



Department  
for Environment,  
Food & Rural Affairs

## Annex Four: Surveillance and Research

Regulation 9a Reporting, The Conservation of  
Habitats and Species Regulations 2017 (as  
amended).

January 2026

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# 1. Overview of Monitoring Schemes for Habitats and Species of European importance

Monitoring is essential for supporting the Government in fulfilling their statutory responsibilities. These obligations are set out in part 4 of the Habitat Regulations and 2(d) through the general requirement to comply with the Directives in Regulation 9A, Article 11 of the Habitats Directive and Article 4 (1) and 10 of the Wild Birds Directive. Without monitoring, it would not be possible to assess the conservation status of the habitats and species outlined in the Habitats Regulations. Key to this is the National Biodiversity Network which was created to facilitate the exchange of biodiversity information, including monitoring data (National Biodiversity Network, 2025).

Most species monitoring and surveillance schemes operate at the UK level and are delivered through partnerships among various conservation organisations. JNCC provides the coordination for these monitoring and surveillance schemes on behalf of the country Governments and Statutory Nature Conservation Bodies (SNCBs). In August 2023, Natural England published its strategic monitoring plan which sets out Natural England's monitoring activities for 2023 to 2026, including supporting national species surveillance and recording activities (Natural England, 2023c).

Below provides a general overview of monitoring efforts across habitats, non-bird species, and bird species. For a more detailed list of monitoring schemes, please see Appendices M and N (Annex Five). The data collected by some of these schemes were used to inform the Habitat Regulation assessments. Information regarding which data was used can be found in the technical assessments for habitats and non-birds. The data for birds was collated by the BTO under contract to the JNCC, to produce the population abundance and trend information presented in Annex Two and summarised in section 2.5 of the General Implementation Report.

## 1.1 Monitoring Schemes for Habitats

Habitat monitoring across England is supported by a combination of UK-wide and England-specific schemes that assess the condition and trends of terrestrial and marine ecosystems. The SNCBs are responsible for advising on conservation objectives of SACs and SPAs and monitoring their achievement by periodically assessing the condition of their underpinning habitats and species features. This is carried out through Common Standards Monitoring (JNCC 2019a). A Common Standards Monitoring Statement was revised in October 2019 and further updated in 2022 which replaced the original statement produced in 1998 (JNCC, 2022).

## Sites of Special Scientific Interest Monitoring Programme

SSSI monitoring is the main approach used to monitor qualifying features within SACs and SPAs using common standards approaches. In 2020, Natural England published a document detailing the operational standards for SSSI monitoring (Natural England 2020c).

The condition of SSSI features, including bird features, is assessed using national monitoring scheme data, periodic surveys, data from partners and site managers or bespoke commissioned surveys. When a SAC or SPA feature is underpinned by an analogous SSSI feature, the data collected can inform assessments of the condition of the SAC or SPA features. SSSI feature condition is reported on Natural England's online Designated Sites Viewer and informs the EIP targets for SSSIs. The EIP set an overarching biodiversity commitment to restore 75% of protected sites to favourable condition by 2042. This is supported by interim targets within the EIP23 that by 31st January 2028:

All SSSIs will have an up-to-date condition assessment.

- 50% of SSSIs will have actions on track to achieve favourable condition.
- Assessment of qualifying SAC and SPA features through SSSI data is not straightforward as historic approaches to identifying and describing interest features within SSSIs do not always translate directly to SAC features, particularly for habitats, and so the data generated through monitoring requires specialist interpretation.

During the current reporting period, Natural England has been transitioning to a reformed approach to SSSI monitoring that assesses whole features at site-scale rather than within individual management units (Natural England, 2024d). This should provide data with enhanced versatility for reporting on SAC and SPA features in future reporting rounds.

## The National Forest Inventory

The National Forest Inventory (NFI) is a rolling programme delivered by Forest Research, designed to provide accurate information about the size, distribution, composition and condition of our forests and woodlands and changes taking place in the woodlands over time.

Forest Research and its predecessors have carried out woodland surveys and compiled forest inventories at 10- to 15-year intervals since 1924. Because forests and woodlands are dynamic and can change a great deal over the years, it is important that information is kept up to date. The NFI, which started in 2009, is the latest of these periodic surveys to gather information across Great Britain.

The NFI covers any forest or woodland in Great Britain of at least 0.5 hectares (ha) in area with a minimum width of 20 metres, and that have at least 20% tree canopy cover (or the potential to achieve this). A sample of forests and woodlands are ground surveyed with the

surveys taking place in 5-year 'cycles'. The survey teams visit a representative sample of approximately 10,000 one-ha plots across Britain. Sites are randomly selected.

The first cycle of assessments took place between 2009-2015 with repeat cycles every five years. About two thirds of plot locations are permanent and will be revisited by the survey team during subsequent survey cycles. Repeat visits allow changes to be monitored and tree growth to be calculated. Other randomly selected plots are visited one time only to provide flexibility in the overall sample and to ensure that the NFI provides a valid snapshot of the woodland in GB (Forest Research, 2025a).

The NFI ground survey collects a varied range of qualitative and quantitative information from the one-hectare sample site which supports the evidence gathering and analysis required to report on woodland features under Regulation 9A.

## **Monitoring Freshwater and Marine Habitat Features**

The Environment Agency delivers a significant programme of freshwater and marine monitoring to support reporting against a number of drivers including the Water Framework Directive and the Marine Strategy. In 2024 the Environment Agency collected over 99,000 samples across the Country (Environment Agency, 2025a). This comprises collection of routine water quality data, chemicals, ecological components such as macrophytes, macroalgae, phytobenthos, phytoplankton marine angiosperms (saltmarsh and seagrass) fish and macro-invertebrates and data on physical attributes of freshwaters such as that collected through River Habitat Surveys. Together, these provide an evidence base for the quality and condition of near shore marine and freshwaters. Where these data coincide with protected sites, we use this evidence to develop an understanding of habitat condition, structure and function and inform management approaches and decision making. Data are available via the Water Data explorer [Water Data Explorer | Engage Environment Agency](#) through several archives (Environment Agency, 2025b). Common Standards Monitoring is designed to utilise this data when it is available, but it is often necessary to supplement the core data available with additional targeted monitoring carried out by, or on behalf of, Natural England to ensure that the resolution and frequency of monitoring is sufficient to assess condition of designated features. Part Four of the Habitats and Species Regulations 2017 (as amended) requires the appropriate authority to make arrangements for the surveillance of the conservation status of natural habitat types of national interest and species of national interest, and in particular priority natural habitat types and priority species.

## **Monitoring marine habitats**

For the purpose of this section 'marine' is refers to habitats between Marine High Water Spring (MHWS) and the 12 nautical mile boundary.

Natural England run a monitoring programme consisting of a complex suite of surveys undertaken by Natural England staff directly (i.e. dive surveys, rocky shore surveys and saltmarsh surveys (which fall across marine and terrestrial) or through partnerships with other organisations;

- Funded and co-ordinated by Natural England but delivered by ALBs (the Environment Agency and Cefas)
- Funded and co-ordinated by Natural England but delivered by one or more of the regional Inshore Fisheries and Conservation Authorities (IFCAs).
- Funded and managed by Natural England but delivered by external contractors
- Delivered through ad hoc MoA collaborations with academia, NGOs or citizen science organisations.
- As stated above, the Environment Agency conduct significant monitoring in inshore marine environment (typically estuaries, coast and marine waters out to 1nm) to support reporting against a number of drivers including the Water Environment Regulations. In the marine environment this comprises collection of routine water quality data, chemicals, ecological components such as macrophytes, macroalgae, phytobenthos, phytoplankton marine angiosperms (saltmarsh and seagrass) fish and macro-invertebrates.

Natural England and the Environment Agency have a close monitoring relationship in the marine system, with a collaborative post facilitating marine survey, analysis and assessment co-ordination to maximise efficiencies and consistency. Marine ecological data is automatically uploaded to the marine Data Archive Centres (DACs) via [MEDIN](#) (Marine Environmental Data and Information Network), and Natural England routinely use the Environment Agency's marine evidence, to support marine feature condition assessment. For example, condition assessment of subtidal seagrass features incorporates extent data from the Environment Agency, plus data on percent cover, shoot height and density, wasting disease and epiphytes collected by the Natural England Dive Unit.

In the marine environment, the [UK Directory of Marine Observing Systems](#) is a high-level metadata repository and maintain a comprehensive record of marine monitoring activities. This includes schemes focused on marine SACs to inform marine conservation strategies

## Monitoring Marine Special Protection Areas

During the reporting period, SPA monitoring was undertaken via three primary routes.

Natural England directly funded Digital Aerial Survey monitoring of - Falmouth Bay to St Austell Bay SPA (2020/21).

As part of Natural England's work under the Defra led marine natural capital and Ecosystem assessment (mNCEA) programme (2020/1-2023/4), which was focused on trialling innovative methods for monitoring marine ecosystems, filling key evidence gaps and on integrating ecological evidence with social and economic evidence, further marine bird surveys were undertaken, Natural England conducted additional monitoring of marine birds.

Digital aerial surveys of the Solway Firth SPA (2021; 2022/23); and Greater Wash SPA (2021/22; 2022/23) (Natural England, 2022d; Natural England, 2022b; gov.uk, 2022).

- Low tide surveys of the Wash SPA at low tide were completed, with accompanying Digital Aerial Survey trials, in 2019/20 (data available from Natural England);
- Digital Aerial Surveys of Morecambe Bay SPA at low tide were completed in 2023/24; and
- Digital Aerial Surveys of Berwick to St Mary MCZ/Lindisfarne SPA were completed in 2023.
- Additional, as part Natural England's mNCEA portfolio, monitoring is being supplemented at 28 key seabird colonies including Flamborough & Filey Coast SPA and Isles of Scilly SPA using remote monitoring methods, following earlier successful trials at Poole Harbour SPA. This work is currently ongoing
- Digital video aerial surveys were conducted between 2015 and 2020 by HiDef Aerial Surveying Ltd ('HiDef') and commissioned by DONG and Ørsted as part of their post-consent monitoring programme for Burbo Bank Extension offshore wind farm. Eight surveys were completed between January-March in 2015, 2018, 2019 and 2020 (Natural England 2023b).

Coastal overwintering bird SPA features are condition assessed using Wetland Bird Survey (WeBS) data and breeding seabird SPA features using Seabird Monitoring Programme (SMP) data (see Appendix N).

**Table 5. Condition Assessment Outcomes Across 14 Marine/Coastal Special Protection Areas.** Condition assessments were conducted by Natural England staff and results uploaded to Designated Sites View.

|                           | Favourable | Unfavourable Recovering | Unfavourable No Change | Unfavourable Declining | Total |
|---------------------------|------------|-------------------------|------------------------|------------------------|-------|
| <b>Number of Features</b> | 44         | 7                       | 22                     | 30                     | 103   |

As shown in Table 5, condition assessments for 103 features on 14 marine/coastal SPAs have been published to date, as set out in the table above. Half of the features assessed are in favourable or recovering condition.

## 1.2 Monitoring Schemes for Species

### Monitoring Schemes for Non-bird Species

Monitoring Schemes for Non-Birds assessments at an England level benefit from several UK monitoring and surveillance schemes including the United Kingdom Butterfly Monitoring Schemes, National Bat Monitoring Programme and the Small Cetaceans in European Atlantic Waters and the North Sea (SCANS).

While there are fewer country-specific initiatives, some notable examples include the [National Dormouse Monitoring Programme](#) and [National Otter Survey of England](#). The dormouse monitoring programme, led by the People's Trust for Endangered Species, is a long-term monitoring effort spanning England and Wales (People's Trust for Endangered Species, 2025). The sixth National Otter Survey, conducted between 2022 and 2023, was a collaborative effort funded by the Environment Agency and Natural England, and led by the Mammal Society (Mammal Society, 2024). Although the final report is not available at the time of publication, the results have been used to undertake the Habitats Regulations reporting requirements.

### Monitoring Schemes for Birds

Wild bird populations in the UK are monitored through a suite of well-established schemes and surveys, as detailed at Appendix N (Annex Five). Data from these schemes have been used to derive the population abundance and trend information presented at Annex Two and summarised in section 2 of the General Implementation Report. The schemes are co-ordinated by a range of organisations, as described at Appendix N, but the fieldwork is largely carried out by volunteers. Without this massive voluntary effort understanding of the UK's birds would be immeasurably poorer.

To promote coordination across the four constituent countries, a UK Bird Monitoring Framework ("the Framework") has been constituted to facilitate, support, and integrate monitoring efforts across organisations and geographies. The Framework will become an on-going partnership between JNCC, Natural England, Natural Resources Wales, NatureScot, Northern Ireland Environment Agency, BTO, RSPB, and the Rare Breeding Birds Panel.

### Monitoring the Impact of Highly Pathogenic Avian Influenza

Highly Pathogenic Avian Influenza (HPAI) is naturally occurring in wild waterfowl and is spread across the globe via migratory pathways. The current H5N1 strain has been circulating in the UK since 2020. HPAI outbreaks in wild bird populations have become more common and severe, with notable outbreaks in 2022 and 2023 (Atkinson and Baillie, 2025). Since 2022, all UK SNCBs have operated a targeted wild bird mortality reporting system at key breeding seabird and non-breeding waterbird sites.

Enhancements to the monitoring and assessment of bird species affected by HPAI have been introduced, especially focussed on birds of prey, non-breeding waterbirds and breeding seabirds monitored under the UK Seabird Monitoring Programme, as a response to significant mortality of these taxa in 2022 and 2023. Birdwatchers and volunteer bird surveyors can now record dead wild birds through existing citizen science platforms (e.g. Wetland Birds Survey) operated by the BTO.

The mitigation strategy for avian influenza in wild birds (2024) in England and Wales sets out the policies and approach that Defra and Welsh Government, and their delivery agencies the APHA, Natural England and Natural Resources Wales, take to Avian Influenza in wild birds in England and Wales. It also contains guidance for the general public and non-governmental organisations on issues which may impact them in relation to avian influenza in wild birds (Defra and Welsh Government, 2024).

## **Monitoring the State of Natural Capital**

In 2022, the total asset value was valued at £1.8 trillion, an increase of 11% since 2018. It is estimated that 20 million people gained health benefits from recreation in nature in 2022 (Office for National Statistics, 2024). The Habitats Regulations play a crucial role in safeguarding not only the quantity but also the quality of habitats. In doing so, they help preserve the natural capital and ecosystem services provided by the network of European sites, securing the benefits from nature we rely on for a thriving society and economy.

A review of five SACs within the LIFE Recreation ReMEDIES programme, focusing on Maerl and Seagrass habitats demonstrated the carbon capture, water filtration and fisheries values that are protected by the Habitats Regulations (LIFE Recreation ReMEDIES, 2021). Furthermore, only around 20% of England's peatland is in a near natural or rewetted condition which allows it to capture carbon from its surrounding environment (Office for National Statistics, 2019).

Both Article 2 of the Habitats Directive and Wild Birds Directive reference measures taken pursuant to these directives shall consider economic, social, and cultural requirements. In the previous reporting round, England released the 2018 Natural Capital Indicators report which identified key components of the environment essential for the long-term provisions of benefits on which society relies (Natural England, 2018). Since then, England has published:

[The 2019 Natural Capital Account of NE's National Nature Reserves](#), innovated by using an extended balance sheet, which displays the state of our assets, services, benefits and their economic value next to each other (Natural England, 2019).

- [The 2020 Natural Capital Atlases](#) use nationally consistent evidence to map out indicators showing the quantity, quality, and location of ecosystems. They provide an “off the shelf” natural capital evidence bases for each county or city region and can be added to or built on to support place-based decision-making (Natural England, 2020b).

- [The 2021 Natural Capital Evidence Handbook](#) which sets out an approach that will help users to include natural capital evidence in their decision making, a tool that could support management of sites within the National Site Network (Natural England, 2021c).
- [The 2024 State of Natural Capital Report](#) which brings together the best available evidence on the state of England's natural capital. The report looks at the risks to ecosystems and the benefits they provide from key drivers of change, setting out the consequences of these risks for key government policy areas (Natural England, 2024f).
- Natural Capital and Ecosystem Assessment

[The Natural Capital and Ecosystem Assessment](#) (NCEA) is the UK government's largest environmental research and development programme. The NCEA programme is led by Defra and delivered in partnership with other agencies (Adcock and Jones, 2024). The programme was developed as a direct progression from the 2015 Natural Capital Indicators Report. NCEA aims to transform how we value and manage nature by creating a comprehensive and consistent evidence base on the extent, condition, and trends of England's ecosystems and natural capital. This evidence will inform environmental policymaking and investment, especially in support of the Environment Act, ELM schemes, Net Zero, and BNG.

Natural England lead several key monitoring and mapping projects within the NCEA programme, focusing on terrestrial ecosystems and habitat evidence. There are also various other projects to promote better coordination between volunteers and mobilisation of data. Key projects within the reporting period include:

**The England Ecosystem Survey.** One of the flagship projects is the England Ecosystem Survey, the largest ecological survey of its kind in the UK. It collects detailed data on soils, vegetation, hedgerows, ponds, trees, and landscapes from thousands of 1km<sup>2</sup> plots over a five-year period. This comprehensive field survey provides essential information for understanding ecosystem condition and directly supports environmental indicators such as E7, which measures soil health. In addition, Natural England's NCEA contributes to projects assessing below-ground biodiversity collected by the EES. It partners with the Royal Botanic Gardens, Kew, to deliver the Mycorrhizal Diversity Dataset, exploring the role of soil fungi in ecosystem health and carbon storage.

- **Living England Habitat Map.** This data supports habitat change monitoring, green infrastructure planning, and assessments for biodiversity net gain. The Priority Habitat Inventory, which updates spatial data on Section 41 habitats, crucial for conservation planning and environmental regulation, has been streamlined and enhanced by the NCEA. This work can be used to reliably identify and assess areas of ecological importance, leading to a larger value in the conservation and enhancement of biodiversity.

- **Botanical Heatmaps and Value Maps.** These maps represent the efforts to capture the value of biodiversity, and they use plant species records to identify areas of high botanical importance and guide decisions on activities like afforestation. These maps are also useful when assessing plans or projects that might affect habitats as they could support in identifying locations with high ecological sensitivity. NCEA also created the LNRS Data Viewer, an online tool providing habitat maps and guidance to local authorities developing recovery strategies under the Environment Act.
- **The England Peat Map.** The England Peat Map (EPM) was recently published and shows a probability map showing the extent, depth and condition of peaty soils in England. As a great deal of peatlands fall within or near SAC or SSSI. Restoration informed by the EPM can directly support the favourable conservation status of these designated habitats or even be used to identify more.
- **Terrestrial Citizen Science.** Over 70% of government biodiversity reporting relies on volunteer-collected data. This project aims to formalise, standardise, and improve the quality and utility of that data. An example of this work in practice is the collaboration with DigVentures on the Deep Time platform, where citizens mapped habitats using Earth observation data. Supported by Natural England's Living England project, this initiative helped test new methods of validating remote-sensing data through public participation.
- **The marine NCEA** ran as part of the wider NCEA programme between 2020 and 2025. Its vision: A thriving marine environment where nature is at the heart of decision making. Its mission: To accelerate nature recovery, growth and delivery of nature's benefits by transforming marine evidence and decision making. Projects delivered included:
  - **Local decision making.** This had a primary aim to strengthen place-based decision making by using interdisciplinary methods to deepen our understanding of local environmental contexts and priorities. New work was delivered that provided monetary values for improving species' populations and delivering Good Environmental Status, as well as exploring wider cultural values and how these can inform fisheries management. Additional work was undertaken to support Fisheries Management Plans through understanding the societal benefits of well-managed crab and lobster fisheries and trialling the use of additional data sources to improve confidence in stock assessments. Data were also collected on the extent and condition of Maerl beds and the drivers of shellfish mortality. The project also led to the adoption of a natural capital approach to the East Marine Plan sustainability appraisal and explored how an approach following the model of Local Nature Recovery Strategies could be applied in marine areas.
  - **Innovation in evidence.** This work-package also ran through the 3 years of the mNCEA programme and comprised >60 individual projects. Evidence collection under the mNCEA was all about working toward transformational change in

future monitoring to enable a natural capital/ systems approach to decision making, Evidence included ecological, social, cultural and economic. In all cases Natural England's approach to the programme was to promote the fresh, innovative and novel and then to evaluate readiness for RDEL incorporation. On the ecological side Natural England evaluated eco-acoustics (marine mammals & fish), eDNA (fish, mammals, meiofauna, and carbon sourcing), artificial intelligence and machine learning (species distribution models, marine habitat mapping from aerial imagery and drones, larval fish identification, provisioning studies for seabirds, counting pinnipeds and mapping inshore vessel pressures).

- **Marine Citizen Science.** 40% of Natural England's mNCEA relied of citizen/ community science input to a greater or lesser extent. Key achievements include the establishment of a cross ALB marine citizen science group, the creation of a marine citizen science strategy (Defra bodies), a synthesis review of marine citizen science initiatives and a marine citizen science best practice portal [DASSH - Citizen Science Best Practice](#).

## 1.3 Monitoring Public Engagement and Acceptance Towards Biodiversity Protection

Public understanding and opinion on the value of biodiversity has strong implication for the acceptance and adoption of conservation measures. England has been monitoring public perception of biodiversity protection for over 15 years. [The Monitor of Engagement with the Natural Environment Survey](#) (MENE) was set up in 2009 and concluded in 2019.

Since then, England has continued to track public engagement and attitudes toward biodiversity protection through the [People and Nature Surveys](#) (PaNS). Launched in 2020, the survey collects evidence and trend data on how people access, understand, and enjoy nature, as well as its impact on wellbeing (Natural England, 2025e). In 2024, 86.3% of adult respondents either agreed or strongly agreed that they were concerned about harm to the natural environment, a 0.7 percentage point increase since the beginning of the programme. Additionally, the belief that protecting the environment is important for the sake of 'Animals and plants' increased 0.9 percentage point increase to 62.9% over the same period (Natural England, 2025f). To explore these trends in more detail, Natural England provides an interactive [People and Nature Data Viewer](#), which allows users to access and visualise the survey data.

Both surveys contribute to England's biodiversity indicators, specifically the indicator that addresses [people's awareness of biodiversity and understanding of its value](#).

## 2. Research and Work Conducted between 2019 and 2024

A considerable amount of research and work has been undertaken within England to inform the protection, management, and sustainable use of habitats and species, supporting delivery of the Habitats Regulations. This section was previously included in Article 12 reporting for the Wild Birds Directive and consisted of a table demonstrating the research conducted across the reporting period. An updated table representing this reporting round can be found in Appendix O.

As mentioned in Section 4, NCEA is the UK government's largest environmental R&D programme. It aims to systematically improve the evidence base to ensure that nature recovery and site management decisions are informed by the best available data. Additionally, AfiBE - a key programme outlined in section six - has funded diagnostic research on a suite of species including Turtle dove, Black-tailed Godwit and Wood warbler, beach-nesting birds and the impacts of HPAI in recent years.

The [UK Cetacean Strandings Investigation Programme \(CSIP\)](#) has been running since 1990 and within England, the programme is funded by Defra. This R&D programme collects data on marine mammals such as stranded whales, dolphins, porpoises, marine turtle, and seals (since 2022). CSIP investigates the cause of death, through necropsies. Additional research and evidence from this reporting round can be accessed via [Defra's Science Search](#), which provides insights into Defra-funded studies, and Natural England's [Access to Evidence catalogue](#), offering a wide range of resources to support conservation and environmental decision-making.

### 2.1 The Agri-Environment Evidence Programme

AES include both the existing Environmental Stewardship, Countryside Stewardship, and the newer Sustainable Farming Incentive (piloted in 2021 and launched in 2022). The area of land in AES is part of [England's biodiversity indicators](#) and also contribute to the [UK Biodiversity Indicators](#). In December 2022, the total number of agreements under AES was 27,100 in England. The total area of land in higher-level or targeted Agri-environment agreements was 2.3 million ha, and this area has gradually increased over time. The total area of land in entry-level agreements was 1.4 million ha (Defra, 2024a). Since then, the total area covered by the three schemes is estimated to be around 5.6 million ha in England at 31 December 2024. This is estimated to be equivalent to 64% of the utilised agriculture area of England (Defra, 2025b). There are [more up-to-date statistics](#) on the total number of agreements published outside of the reporting period (Defra, 2025a).

The Agri-Environment Evidence Programme monitors and evaluates existing AES; their effectiveness in achieving their intended policy objectives and inform current and future agri-environment policy. Each year, Natural England produce a report summarising findings from projects within the programme. The most recent report within this reporting

period was published in 2024 and represents seven peer-reviewed research projects completed during 2022 and 2023. Key findings include:

- **LM0465: Landscape-scale Species Monitoring of Agri-environment Schemes:** Findings from this study revealed that higher scheme uptake was associated with greater species richness, diversity and/or abundance among butterflies, moths and 2 bat species. The study also found evidence that the abundance or species richness of larger and more mobile butterflies, moths and hoverflies was associated with scheme uptake at landscape-scale. This indicates landscapes with high levels of scheme intervention may support multiple species. However, bird responses were more closely linked to habitat diversity than AES uptake, with only local-scale effects observed. Notably, breeding birds that feed on invertebrates showed a positive association with local AES, suggesting that while birds are highly mobile, their community-level responses to AES are primarily influenced by local habitat conditions.
- **LM04127: Countryside Stewardship Facilitation Fund (CSFF) - Monitoring and Evaluation Phase 4:** The study found CSFF group membership supported the wellbeing of land managers - including farmers - by helping them develop a collective voice, feel part of a community, and feel that their activities are deemed worthwhile. The CSFF membership also improved individual farming and environmental management for nature recovery by playing a key role in developing the confidence of land managers concerns aspects of AES delivery and development (Natural England, 2024a).

For birds specifically, the programme demonstrates that measures, when targeted, can successfully deliver the habitats and resources needed to maintain or enhance bird abundance at the local level. For example, targeted measures for circl buntings were designed into the scheme and then promoted to landowners by RSPB project officers supported by Natural England. As circl buntings were largely confined to south Devon, these measures could affect a large proportion of the population and have been successful in recovering the species from 118 pairs in 1989 to a latest estimate of 1079 pairs (RBBP, 2024). Collaborative research by the RSPB and Natural England has shown that targeted AES can improve populations of farmland birds in arable and pastoral landscapes (Sharps and others, 2023). However, to improve national populations of widespread farmland birds, greater implementation of targeted bird-friendly AES is required.

Appendix P links to further research publications relating to AES within this reporting period.

## 2.2 Research and Work Undertaken to Reduce and Mitigate Impact on Seabird Populations

Alongside POSEIDON, a substantial amount of work has also been undertaken specifically designed to reduce and mitigate impacts on seabirds from marine renewables and other anthropogenic activities.

### Reducing Seabird Collisions Using Evidence

Reducing Seabird Collisions Using Evidence (ReSCUE) is a multi-year, multi-partner project that commenced in 2024 and is led by Natural England. The aim is to provide a better understanding of seabird flight heights and vulnerability to collision with wind turbines, using existing sources of data and innovative technology such as light detection and ranging (LiDAR). Better data, leading to reduced uncertainty, will provide increased confidence in the assessment of impacts. This will aid the development of design standards to mitigate potential collisions from offshore renewables, at the same time contributing to the UK's targets to reduce emissions and work towards achieving its net-zero ambitions.

### Bycatch Mitigation Initiative

The [Bycatch Mitigation Initiative](#) (BMI) was published in 2022 and outlines the UK government's ambition to minimise and where possible, eliminate bycatch of sensitive species, including seabirds, seals, cetaceans and elasmobranchs, through a framework of objectives and actions. Defra has commissioned and funded numerous programmes and projects to deliver as part of the strategic bycatch programme of work and to address the objectives outlined in the BMI. This includes [Clean Catch](#), an R&D programme established in 2020 that works collaboratively with industry, academics and experts on species and bycatch, undertaking innovative bycatch monitoring and mitigation trials which have been codesigned with fishers. Defra also funds the [Bycatch Monitoring Programme](#) (BMP) are currently developing a Seabird Bycatch Action Plan for England to address the issue of seabird bycatch and align with our commitments under international environmental agreements such as OSPAR.

## 2.3 Protected Site Strategies Research and Development Project Pilots

The Protected Site Strategies (PSS) research and development project conducted five R&D pilot projects including:

- On the Humber, PSS considered how to manage the impact of multiple pressures, including increase development and infrastructure on the estuary, see case study below.

- In Sussex ancient woodlands, PSS explored how the sustainable management of deer can be improved through collective action of diverse land management and landowning interests. See case study below.
- On the Clun in Shropshire, research is being carried out to support land managers and wider local community to address water quality issues in ways that increase the profitability of land-based enterprises. A case study has already been highlighted in section 3.2.4.
- In the Peak District, PSS is supporting farmers to transition to regenerative farming practices to help address water quality issues. A case study has already been highlighted in section 3.2.4.
- In Cumbria, on isolated fens and bogs, PSS is testing how to restore water systems to stop peatland drying out.

## **Enhancing Curlew Conservation on the Humber Estuary**

The Humber Estuary is one of the UK's most ecologically and economically significant coastal regions as a designated SAC and SPA. It is also the second-largest estuary in the UK, supporting over 30,000 hectares of diverse habitats and handle 14% of the nation's international trade. Many priority species such as the curlew and a host of other shorebirds whose populations are under threat also rely on the Humber for their survival. Because of its ecological and economic importance, the Humber faces complex challenges: socio-economic deprivation, industrial transition, and fragmented governance. These issues hinder effective conservation and slow down economic development.

The TRACC (Transformative Research Actions for Resilient Coastal Communities) project, part of the Resilient Coastal Communities and Seas programme, addresses the complex challenges facing coastal regions like the Humber Estuary through a place- and values-based approach. It promotes transformative governance by integrating ecological, social, and economic dimensions to build resilience. These efforts highlight the need for more inclusive decision-making to ensure sustainable conservation outcomes. A focus on identification and mapping of land functionally linked to the estuary and inclusion of these areas in spatial planning initiatives through TRACC supports the restoration of structure and function attributes in the site's conservation objectives.

For species reliant on dynamic estuarine environments, TRACC's integrated planning and community-led strategies improve habitat protection, reduce conflict, and build resilience- demonstrating how inclusive, place-based governance can strengthen long-term conservation efforts.

## **Sussex Wood - Sustainable Deer Management Project**

The Sussex Woods pilot, launched by Natural England in 2022 as part of the PSS research and development programme, focuses on sustainable deer management to restore woodland habitats and improve biodiversity. Within the boundaries of the pilots,

there are four SAC sites involved including Kingley Vale SAC and Duncton to Bignor Escarpment SAC.

Overgrazing by deer had significantly degraded understorey vegetation and hindered the regeneration of native tree species. Through targeted deer control, the project is enabling natural woodland recovery, enhanced structural diversity, and improved habitat connectivity across fragmented woodland patches.

These habitat improvements will lead to notable benefits for species such as nightingales and woodcocks. Invertebrates and small mammals have also benefited from the resurgence of understorey growth, which provides essential microhabitats. Additionally, native woodland flora like bluebells and wood anemones are showing signs of recovery in areas where deer browsing has been reduced, contributing to overall biodiversity gains.

Strategically, the Sussex Woods pilot demonstrates how evidence-based deer management can be integrated into broader conservation efforts to support FCS for woodland habitats. The project's collaborative approach - engaging landowners, local authorities, and conservation groups - is fostering shared responsibility and built momentum for landscape-scale restoration. Its success will inform the national rollout of PSS in 2025, offering a scalable framework for addressing similar ecological pressures in other regions.

## 2.4 Defining Favourable Conservation Status Project

Achieving Favourable Conservation Status (FCS) of habitats and species of European importance is the primary objective of the UK's Habitats Regulations and the EU Habitats Directive.

Natural England leads the Defining FCS project (also mentioned in chapter two) which produces definitions of FCS for species and habitats in England. These definitions set out England scale ambitions for species and habitats based on ecological evidence and expertise of specialists (Natural England, 2021a). Where available FCS definitions have been used in Regulation 9A reporting. As of the date of publication 46 definitions are published.

Working with partners, Natural England are evaluating how these definitions can inform and improve decision-making across a wide range of work areas. Some of the work areas include:

- **Statutory Requirements:** Having a clearer definition of favourable conservation status through the development of country level favourable reference values for habitats and species provides important ecological context for decision-making at local and national levels.
- **Nature Recovery:** FCS sets the ambition and recognises the need for delivery at larger scales and across both protected and unprotected areas without being restricted to locations or boundaries. Multiple definitions could be used to inform the

management of individual habitats and species or mosaics comprising several different habitats.

- **Species:** FCS definitions could be used to guide ambitions for Species Recovery Programmes and can be used in conjunction with Species Recovery Curves. They inform strategic approaches to wildlife management and inform the Species Conservation Strategies.
- **Conservation Management of Protected Sites:** FCS could be used to inform the sufficiency of protected sites, in the context of conservation in the wider environment. This could be useful in informing future project site designation strategies (Hanna, 2021).
- **Strategies:** A program of FCS strategies is under development which outline the objectives and actions needed to achieve FCS for species and habitats in England. Guidance on producing strategies was published during the reporting period (Mason, 2023)

### 3. References

Full list of references can be found at Annex Six to this report.