



CURLEW BY PAUL HILLION/BTO

Saving the Curlew by understanding its decline

BTO are the experts

We have been at the forefront of identifying key issues in UK bird conservation for over 80 years. Our long-term monitoring data on the status of UK birds sets the standard worldwide for understanding the effects of environmental change on wildlife. For example, it was the pattern of population change among farmland birds revealed by our Common Birds Census in the late 1980s that first alerted conservationists to the existence of widespread declines in a range of farmland species. Our work has shown that many of our birds are in rapid decline and we face the very real risk of extinction of some of our most iconic species in the coming decade. **Two of our most talented research scientists are leading this important work which aims to elucidate the reasons for the Curlew's decline.**

Dr Samantha Franks



I am passionate about bird migration and waders, and so my research interests focus on exploring how our changing environment is influencing avian populations, particularly those of long-distance migrants and waders. I want to understand what environmental factors drive changes in abundance, survival and productivity across all of the habitats that birds use throughout their entire annual cycle. My research has included using stable isotopes to understand wader habitat use during the winter, investigating the habitat use of long-distance migrants by tracking them from Europe to Africa using satellite tags, and investigating whether climate change is resulting in productivity declines as a result of the timing of breeding becoming decoupled from the timing of food availability.

Dr Lucy Wright



My work focuses on understanding the causes of bird population change to find conservation solutions. I currently investigate how changes to the environment (from climate change to local changes, such as renewable energy developments or habitat restoration projects) affect waterbirds and seabirds. I want my science to identify solutions to real-world problems. My team's work led to changes to offshore wind turbine design to reduce the risk to seabirds. I provided national guidance to improve the methods used in environmental impact assessments for new renewable energy developments and my research has also influenced the designation of protected areas.

"Curlew face challenges during both the breeding and wintering seasons. Our research will investigate the patterns and processes affecting Curlew throughout the year so we can begin to understand where and when they face the greatest pressures."

The decline of the Curlew

The Curlew is one of our most rapidly declining breeding bird species showing a 46% decline across the UK from 1994-2010 with this figure exceeding 50% in Wales and Scotland. The UK holds 28% of the European breeding population and in response to these declines, and those seen elsewhere in Europe, the species has recently been listed as globally near-threatened, one of the few British species on this list. The wintering population in the UK comprises a significant proportion of UK-breeding birds as well as birds originating primarily from breeding sites in northern Europe and Russia, and has declined by 20% in the last 15 years.

Possible reasons for these declines include:

- **Increases in generalist predators reducing breeding success.**
- **Afforestation of marginal hill land.**
- **Changes in farming practice reducing habitat quality.**
- **Climate change.**

Britain's estuaries support internationally important communities of wading birds due to our mild climate and key position on the East Atlantic flyway. However, our estuarine ecosystems are under ever increasing pressure from human activities, such as development and agricultural intensification.

There is an extremely urgent need to identify the causes of these declines so that we can help guide potential conservation interventions.

What we plan to do...

Use BTO Bird Atlas data to investigate patterns of extinction and colonisation. This analysis will examine changes in tetrad (2km x 2km) occupancy from the *Breeding Bird Atlas 1988-91* to the *Bird Atlas 2007-11*. This will increase our understanding of what factors are most likely driving the disappearance of Curlew from areas of the UK.

Predicting patterns of Curlew abundance using Atlas and BBS data. This analysis will assess whether a combination of *Bird Atlas 2007-11* data (with high coverage) and Breeding Bird Survey (BBS) data (which give true, annual estimates of density) may be used to maximise the ability to predict Curlew abundance in less well-monitored parts of the country.

Environmental drivers of breeding Curlew abundance and distribution patterns across Europe. Building on the results of a recent analysis using BBS data we will use standardised survey data of breeding birds across Europe to relate patterns of Curlew abundance and distribution to habitat, topography, climate, and other environmental variables. This research will give us greater perspective on whether the pressures facing Curlew in the UK are the same across Europe. What might be different in countries with healthier Curlew populations, and can indicate potential conservation actions that can be undertaken in the UK?

Investigating home range and habitat use of breeding Curlew. Breeding Curlew are generally failing to benefit from supposedly favourable habitat management undertaken as part of agri-environment schemes. Using remote tracking techniques, we will examine how breeding Curlew use upland areas and relate their movements and home range to aspects of upland landscapes such as the availability, extent, and management of moorland and grassland habitats used for nesting and foraging. This information can be used to adapt current habitat management strategies so that they actually benefit breeding Curlew.



CURLEW CALLING BY EDMUND FELLOWES/BTO

Curlew annual survival. While we have good information about population and distribution changes of breeding and wintering Curlew from the BBS, Wetland Bird Survey (WeBS), and breeding and wintering Atlases, the processes behind these patterns are less well-understood. A likely driver of Curlew population change is variation in breeding success. However, less is known about the impact of changes in adult over-winter survival. Recent research has demonstrated that the annual survival of Curlew wintering in North Wales increased following the UK hunting ban, but declined in response to mechanised cockle-dredging. We would extend these analyses of long-term ringing data to determine the survival rates of Curlew wintering in other parts of the country, and the factors influencing these rates. We will use results to determine whether apparent population declines at WeBS sites could be explained by changes in survival rates.

Patterns of winter Curlew distribution and habitat use across the UK. We will undertake a broad review of Curlew distribution and habitat use during the winter. This will include analyses of wintering data from a wide range of sources including *Bird Atlas 2007-11*, WeBS, BirdTrack, the Non-Estuarine Waterbird Survey (NEWS), County Bird Reports and other surveys. This will help us understand how wintering Curlew use estuarine and farmland habitats, both inside and outside protected areas, in different areas of the UK and how Curlew might be affected by coastal development, disturbance, and habitat creation, all of which might impact their survival.

Detailed habitat use of Curlew wintering on the UK's estuaries using GPS tags. Complementing the broad review of Curlew distribution and habitat use above, we will use remote tracking techniques to examine Curlew winter movements and home range on estuaries around Britain. We need to understand how birds move around their landscape in order to minimise threats to the habitats they use and to understand the likely impacts of development, disturbance, and other pressures that might affect their survival. This information can be used to help guide management plans for protected sites.

Eurasian Curlew *Numenius arquata*

EURASIAN CURLEW *Numenius arquata*

Order: Charadriiformes **Family:** Scolopacidae

Overall British population size: 68,000 pairs in summer, rising to 150,000 birds in winter

UK Conservation Status: RED

Longevity record: 32 years and 7 months

Typical measurements **Length:** 55 cm

Wing length: M: 29.5cm **F:** 31cm

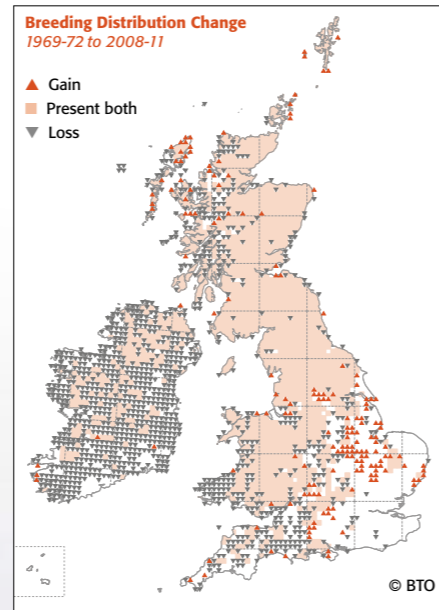
Weight: M: 770g **F:** 1000g

Breeds: N & C Eurasia

Winters: NW Europe, S Asia, Africa & Indonesia

Habitat: Marsh, grassland; mudflats on migration and in winter

Diet: Principally invertebrates located by touch



This map shows the dramatic decline in Curlew breeding distribution over the past 40 years. The species has been described as 'The most pressing bird conservation priority in the UK'.



After the breeding season Curlew move from moorland and other inland areas to the coast, particularly mudflats and sand exposed at low tide, where they feed by probing with their long bills for small invertebrates. They will also pick small crabs off the surface if the opportunity arises.

If you've been lucky enough to hear a Curlew's distinctive bubbling call when walking over wild moorland or coastal marsh, it will most likely have stayed with you forever.

The largest wader in its range, the Curlew has mottled brown plumage with a white rump most noticeable in flight. Its long legs and distinctive downturned bill (its Latin name *Numenius* means crescent moon) make this wader easy to identify.

Curlew inhabit most of continental Europe, from Scandinavia and the Ural mountains down to the south of France. The species nests in a number of habitats, including moorland, open boggy areas in forests and traditionally-managed hayfields, before migrating to coastal areas of sand and mudflats after nesting. At high tide, large groups of Curlew can be seen roosting on nearby fields and marshland.

Curlew breeding in Britain largely winter on the west coast and in Ireland. Populations wintering on the east coast originate primarily from breeding sites in northern Europe and Russia.

Curlew nest inland, on rough upland grassland or moorland.

