

C4a Priority Species - Abundance

This Evidence Statement should be read in conjunction with the *Summary of Evidence* document (Annex 3). Assertions in bold text have been assigned a confidence rating following assessment by a panel of independent experts (see main report for details).

A. Background, structure and statistical issues/biases

- This indicator describes trends in the UK abundance from 1970-2012 of 213 species deemed to be priorities for conservation action and for which sufficient data existⁱ. Many species were listed as priorities on the basis of rarity, or because they were known to be in decline. The indicator is restricted to taxa with standardised monitoring schemes: birds, mammals, butterflies and moths.
- The list of “priority species” has been designated by statutory conservation agencies of the four countries of the UK, with each country following a separate process. The data used reflect changes of the entire populations of species, not just of the proportion using particular habitats. Moreover, the indicator uses data from across the UK, not just the countries in which the species is listed as a priorityⁱ.
- Indices are derived from a suite of surveys and monitoring schemes deemed suitable for each particular taxon. Each species is given equal weighting, and the annual index is the geometric mean of the individual species indices for that yearⁱⁱ.
- Each of the datasets that contribute to the indicator has different statistical properties. The indicator does not make a statistical correction for the location of study sites or differences in the data collection across species.
- The indicator is presented and assessed in an unsmoothed form.

B. Representation

1. There are nearly 3000 species on the UK priority species list, so the species contributing to this indicator are a small and biased subset. The indicator represents trends in the average abundance of species that contribute to the indicator. **The indicator should not be used to represent priority species in other taxonomic groups, nor can it be used to represent trends in wider biodiversity** ^[High].

C. The Trend

2. The headline indicator declined by 67% decline over the period 1970-2102ⁱⁱⁱ. The decline occurred throughout the time period of the indicator. **There is strong evidence for a long-term decline in the average abundance of species contributing to the indicator** ^[High]. However, this is not surprising because many species were listed as priorities on the basis of known declinesⁱ.
3. The overall indicator masks substantial variation in the trajectory of species that contribute to it^{iv}. The ratio of declining to increasing species was approximately 3:1, although no information was provided on the magnitude or uncertainty in species trend estimates^v. **Whilst most species have declined, a minority have increased** ^[Medium].
4. In the past five years the indicator shows no overall trend, and the ratio of declining to increasing species is 1.1^{iv}. This implies that long-term declines have stabilised over recent years. However, the indicator has low statistical power to detect short term change^{vi}, so **the evidence for a reduction in the rate of decline among these priority species is plausible but not definitive** ^[High].
5. Country versions of C4a are not available, therefore **it is not known whether the pattern of change exhibited in the UK indicator holds true for each country** ^[Medium].

D. Wider Application

6. Encounters with rare and charismatic species form an important component of human enjoyment of nature (cultural ecosystem services). The priority species indicator includes some of the UK’s most charismatic animals (including the hedgehog and dormouse and many birds and butterflies). However, the link between species status and cultural services is not well-

established, so it remains unclear how changes in the indicator could be used as a measure of cultural ecosystem services.

7. The trend in indicator C4a is considered to provide a direct contribution to the assessment of progress towards Aichi target 12: to improve the conservation status of known threatened species. **The Priority species indicator is a useful metric for assessing progress towards Aichi Target 12** ^[Low] (with the caveat about representation, above). Note, however, that the species on the priority list were defined subjectively, and not all would qualify as threatened by an objective criterionⁱ. The status of priority species is thought to be indirectly relevant to Aichi target 5 (natural habitats) and target 11 (protected areas)^{vii}, but better indicators of progress towards these targets exist.

E. Drivers of change

8. The most significant drivers of change of the priority species indicator (abundance) relate to the intensification of agricultural management, which can be sub-divided as production-driven farm management, pesticide and herbicide use, intensive grazing, and fertiliser use. There is good evidence on the very strong negative impact of these drivers, which can be linked to changes in management driven by the Common Agricultural Policy. **Agricultural intensification is largely responsible for the decline in the indicator**^{viii} ^[Medium].
9. **Trends in abundance of about half of the species within this indicator are associated with climate change, with more species decreasing than increasing**^{ix} ^[High]. Strength of evidence for these associations ranges from low to high. The mechanisms vary widely across taxa. A number of priority species have shown range expansion in response to a warmer climate, whereas wintering waterbird distributions have shifted away from the UK.
10. **There is very good evidence that extensive management of farmland, largely through targeted wildlife-friendly farming supported through agri-environment schemes, has had a moderate positive effect on the indicator**^x ^[Medium]. Some changes, such as declines in grazing, have had negative impacts.
11. **Changes in woodland management have been important, with both an increase and decrease in management intensity having a moderate negative effect on priority species** ^[Low]. The cessation of traditional practices such as coppicing has been deleterious for understorey specialist birds, and butterflies such as the Duke of Burgundy, while removal of dead trees has impacted species that feed or nest within dead wood^{xi}.

Endnotes refer to the “Technical Report – Summary of Evidence” document, unless otherwise stated

ⁱ Eaton *et al.*, 2015. *Biodiversity* 16, 108-119

ⁱⁱ http://jncc.defra.gov.uk/docs/UKBI2015_DS_C4a_Final.docx

ⁱⁱⁱ <http://jncc.defra.gov.uk/page-4238>

^{iv} Section 2.1.5, table 2.1.

^v http://jncc.defra.gov.uk/docs/UKBI2015_DS_C4a_Final.xlsx

^{vi} Figure 2.7

^{vii} Section 6

^{viii} Section 3.2.1, especially table 3.5 and subsection 3.2.1.1

^{ix} Section 3.2.1, especially table 3.5 and subsection 3.2.1.2

^x Section 3.2.1, especially table 3.5 and subsection 3.2.1.3

^{xi} Section 3.2.1, especially table 3.5 and subsection 3.2.1.4