



# Marine Bird Abundance

MSFD Descriptor: 1 - Biological diversity  
MSFD Criterion: 1.2 - Population size



**Key Message** Abundance of marine bird species assessed across the OSPAR Maritime Area has not been considered healthy since the mid-2000s. Species that use intertidal and inshore areas of the Greater North Sea during migration or over wintering are the exception, and have been present in healthy numbers since the early 1990s

## Background

Marine birds rely on a range of food sources in the marine environment. They are sensitive to a variety of pressures, including fishing, predation by non-indigenous mammals (e.g. rats and American mink), loss of habitat and changes in water quality.

Abundance (numbers of adult birds or pairs at breeding colonies) is used as an indicator because it is practical to measure, good for assessing long-term changes in community structure and because it changes slowly under natural conditions. Rapid changes in number can indicate human-induced impacts and, supported by species-specific assessment values for the extent of decline, can serve as a prompt for management action. Historic changes include many species having benefitted from food provided by the fishing industry through discards.

For seabirds, this assessment is constructed mainly from data on 'breeding abundance'. For waterbirds (wildfowl and waders) this assessment is constructed mainly from data on 'non-breeding abundance' (numbers of birds using intertidal and inshore areas during migration or over winter). Annual estimates of breeding or non-breeding abundance of each are compared against assessment values that are designed to reflect the resilience of different species to population decline. It is desirable for the annual 'relative abundance' of a species to be above 0.8 (80% of the baseline) for species that lay one egg or 0.7 (70% of the baseline) for species that lay more than one egg. If 75% or more of species assessed exceed their individual assessment values, an assemblage of bird species is considered to be healthy.



Image: Northern gannet *Morus bassanus* ©Alan D Wilson

## Results

The percentage of all species within each functional group exceeding assessment values for relative breeding abundance in 2014 and 2015, and for relative non-breeding abundance in 2015 in each OSPAR Region are shown in **Table 1**.

Table 1: Percentage of species assessed that had a relative abundance above the assessment values in each functional group in the Norwegian part of the Arctic Waters and Celtic Seas regions in 2015 and in the Greater North Sea in 2014

Functional group	Percentage of species above assessment values for relative abundance					
	Norwegian part of Arctic Waters		Greater North Sea		Celtic Seas	
	Breeding	Non-breeding	Breeding	Non-breeding	Breeding	Non-breeding
Wading feeders		0% (2)	40% (6)	82% (22)		47% (19)
Surface feeders	40% (5)	67% (3)	47% (15)	80% (5)	50% (12)	100% (1)
Water column feeders	57% (7)	14% (7)	75% (8)	100% (7)	86% (7)	50% (4)
Benthic feeders		60% (5)	100% (1)	56% (9)		50% (8)
Grazing feeders		50% (2)	0% (0)	80% (10)		62% (8)
Breeding/non-breeding total	50% (12)	47% (19)	50% (32)	77% (53)	63% (19)	53% (40)
All	48% (31)		67% (85)		55% (59)	

## Results cont...

In all three OSPAR Regions assessed, less than 75% of all species assessed across the functional groups have met assessment values for relative breeding abundance (**Table 1**), indicating that the bird communities are not healthy. This was also the case for relative non-breeding abundance in the Norwegian part of the Arctic Waters and the Celtic Seas. In contrast, assessment values were met for non-breeding abundance in more than 75% of species in the Greater North Sea in 2014 (**Table 1**), which has occurred in every year since 1993, except in 2010 (**Figure 2**).

Changes in the annual percentage of species meeting assessment values since 1992 are shown in **Figure 1** (relative breeding abundance) and **Figure 2** (relative non-breeding abundance). There has been a decline in the proportion of species meeting assessment values since the mid-2000s or earlier in all OSPAR Regions assessed.

There was moderate confidence in both the methodology and the data used in this assessment.

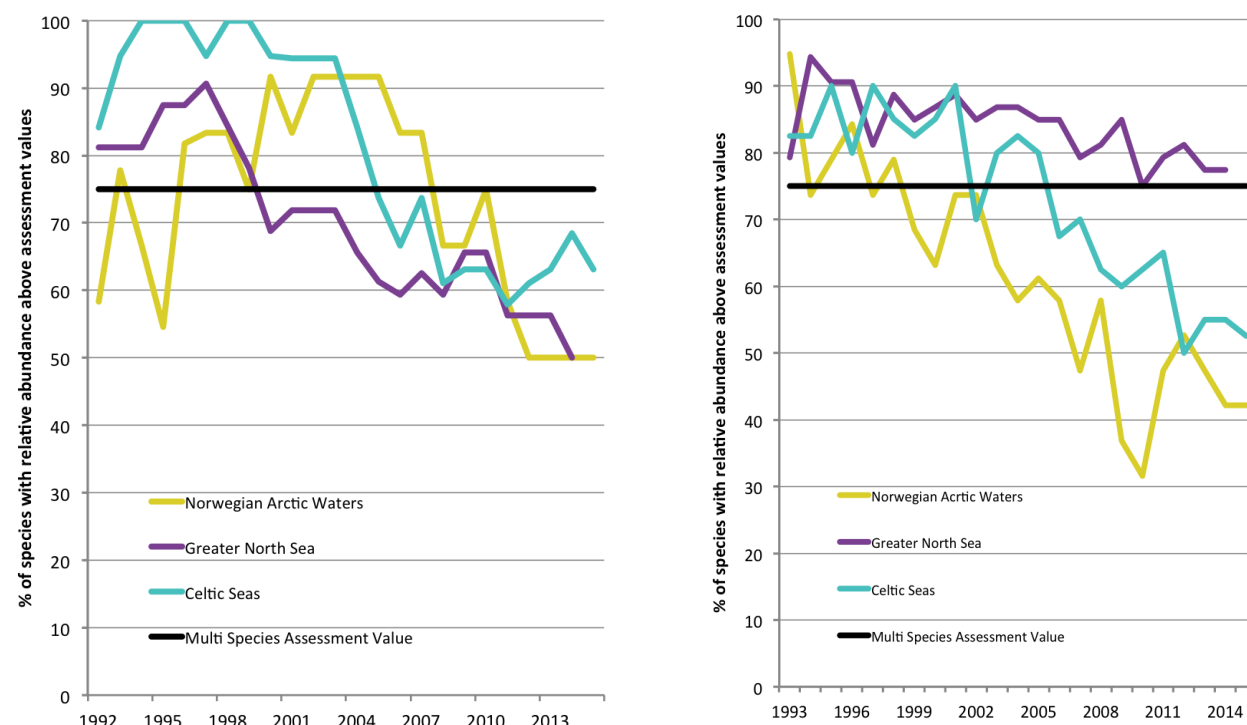


Figure 1: Change in the annual proportion of species exceeding assessment values for the relative breeding abundance of marine birds in the Norwegian part of the Arctic Waters (12 species) and Celtic Seas (19 species) regions during the period 1992–2015, and in the Greater North Sea region (32 species) during the period 1992–2014; The black line denotes the multi-species assessment value of 75%

Figure 2: Change in the annual proportion of species exceeding assessment values for relative non-breeding abundance of marine birds in the Norwegian part of the Arctic Waters (19 species) and Celtic Seas (41 species) regions during the period 1993–2015, and in the Greater North Sea region (53 species) during the period 1993–2014. The black line denotes the multi-species assessment value of 75%

## Conclusion

Since the mid-2000s, the breeding abundance of more than a quarter of the marine bird species assessed in the OSPAR Maritime Area has been below the baseline set in 1992, indicating that the populations are not healthy. A similar pattern was found in the non-breeding abundance of species that visit the Arctic Waters and Celtic Seas during migration and / or during winter. In contrast, non-breeding populations in the Greater North Sea are doing much better, and with 75% or more of species meeting assessment values in every year since 1993 are considered healthy.

The majority of the breeding populations assessed were marine birds that forage offshore, mostly on fish. The species feeding on fish within the water column are faring better than those feeding at the surface. This suggests that the availability of small forage fish species at the surface is probably limiting the breeding success of some species. Drivers of food availability are likely to be ecosystem-specific changes, possibly initiated by past and present fisheries, in combination with climate change.

The non-breeding populations assessed are from all five marine bird functional groups, with the majority being wading feeders. The assessments of non-breeding abundance showed few differences between the functional groups.

## Knowledge Gaps

This indicator assessment could also be applied to the Bay of Biscay and Iberian Coast and to the marine birds breeding on the Azores, if data were available from Contracting Parties. The assessment for Arctic Waters lacks data. This indicator assessment could also be expanded to include more data on seabirds and waterbirds collected at sea.

The baselines used in this indicator assessment were assigned to the first year of the data series being assessed. It would be more objective to set baselines that include 'historical reference levels', which reflect abundance at a point in the past long before the time series began, or 'reference levels', where anthropogenic impacts on population size are assumed to be negligible.

This document was published as part of OSPAR's Intermediate Assessment 2017.

The full assessment can be found at [www.ospar.org/assessments](http://www.ospar.org/assessments)