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## Surveillance and monitoring



### Working with partners, JNCC tracks trends in plant and animal populations and habitats across the UK

If UK and devolved governments are to assess whether they are meeting their environmental targets and to identify any areas where policy needs to be adjusted, it is vital that they have access to up-to-date information. Biodiversity surveillance provides information about the fate of species and habitats and also highlights the impacts of factors affecting biodiversity, such as habitat change, climate change and non-native species.

JNCC is a key player in country and UK-level biodiversity surveillance and monitoring, and supports a wide range of schemes that gather data on animal and plant populations and habitats.

There are around 100 schemes that keep track of one or more biodiversity components at a country or UK scale. This is more than for any other single sector of environmental monitoring and reflects the wide range of species and habitats that need to be recorded. Schemes are funded by public bodies, research organisations, non-governmental organisations and societies. The UK benefits from a culture of species recording by amateur naturalists,

#### What do we mean by surveillance?

The word 'surveillance' originates from the French to 'watch over', and may be used interchangeably with 'monitoring' (which we see as 'surveillance against a pre-set standard[s]'). Both imply repeated recording over time. 'Sampling', 'recording' and 'observation' may be one-off events, or form part of a surveillance or monitoring scheme. JNCC supports all these activities, however defined, that help to reveal the state of biodiversity.

and volunteers play an invaluable role in carrying out field recording.

JNCC spends more than £1 million a year on biodiversity surveillance, most of which is delivered through long-term partnerships with organisations such as the British Trust for Ornithology, the Centre for Ecology and Hydrology and Butterfly Conservation. Over the past year, JNCC has continued to play a leading role in the development of a terrestrial biodiversity surveillance strategy for the UK. We published details of this strategy on the JNCC website in July 2008 at [www.jncc.gov.uk/page-4425](http://www.jncc.gov.uk/page-4425) – this

coincided with the launch of the UK Environmental Observation Framework, which is working towards a complete framework for all environmental observation and monitoring. There has been close collaboration between JNCC and the country conservation bodies in this area.

The terrestrial biodiversity surveillance strategy is designed to ensure that the UK has sufficient surveillance in place to meet UK conservation and reporting objectives. It also aims to improve efficiency in sampling design and analysis, for example by using one dataset many times for many purposes.



**Chiffchaff being ringed**  
*Phylloscopus collybita*

Attaching uniquely marked lightweight metal rings to the legs of birds has been used in Britain and Ireland as a way of monitoring their populations since 1909. Bird ringers are trained and licensed by the British Trust for

Ornithology to catch and handle birds, ensuring that high welfare standards are met and high quality information is being obtained for scientific purposes.

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## Partners in surveillance

A wide range of partners play a role in surveillance and monitoring schemes in the UK, with volunteers putting in a total of 40,000 hours of effort each year on these named schemes alone.

### Birds:

#### Breeding Bird Survey (BTO, JNCC, RSPB)

3,604 1km squares in UK surveyed three times in 2007, covering 101 species. Scheme started in 1994.

#### Rare Breeding Birds Panel collation of breeding bird reports (RBBP, JNCC, RSPB, BTO)

Around 8,000 sites in UK reported on annually, covering 130 species. Scheme started in 1972.

#### Nest Record Scheme (BTO, JNCC)

34,202 records in GB submitted in 2005, covering 90 species. Scheme started in 1939.

#### National Ringing Scheme (BTO, JNCC)

Around 880,000 birds ringed each year of 270 species, including birds from 120 Constant Effort Survey (CES) sites and 100 Retrapping Adults for Survival (RAS) studies. National scheme started in 1909, whilst CES started in 1983, and RAS in 1998.

#### Wetland Bird Survey (BTO, JNCC, RSPB, WWT)

Around 2,000 wetlands in GB monitored up to once a month for waders and other waterbirds. Over 100 species recorded. Scheme started in 1947.

#### Goose and Swan Monitoring Programme (WWT, JNCC)

Thirteen goose and swan populations monitored in the UK. Scheme started in 1955.

#### Seabird Monitoring Programme (JNCC, CEH, NTS, RSPB, SG, SOTEAG)

All 26 species of regularly breeding seabirds monitored at a sample of colonies in the UK, since 1984.

### Invertebrates:

#### The UK Butterfly Monitoring Scheme (BC, CEH, JNCC, CCW, Defra, NE, NIEA, FC, SGov, SNH)

Includes transect walks and timed counts. Butterflies counted on 850 transects, 16 times a year. 63 species have data collected regularly, and some trends go back to 1976.

#### Recording schemes (range of invertebrates) (BRC, CEH, JNCC, NBN, NERC, NSS)

At least 412 invertebrates listed as priority species under the UK Biodiversity Action Plan are recorded across the UK by 88 organisations.

### Mammals:

#### National Bat Monitoring Programme (BCT, JNCC, NE)

Approximately 2,500 sites monitored. Long-term trends available for 11 of the UK's 17 bat species. Scheme started in 1996.

#### National Gamebag Census (GWCT, JNCC)

600 estates across GB return information on game and predator bags. Sixteen species of mammal recorded. JNCC funds analysis of the data. Scheme started in 1961.

#### Breeding Bird Survey/Waterways Breeding Bird Survey – Mammal Data (BTO, JNCC)

Mammal data collected at 2,400 Breeding Birds Survey sites since 1995, and 300 Wetland Breeding Bird Survey Sites since 1998.

### Plants:

#### British Bryological Society Recording Schemes (BBS, CEH, JNCC, BRC, NERC)

The Vice-County Recording Scheme (established 1937), the Mapping Scheme (established 1960) and the Threatened Bryophyte Database scheme (established 2000) have collected data on 1,034 species of bryophyte across the UK.

**Key:** BBS – British Bryological Society, BC – Butterfly Conservation, BCT – Bat Conservation Trust, BRC – Biological Records Centre, BTO – British Trust for Ornithology, CCW – Countryside Council for Wales, CEH – Centre for Ecology and Hydrology, Defra – Department for Environment, Food and Rural Affairs, FC – Forestry Commission, GWCT – Game and Wildlife Conservation Trust, JNCC – Joint Nature Conservation Committee, NBN – National Biodiversity Network, NE – Natural England, NERC – Natural Environment Research Council, NIEA – Northern Ireland Environment Agency, NSS – National Schemes and Societies, NTS – National Trust for Scotland, RBBP – Rare Birds Breeding Panel, RSPB – Royal Society for the Protection of Birds, SG – Seabird Group, SGov – Scottish Government, SNH – Scottish Natural Heritage, SOTEAG – Shetland Oil Terminal Environmental Advisory Group, WWT – Wildfowl and Wetlands Trust

During the reporting year, data from surveillance schemes in the UK continued to be used for a variety of purposes. One example of how biodiversity surveillance and monitoring data support policy making is the BICCO-Net (Biodiversity Impacts of Climate Change Observation Network) project, which is managed by the British Trust for Ornithology, with JNCC chairing its steering group. Funded by Defra and with contributions from the Countryside Council for Wales and Scottish Natural Heritage, the project seeks to strengthen the evidence base for policy-making on climate change mitigation and adaptation. Data from the UK surveillance effort will be used to produce an analysis of how climate change influences biodiversity. The project is only possible due to the existence of the surveillance and monitoring output of the schemes in which JNCC and its partners invest.

In the marine environment we are substantially expanding our surveillance and monitoring activities

in response to obligations for the conservation of marine habitats and species that arise from the OSPAR Convention, and the EU Habitats and Marine Strategy Framework Directives. During the reporting year, JNCC worked to develop a strategy for surveillance and monitoring in the offshore marine environment and, in partnership with Natural England, for English inshore waters. This work will continue into 2009/10.

JNCC also played a lead role in the UK Marine Monitoring and Assessment Strategy process, with Jane Hawkridge chairing the Healthy and Biologically Diverse Seas Evidence Group. Our involvement means we are well placed to integrate this work with existing schemes.

Work was also carried out on a surveillance strategy for cetaceans, to meet Habitats Directive obligations. The draft strategy proposes full surveys once every decade supported by more limited monitoring during the intervening years.

**Bryophyte monitoring  
Ben Dearg, West Ross,  
Scotland**

Bryologist Gordon Rothero setting up a permanent snowbed vegetation monitoring transect below the summit of Ben Dearg, West Ross. This is a partnership project between Scottish Natural Heritage, Royal Botanic Garden Edinburgh, the British Bryological Society and University of Bergen.

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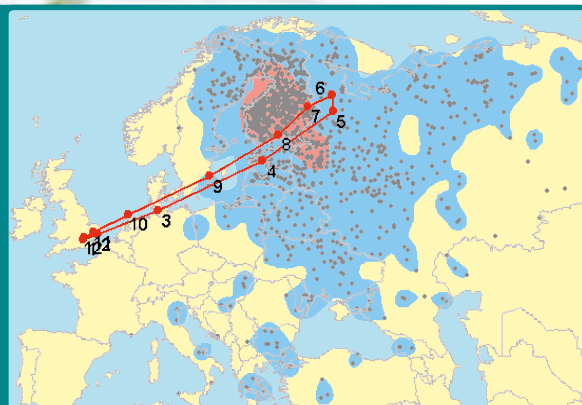
**Teal *Anas crecca***

**Inset: Map of migratory highways**

Movements of teal between Great Britain and Ireland and the continent as revealed by reports of ringed birds. The numbered dots show the average position of the population in each month, the small dots represent individual birds and the shaded areas describe the area where 50% (pink) and 95% (blue) of the population is to be found.

The long-term nature of some of our surveillance datasets has particular value for our stakeholders when they face short-term needs for data and information. A key example arises from the need to manage responses to the spread of Highly Pathogenic Avian Influenza (HPAI). The National Ringing Scheme, which is a longstanding partnership between the British Trust for Ornithology (BTO) and JNCC, has been tracking bird movements since 1909.

Defra commissioned BTO to use the ringing dataset to assess the risk of the spread of HPAI to the UK by wild birds, one of a number of possible vectors for the disease.



BTO produced a migration mapping tool which is used to inform qualitative risk assessments, helping Defra to understand the likelihood of HPAI being introduced to the UK by wild birds when there is an outbreak elsewhere in Europe and also to understand if wild birds might have been a vector when HPAI is found in the UK.

Teals © John Harding/BTO

Map © BTO