Department
for Environment
Food & Rural Affairs

Data use for delivering England's biodiversity targets

Hannah Hoskins and Gemma Shaw

National Biodiversity Evidence & Analysis Team

Through the Environment Act 2021, Defra set four legally binding national biodiversity targets

By 2030:

- Halt the decline in species abundance

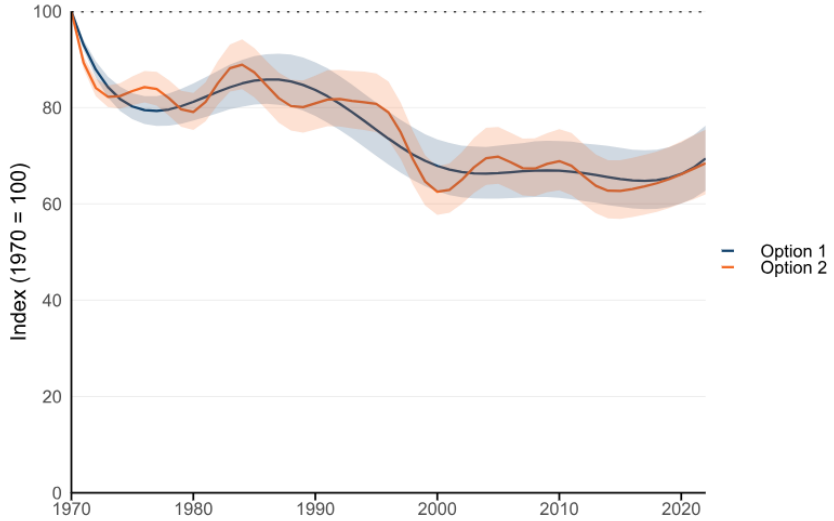
By 2042:

- Improve species abundance by at least 10% compared to 2030
- Reduce the risk of species extinction to below its 2022 level
- Restore or create 500,000 ha of wildlife-rich habitat outside of protected sites

Monitoring progress – species abundance

- Indicators of species abundance in England were published in May 2024
  - All-species abundance
  - Priority species abundance
- The all-species indicator will be used to track progress towards the species abundance targets
- Includes data for 1,177 species for which we have suitable data

Figure 1: Change in relative abundance of species in England 1970 to 2022, shown using two smoothing options.



All-species abundance indicator

- Much of the data is collected through established volunteer-based recording schemes
- Data requirements:
  - Standardised approach
  - Annual measure of abundance
  - Spatial coverage
  - Assessed at species level

Breeding Bird Survey (BBS)

Rare Breeding Birds Panel (RBBP)

Seabird Monitoring Programme (SMP)

Statutory Conservation Agency and RSPB Annual Breeding Bird Scheme (SCARRABS)

Wetland Bird Survey (WeBS)

National Fish Population Database (NFPD) and Transitional/Coastal waters Data (TRaC)

BeeWalks

UK Butterfly Monitoring Scheme (UKBMS)

Freshwater Invertebrates (BIOSYS)

Priority Moths

Rothamsted Insect Survey Light Trap

Breeding Bird Survey (BBS) mammals

National Bat Monitoring Programme

National Dormouse Monitoring Programme

National Water Vole Monitoring Programme

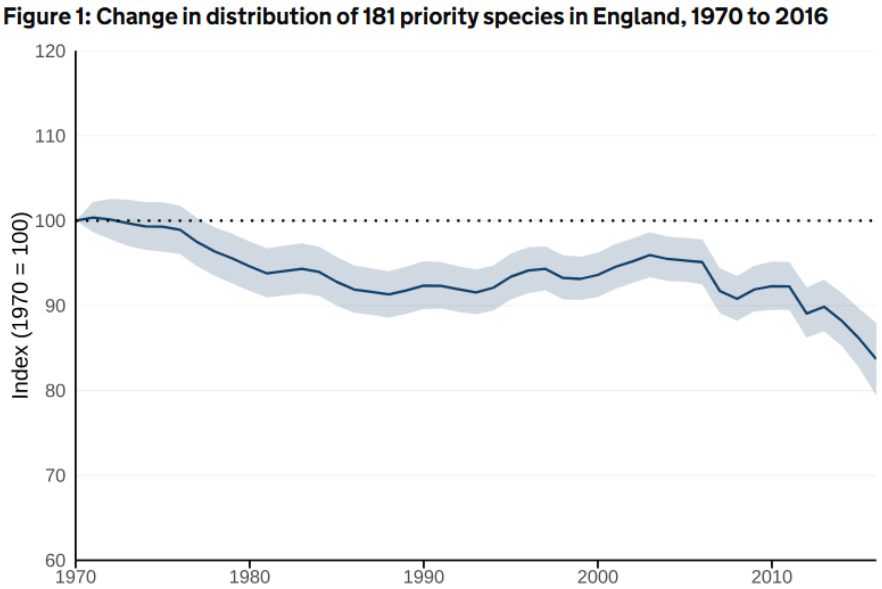
National Plant Monitoring Scheme (NPMS)

Monitoring progress – species extinction

- Assessed using an England-level Red List Index, based on GB data
- Based on the numbers of species in each Red List category, and how this changes over time as species improve or deteriorate in status
- Baseline assessment published in 2021
- Includes **8,259 taxa**, of which **994 are threatened**

Wider indicators – species distribution

- Existing indicator for priority species distribution
- Based on occupancy data collated through the Biological Records Centre
- We are developing a new indicator of all-species distribution in England



Target delivery – three broad actions required

1

Restoration and creation of habitat

2

Tackling pressures (e.g. ammonia, water quality, pesticides, invasive non-native species)

3

Taking targeted action for species

1 Restoration and creation of habitats

How does amount, type & configuration of land use change & agri-environment scheme actions affect species?

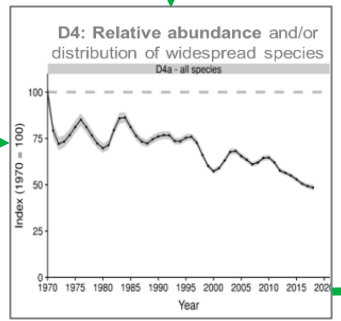
Map scenarios of future **land use** & **ELM** schemes

Models that simulate how species respond to landcover, small scale habitat features

- Birds
- Moths & Butterflies
- Plants
- Amphibians
- Bats
- Bees
- Reptiles

Generate a '**theoretical species abundance index**'

Check agreement *with historic trends*



Predict effects on species & the all species indicator used to measure progress towards abundance targets

Project Leads: Dr Emma Gardner (UKCEH) & Dr Emma Jardine (Defra)

UK Centre for Ecology & Hydrology

1 Restoration and creation of habitats – Evidence gaps

Delivery

- Effectiveness of farming schemes
- Encouraging uptake of actions to create wide range of habitats
- Opportunities (and risks) for green finance

Modelling & monitoring

- Habitat being lost/emerging drivers of change
- Empirical/field data to support modelling
- How best to target monitoring

2 Tackling pressures

We focus on:

- Water quality
- Physical modifications to rivers
- Nitrogen deposition
- Pesticides
- Invasive non-native species
- Climate change




2 Tackling pressures – evidence gaps

- Water quality – emerging contaminants (e.g., pharmaceuticals, plastics, road run off)
- Nitrogen deposition – impacts on higher trophic levels & species recovery
- Pesticides – sub-lethal impacts
- Invasive non-native species – priorities in INNS Evidence Strategy

How do different pressures interact with each other?

3 Targeted actions for species – evidence gaps

Projecting progress towards extinction risk target over time is challenging:

- **Multiple criteria for Red List assessments**
- **Specificity of species' needs**

Natural England qualitatively assessing which recovery actions are required

More research needed to understand threats/ recovery **for around a quarter of threatened species** assessed

Summary

- Evidencing the type and scale of action required to deliver the targets is challenging
- We are interested in data for species beyond those in the abundance and extinction target indicators
- Looking forward, we plan to develop a more detailed monitoring strategy
- We will be keen to engage with the monitoring community and ask for your help and expertise in filling some of our evidence gaps

Biodiversity indicators survey

- Defra publishes a suite of biodiversity indicators
- We would like to get a better understanding of who uses our indicators, and for what purposes
- Contact Clare Betts for more information – Biodiversity@defra.gov.uk

Please complete this short survey