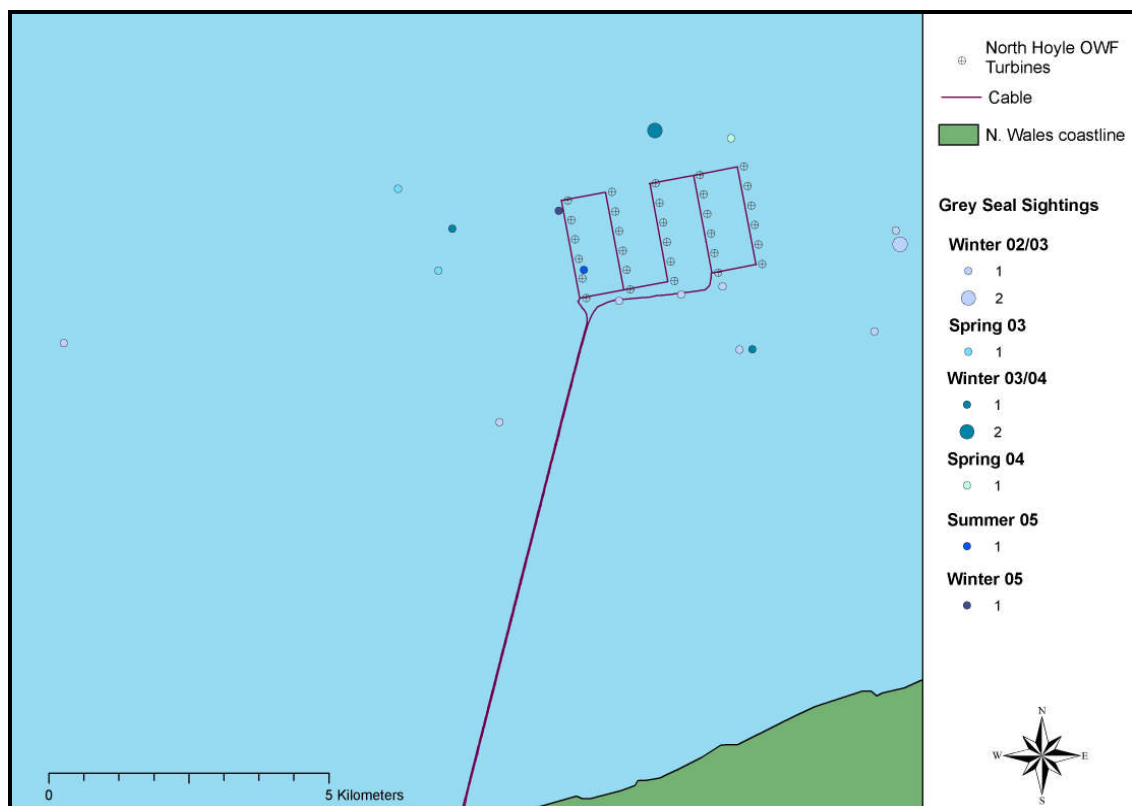


Figure 11.10 Seasonal distributions of Grey seal sightings in the North Hoyle OWF area and its surrounds between 2003 and 2006.

11.3 CMACS CASUAL MARINE MAMMAL SIGHTINGS

Casual marine mammal observations have also been recorded by the Centre of Marine and Coastal Studies Ltd (CMACS) during ongoing environmental monitoring surveys within the North Hoyle OWF and its surrounds, including the Rhyl Flats and Gwynt y Môr OWF development areas. These are summarised below.

Date	Site	Approximate Position	Species	Number	Behaviour
March 2005	North Hoyle	Turbine 18 N53.41963 E-3.44888 Second row of turbines in from the western extreme of the site in the upper section of the array.	Harbour porpoise	3	Three porpoise were actively foraging around the turbines within the central part of the wind farm array
04/10/2005	North Hoyle	Turbine 2 N53.41624 E-3.42323 Furthest row of turbines to the east, second turbine in from the shore	Harbour porpoise	3	Porpoise were swimming directly through the wind farm array in a SW-NE direction
22/11/2003	Gwynt y Môr	N53.43181 E-3.64035 Bottom central location of site offshore from Abergele	Common Dolphin	approx 200 (two hundred)	A very large group of individuals, seen throughout the afternoon. Heading E-W with the group splitting into two north of the boat. The main group headed off towards Anglesey and the smaller group headed inshore towards Colwyn Bay/Little Orme. Juveniles were spotted swimming next to adults. Those in the distance were jumping clear of the water and occasionally somersaulting.
03/12/2003	Gwynt y Môr	N53.40497 E-3.78416 South west corner of the Gwynt y Môr site, offshore from the Great Orme	Common Dolphin	12	Group appeared within 10-20m of the boat moving W-E. Single juvenile spotted.
04/12/2003	Gwynt y Môr	Offshore from Abergele	Dolphin sp	2 groups: 20-30 individuals	Moving in a S-N direction. One group appeared 100m from the boat and the other approx 300m. The far group were leaping clear of the water.

Table 11.2 Casual marine mammal observations made by CMACS during ongoing monitoring surveys within the North Hoyle, Rhyl Flats and Gwynt y Môr OWF OWF project areas.

The data summarised above were collected during the latter stages of wind farm construction and during the post-construction phase of the development. Several of these sightings have been local to the turbine array and have documented foraging activity and passage through the wind farm. Large groups of common dolphin have been observed further north and west, within the Gwynt y Môr OWF development area.

11.4 HILBRE ISLAND OBSERVATORY REPORTS

There is an established Atlantic Grey Seal Haul Out on the West Hoyle Bank, approximately 10km south east of the North Hoyle OWF. The seals at Hilbre are not a breeding population but use Liverpool Bay to feed, haul out and moult. These seals have long been considered to originate from Ramsey Island in south west Wales.

Maximum and average monthly counts of Atlantic Grey Seal at the haul out between 1964 and 2003 are summarised in Figure 11.11, below. Average monthly counts are shown for the decades between 1960 and 1990. Maximum annual counts are reported for more recent years including 2001, 2002 and 2003. No data were available for 2000. Numbers of Atlantic Grey seal varied seasonally and were highest at the haul out over summer, with numbers regularly in excess of 400 seals being recorded over recent years between May and August. Post-breeding dispersion probably accounts for the annual increase in seal numbers during spring and summer on the West Hoyle haul out. Over 500 seals were recorded during summer 2001, 2002 and 2003, with a peak of 600 seals being recorded in June 2003. Full count data are provided in Appendix 11.2.

Numbers of Atlantic Grey seal can be compared between the pre-construction phase of the North Hoyle OWF (pre- April 2003) and during construction (April-December 2003). No data are yet available for 2004 or 2005 and therefore no post-construction comparisons can be made. Large numbers of seal were regularly recorded during construction activities at the North Hoyle OWF site. Numbers were regularly in excess of 300 seal over the majority of the construction period, peaking during June at almost 600 individuals. Comparisons between years show similar numbers of grey seal at the haul out before and during the months of construction. There appears to be no direct effect on the number of seal at the haul out by wind farm construction, at least during the construction phase. Differences over the year are likely to be seasonally driven and not a direct result of wind farm activities.

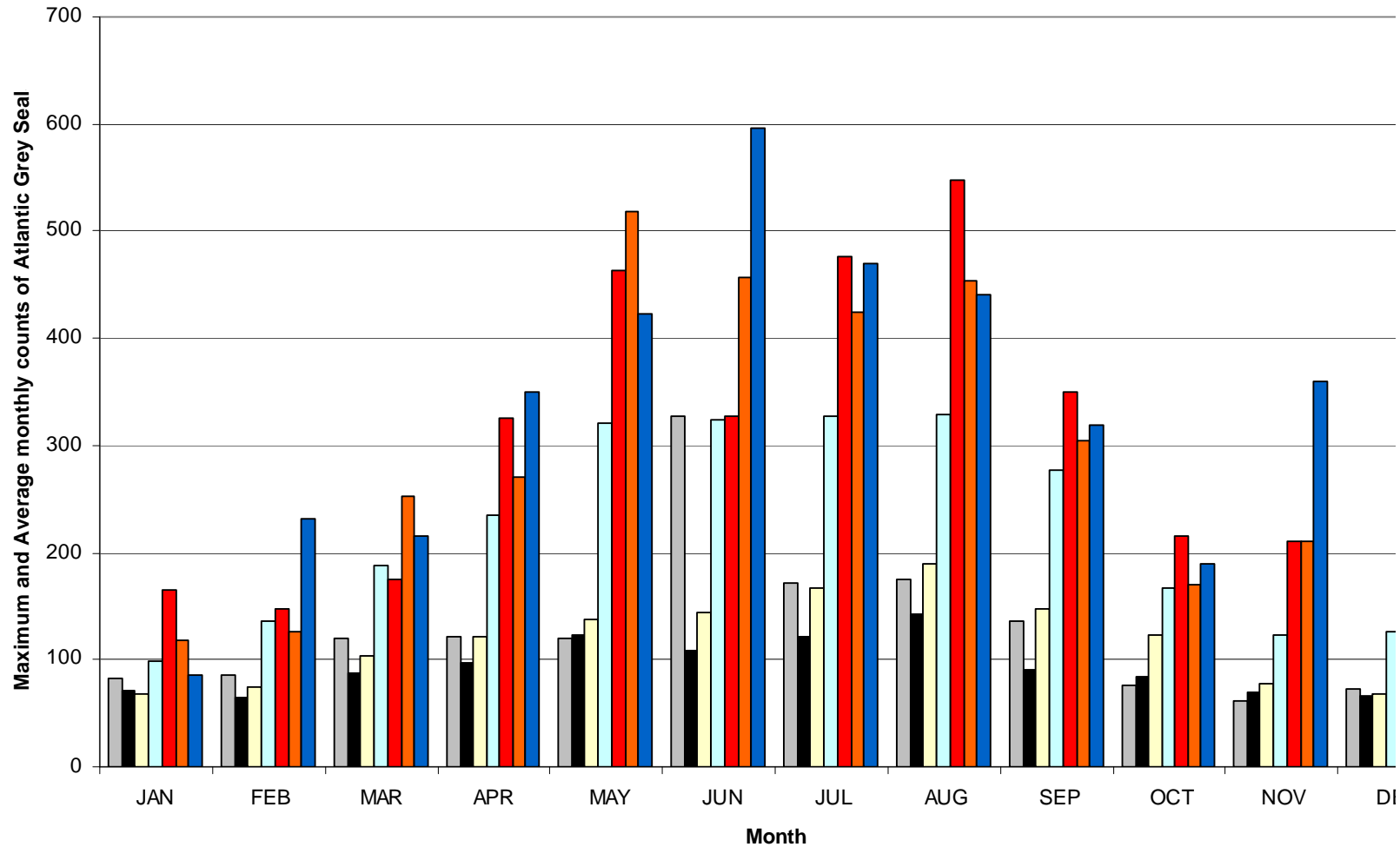


Figure 11.11 Maximum and Average monthly counts of Atlantic Grey seal at Hilbre Island. Average data are provided per decade for the 1960s to 1990s and maximum annual counts for more recent years (2001-2003). (Data from Hilbre Bird Observatory Reports).

Casual marine mammal sightings have also been made and reported by the Hilbre Bird Observatory. These data are available for 2001-2003.

Pinniped			Cetacean		
Date	Species	Sighting	Date	Species	Sighting
January/February 2001	Harbour seal	Individual was hauled out on a sand bar opposite the Observatory, and persisted throughout February.	9th February 2001	Dolphin spp	Group of individuals observed
1st May 2003	Harbour seal	Sole record of the year	3rd Aug, 9th & 20th Sept, 6th Oct 2002	Harbour porpoise	Single individual separately spotted on each date, except 20th Sept when a group of 3 dolphin were spotted.
These data represent casual marine mammal sightings reported in Hilbre Bird Observatory Reports.			3rd Aug, 9th & 20th Sept, 6th Oct 2002	Bottle-nosed dolphin	Single individual separately spotted on each date, except 20th Sept when a group of 3 dolphin were spotted.
			6th July 2003	Harbour porpoise	An adult female, length 1.55m beached on Hilbre's east side.
			6th May 2003	Dolphin spp	Unidentified dolphin beached, 1.47m length.

Table 11.3 Casual marine mammal observations made by the Hilbre Bird Observatory.

The Hilbre haul out data in particular provides a useful long terms record of seals in the area, covering the period both before and during construction of the North Hoyle OWF. The area is of some importance for grey seal, providing a haul out for individuals. Numbers on the West Hoyle Bank swell during summer and spring owing to post breeding dispersions of individuals to the area. The area is not so important for harbour seals with only sole annual sightings being recorded.

11.4.1 Other Information

Hammond *et.al.* (2005) identified the southern part of Liverpool Bay (including the operational North Hoyle Offshore Wind Farm site) as heavily used by grey seals. The authors tracked the movements of 19 seals around Wales, including several seals tagged at the Hilbre Island (West Hoyle) haul out, for approximately 3 months from mid June 2004. Tracks of tagged animals indicated that individual seals swam through the (operational) wind farm array at North Hoyle. Hammond *et.al.* (2005) also suggested that the grey seals which haul out at sites in Liverpool Bay, Wales and southeast Ireland comprise a separate population from animals to the north off western Scotland and to the south off Cornwall and France. The population breeding along the coast of Wales was estimated at around 5,000 animals.

11.5 SUMMARY

The data available do not permit a detailed analysis of the effects of construction and operation of the wind farm; however, some discussion is possible.

The site-specific sightings data alone initially suggest that marine mammals appear reluctant to enter the operational wind farm array; however, other evidence (from CMACS surveys and

tracking studies) demonstrates that both harbour porpoise and grey seal will do so.

The reason for this disparity is not clear. Marine mammal sightings are, in general, relatively rare events in the context of many hours observations at sea and it may be that further monitoring will reveal more animals to be using the wind farm array area. Other monitoring certainly reveals that there are relatively abundant food resource for piscivorous marine mammals such as seals and porpoise (MarineSeen and CMACS 2004).

For any future analyses it would be worthwhile improving the site-specific survey data in a number of ways, including:

- determining survey effort throughout the total area surveyed by reference to survey tracks of vessels and time spent per sighting;
- allowing for sea conditions;
- incorporating data from site specific surveys undertaken for Rhyl Flats and Gwynt y Môr offshore wind farms;
- utilising information compiled by other studies, including a CCW report on grey seal movements off Anglesey and the Gwynt y Mor EIA.