What has happened to our **breeding Curlews?**

◀ We've lost half the breeding Curlews in the UK since 1995 – a steep and dangerous decline

Thanks to you generosity, the recent Curlew Appeal has been our most successful ever, enabling us to begin a programme of work to learn more about this fast-declining species. **James Pearce-Higgins** reports on some of the first outputs from this programme.

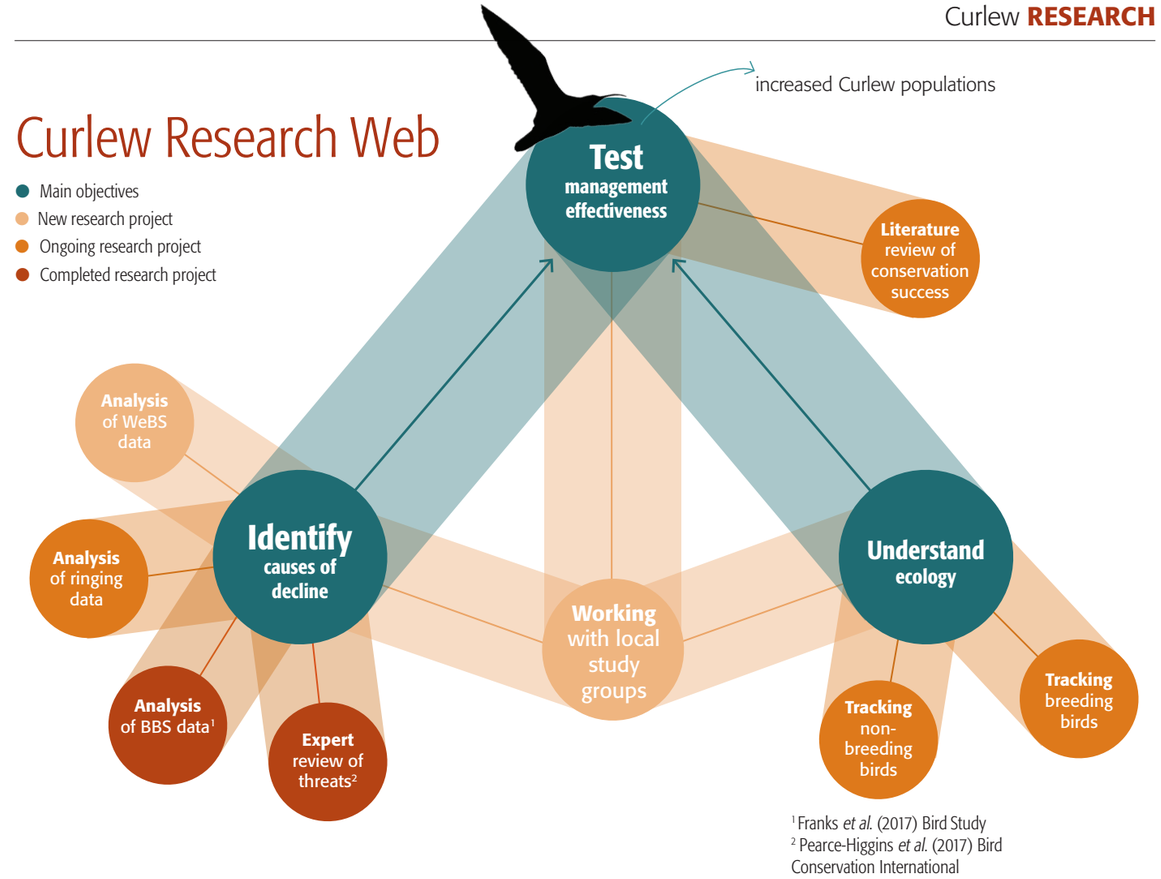
The Curlew appeal's tremendous success has given us the chance to examine the causes of decline, to understand more about the ecology of the species, and to provide the evidence to inform and test potential conservation management responses. Most importantly, it is already providing important evidence about why the curlew's UK breeding population is declining.

As a result of losing half the UK breeding population since 1995, the Curlew has been declared the UK's most pressing bird conservation priority. Given that we hold up to one quarter of the world population, what happens here may have wide-reaching implications for the species globally. The vulnerability of the world's curlew species to extinction is clear. An expert review of threats facing godwit and curlew populations around the world led by BTO found that seven of the 13 species considered are of global conservation concern, including Eskimo Curlew and Slender-billed Curlew which are Critically Endangered and may already be extinct. Some of the main threats to curlew species globally are developments in non-breeding areas; for example, the reclamation of coastal areas of the Yellow Sea which threatens many wader species using the East Asian–Australasian Flyway. Populations within the East Atlantic Flyway, which includes the UK, are affected by a relatively large number of threats to breeding populations, including increasing intensity of arable and pastoral farming, commercial forestry plantations, climate change and rising populations of generalist predators.

This overview provides a valuable back-drop to the first assessment of the causes of Eurasian curlew decline in Britain, which BTO has recently published in Bird Study. The study analysed data from the BTO/JNCC/RSPB Breeding Bird Survey (BBS) to identify which features of the environment correlate with abundance towards the start of the BBS survey period (1995–99), and after a period of long-term population decline (2007–11), and with changes between the two periods, to provide the first national-level assessment of likely causes of change. So what did we find?

HABITAT ASSOCIATIONS

Firstly, habitat is a key driver of curlew abundance. They breed at highest densities in areas of semi-natural grassland and moorland, and as many hill-walkers will know, are particularly associated with the uplands. We also found strong evidence that the amount of woodland in the surrounding landscape was important, with fewer Curlews near more heavily wooded areas in the second survey period, where population declines were greatest. This suggests that the commercial afforestation of marginal upland areas may be an important driver of decline. In addition, areas with extensive arable farming support few Curlews, where population declines have also been widespread.



[1] Franks *et al.* (2017) Bird Study
[2] Pearce-Higgins *et al.* (2017) Bird Conservation International

CURLEW: JOHN HARDING/BTO, INFOGRAPHIC: FAYE VOGELY

As well as habitat, there was strong evidence that generalist predators may also limit curlew populations. Where BBS surveyors recorded more Carrion Crows and a greater chance of encountering Foxes, there were fewer Curlews in 2007–11. Squares with greater numbers of Carrion Crows also experienced greater population declines. This fits in with the theory that, Curlew being ground-nesters, their nests and chicks are highly vulnerable to predation, which can limit their populations when predator abundance is high. Strong positive associations between numbers of Curlew and gamebirds (Red Grouse and Pheasant) in both time-periods may be linked to the control of generalist predators associated with game management, which has previously been shown to improve Curlew breeding success. However, there was also a hint of potentially negative environmental consequences of game management in our analysis. We found the intensity of strip-burning, which is a common feature of grouse moor management, was negatively correlated with Curlew abundance in one of the analyses. Further work is needed to investigate this fully.

Aside from management, there was evidence that Curlew have declined most in warmer, drier parts of the UK. This is consistent with potential impacts of climate warming on the abundance of the soil invertebrates that Curlew rely upon, and with previously documented upward shifts in altitude. However, we would like to see more detailed studies of Curlew ecology to check if these relationships are causal.

Curlew being ground-nesters, their nests and chicks are highly vulnerable to predation, which can limit their populations

FUTURE RESEARCH

To conclude, this analysis, jointly funded by BTO, JNCC and RSPB through the BBS work programme and by the BTO Curlew appeal, has provided crucial information about the likely causes of national-scale breeding Curlew decline. This needs to be supported by more information about Curlew ecology, and we are tracking both breeding and non-breeding Curlew to improve our understanding of their habitat requirements. We are also considering potential causes of change during the important winter period when many additional Curlews flock to our shores from breeding populations in continental Europe that are also declining. The success of different conservation interventions for breeding waders, including Curlew, are currently being reviewed. Finally, we are starting to work with local study groups monitoring Curlew populations in particular parts of the country, to understand more about which mechanisms are most important in explaining local population changes, and to test potential conservation interventions there. We will keep you informed of the outcomes of this work through *BTO News*, and thank you for your support for our ongoing work to protect this iconic species. ■