8. Species in the wider marine environment

Type: State indicator

Indicator Description

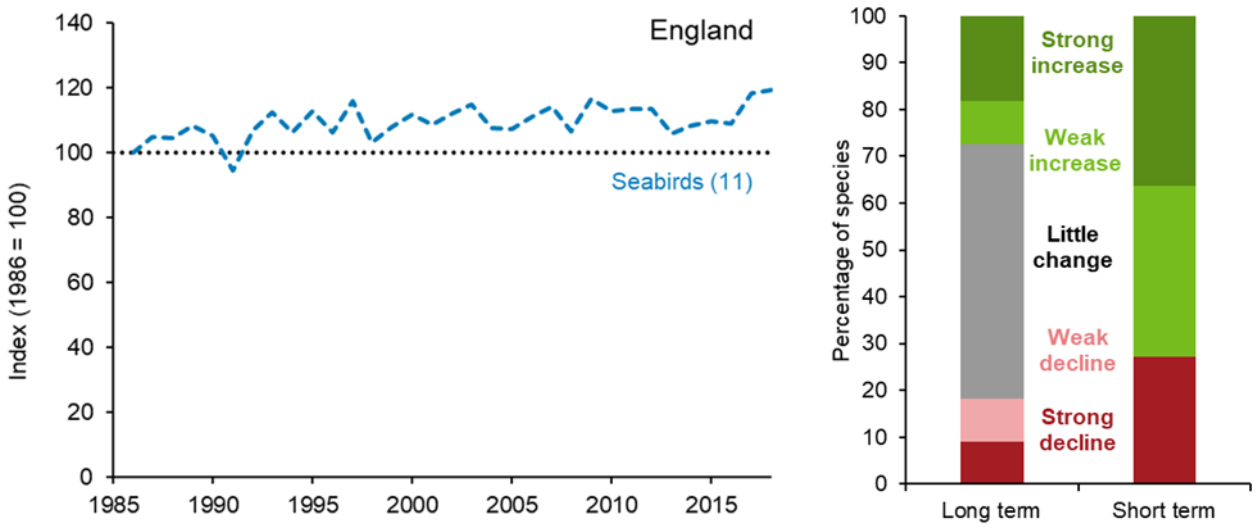
The indicator shows changes in the relative abundance of a suite of breeding seabird species around England's coast. The English coast consists of a wide variety of habitats such as sea cliffs, sand dunes, shingle ridges and intertidal areas. The marine habitats used for foraging by this group of birds include coastal lagoons and shallow coastal waters as well as deeper offshore waters throughout the UK. Most of the trends used in this indicator are based on colonial species nesting on sea cliffs, beaches, coastal lagoons and offshore islands.

The breeding seabird index has now been updated with data up to and including 2018. This follows a brief hiatus in updates since 2016 when the Seabird Monitoring Programme Steering Group made the decision to put the analysis and publication of the annual SMP report on hold enabling staff time to be dedicated to the breeding seabird census, Seabirds Count.

Populations of breeding seabirds (National statistics)

In 2018, the breeding seabird index in England was at the highest level recorded, 19% higher than in 1986 (Figure 8.1). Although fluctuating, the indicator has increased steadily since the late 1990s driven mainly by increases in subsurface feeders. In the same short-term period as used for other indicators, the seabird index increased by 4% between 2012 and 2017. The bar chart (below) also shows that a greater percentage of species increased in the short-term than have increased long-term, since 1986.

Figure 8.1: Breeding seabirds in England 1986 to 2018



Notes:

1. The line graph shows the unsmoothed trend. No smoothed trend is yet presented for seabirds as individual species population trends are analysed using an imputation procedure that does not include smoothing.
2. The figure in brackets shows the number of species in the index.
3. The bar chart shows the percentage of species within the indicator that have increased, decreased or shown little change, based on set thresholds of annual change.

Source: British Trust for Ornithology, Defra, Royal Society for the Protection of Birds, Seabird Monitoring Programme (co-ordinated by Joint Nature Conservation Committee).

The overall index hides considerable variation in individual species trends; the bar chart provided alongside the habitat chart above shows the percentage of species within the indicator that have increased, decreased or shown little change over the long and short term. Figure 8.2 illustrates how subsurface feeders have fared better than surface feeders.

Indicator assessment

Assessment of change in abundance of species in the wider marine environment

The traffic light assessment for the seabirds measure has been removed until a robust method of assessing variability is devised. This follows a recommendation in a quality assurance science panel report, dated January 2016.

Relevance

Bird populations have long been considered to provide a good indication of the broad state of wildlife. Birds occupy a wide range of habitats and there are considerable long-term data on changes in bird populations, which help in the interpretation of shorter-term fluctuations in numbers. As they are a well-studied taxonomic group, drivers of change for birds are better understood than for other species groups, which allows for better interpretation of any observed changes. Birds also have huge cultural importance and are highly valued as a part of England's natural environment by the general public.

The indicator shows progress with commitments to improve the status of our wildlife and habitats. It is relevant to outcomes 2 and 3 of *Biodiversity 2020: A strategy for England's wildlife and ecosystem services* (see Annex A). It is also relevant to the global targets in the Convention on Biological Diversity Strategic Plan (international goals and targets) (see Annex B of the aforementioned publication).

Background

The indicator is based on combined trends of 11 seabirds (Table 8.1 below) and has been compiled by the British Trust for Ornithology (BTO), the Royal Society for the Protection of Birds (RSPB) and the Joint Nature Conservation Committee (JNCC). Data are obtained from the Seabird Monitoring Programme.

Within the indicator, each species is given equal weighting, and the annual index is the geometric mean of the individual species indices for that year. The individual species indices are largely derived by modelling of count data and estimates are revised when new data or improved methodologies are developed and applied retrospectively to earlier years.

Whether an individual species is increasing or decreasing has been decided by its rate of annual change over the time period (long or short) of interest. If the rate of annual change would lead to a population decrease of 50% (halving), or a population increase of 100% (doubling) or more over 25 years, the species is said to have shown a 'strong decline' or a 'strong increase' respectively. Rates of change less than these but above +33% (increase) or below -25% (decrease) are labelled 'weak'. Asymmetric thresholds are used for declines and increases to represent an equivalent symmetrical proportional change in an index. These thresholds for declines are based on the rates used in the Birds of Conservation Concern status assessment for birds in the UK.

Species breakdown

There are 11 species of bird included in the England seabird indicator. This includes gannet, which has shown a rapidly increasing trend at the only English colony at Bempton Cliffs, Yorkshire, which has had a marked positive effect on the indicator. A breakdown by feeding behaviour (Figure 8.2) shows an 8% decline in seabirds that forage on the surface of the sea (surface piscivores) in contrast with a 157% increase in those that forage by diving (subsurface piscivores). Both common terns and Arctic terns, which are surface feeders, have declined; common terns by 77% and Arctic terns by 34% between 1986 and 2017. In contrast, the European shag, which dives for fish, increased by 174% and gannet numbers

increased 20-fold between 1986 and 2017. Note that due to lack of sufficient reliable data, the indicator does not include many burrow-nesting seabirds nor non-colonial coastal species which may show different trends. A larger suite of species is likely to dilute the influence of the increase in gannets.

Table 8.1: Seabird species included in the indicator

Surface feeders (5 species)

Arctic tern (*Sterna paradisaea*); Black-legged kittiwake (*Rissa tridactyla*); Common tern (*Sterna hirundo*); Little tern (*Sternula albifrons*); Sandwich tern (*Sterna sandvicensis*).

Subsurface feeders (4 species)

Common guillemot (*Uria aalge*); European shag (*Phalacrocorax aristotelis*); Great cormorant (*Phalacrocorax carbo*); Gannet *(Morus bassanus)*

Other feeding type (2 species)

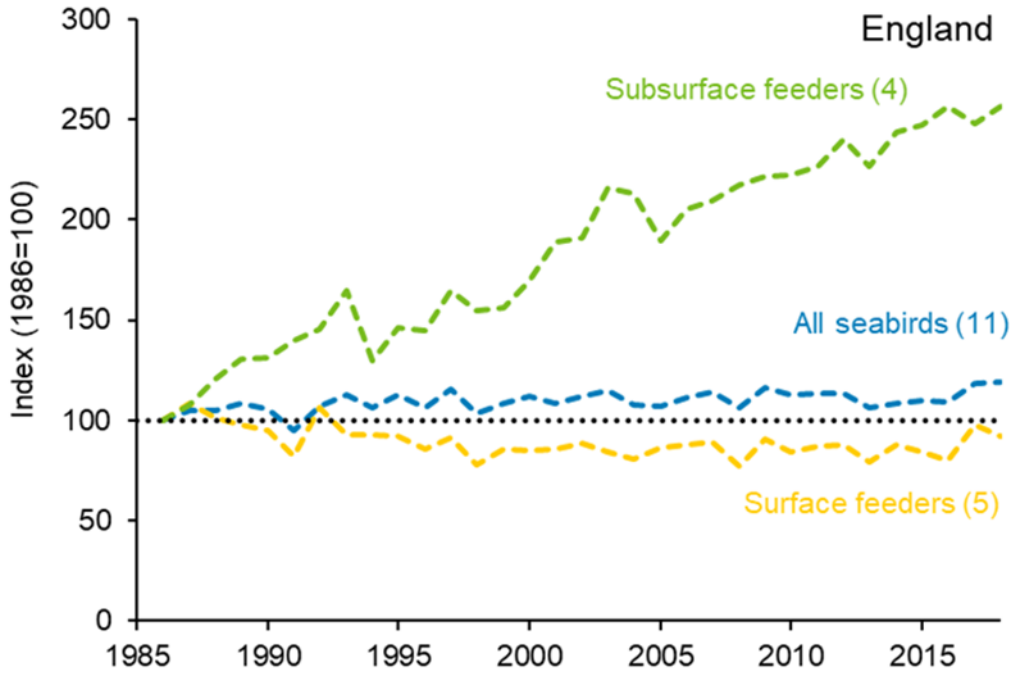
Northern fulmar (*Fulmarus glacialis*); Herring gull *(Larus argentatus)*

The seabird index may not yet fully reflect the low breeding success rates of some species observed during recent years, because seabirds take several years to reach maturity. There will therefore be a lag before the results of reduced breeding success manifest themselves as a decline in breeding adults. In most species, poor breeding success is a direct result of food shortages during the breeding season, but it is not clear for all species whether over-fishing, climate change, or some combination of both is the ultimate cause.

Since the 2014 update of the England Biodiversity Indicators, the England seabird indicator has been standardised as much as possible to the equivalent UK indicator by applying the same definition of seabird, indexing from the same 1986 baseline, and excluding species for which there is no reliable trend data since the last census in 2000. This resulted in 2 species additions (gannet and herring gull) to the England seabird indicator.

Despite these changes, the seabirds index in England in 2018 continues to show a different pattern to the UK index and one of the main reasons for this difference remains species composition. Some species breed only in Scotland whereas others are more widespread but have the bulk of their populations in northern parts of the British Isles, and there may be insufficient data to generate an England-only trend. Furthermore, it was also possible to generate an England trend for gannet based on reliable data from a single large colony, but there are insufficient data representative of the UK population to produce a reliable UK trend. The inclusion of the rapidly increasing gannet trend in the England indicator has had a marked positive effect**.**

Figure 8.2: Breeding surface and subsurface feeding seabirds in England, 1986 to 2018



Notes:

1. The line graph shows the unsmoothed trend (dashed line) - no smoothed trend is presented for seabirds as individual species population trends are analysed using an imputation procedure that does not include smoothing.
2. The figures in brackets show the number of species in the index.

Source: British Trust for Ornithology, Defra, Royal Society for the Protection of Birds, Seabird Monitoring Programme (co-ordinated by Joint Nature Conservation Committee).

Web links for further details

Defra: Populations of wild birds – England; Populations of wild birds – UK

Joint Nature Conservation Committee: Seabird Monitoring Programme

Royal Society for the Protection of Birds, British Trust for Ornithology and Joint Nature Conservation Committee: The State of UK's Birds 2017

Last updated: October 2020

Latest data available: 2018