During the 2018/19 winter, BTO ran the English Winter Bird Survey (EWBS) to investigate the effects of Agri-environment Schemes (AES) on winter populations of farmland birds and Brown Hare (*BTO News* 331). A total of 1,297 farmland-dominated 1-km squares were visited on up to four occasions, mainly using the existing Breeding Bird Survey square network. Surveyors recorded specific habitat data alongside counts of birds and Brown Hares, so we could evaluate the effectiveness of targeted AES options (prescriptive land-management measures) and natural food availability, such as hedgerow berries, at different spatial scales. We focused on AES options that were specifically designed to benefit wintering birds, namely supplementary feeding, hedgerow management, wild bird seed-mix (WBS) crops and stubbles.

EFFECTS AT DIFFERENT SCALES

We examined all species (including Brown Hare, where applicable) that might respond to each management intervention and analysed them at a local scale (1-km squares) and a landscape scale (3-km squares), as bird movements may mean that effects are either most detectable at the field level or across wider landscapes. The results at the landscape scale revealed that there were clear positive effects for 13 of 19 species we tested for associations with stubble management (and five of 19 at the local

scale), which included key species such as Skylark, Linnet and Yellowhammer. For hedgerow management at the landscape scale, 17 of 18 species were positively associated and there were no negative associations. For WBS and supplementary food, there was an overall negative response at the local scale, but a positive one at the landscape scale. Individual species following this pattern included House Sparrow for supplementary food, and Chaffinch, Goldfinch, Robin and Song Thrush for WBS. There were few notable results for supplementary food at either scale, and results did not include a number of the species that might be expected

Future surveys

BTO is working towards a Winter Campaign in 2021/22 to promote better recording of birds throughout the winter months, through our existing schemes and projects. Additionally, we have aspirations to launch a terrestrial winter bird survey, using a similar approach to the EWBS, and we are working hard to secure funding. This period is critical for determining annual population changes in a number of terrestrial species that are largely winter visitors to the UK, as well as an opportunity to monitor our resident species in a different season.

NUMBERS OF SPECIES TESTED

Numbers of positive and negative responses between maximum species count in farmland in survey squares.

- ■ Stubble
- ■ WBS
- ■ Supplementary food
- ■ Hedgerow
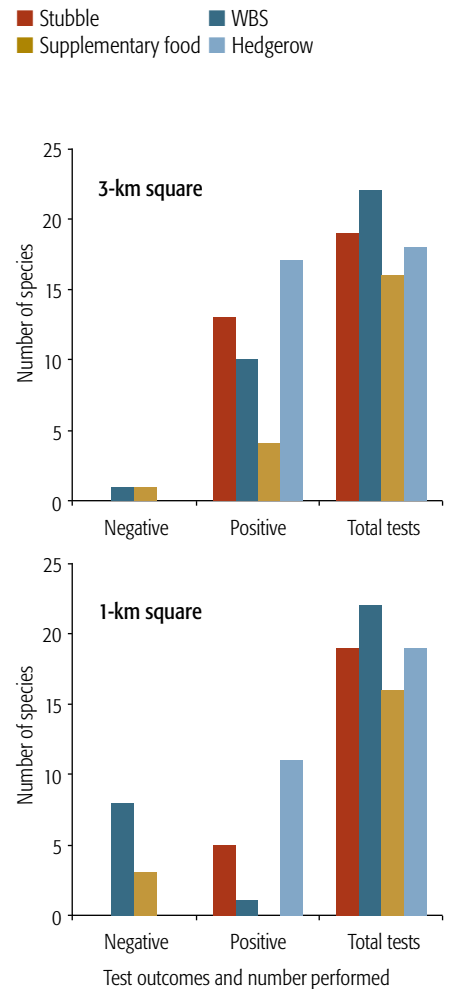
FARMLAND BIRDS IN

David Norfolk and **Greg Conway** from the Terrestrial Research team report the final results from the English Winter Bird Survey.

Overall, the results suggest that AES options strongly affect winter habitat quality for birds in farmed landscapes

to respond, such as Yellowhammer, Greenfinch and Chaffinch.

We also tested whether associations with bird counts varied through the winter, in order to measure the effectiveness of each AES management option. We found little indication, across both spatial scales and all the species tested, of clear associations between option effects and date. The limitation of conducting a one-year survey is that the results represent only a single season. The winter of 2018/19 was particularly wet and mild, so the effects on birds and other wildlife may not be representative of a cold or harsh English winter. In colder conditions, we would expect increased mobility in bird populations, greater concentrations and increased demand for supplementary food, which ought to result in more species responding to management options.

Overall, the results suggest that AES options strongly affect winter habitat quality for birds in farmed landscapes. Further analyses suggest that effects are

ASSOCIATIONS WITH AES MANAGEMENT

- ● Supplementary food
- ◻ Stubble
- ◻ WBS
- -- Transect
- — AES Hedge
- — 1-km square
- — 3-km square

If landscape-scale effects of AES on a bird species are important, we would expect more positive effects in squares with AES management patterns as shown on the right of the figure, whereas, if local-scale effects are important, more positive effects would be found in squares that are like the scenario on the left.

Much AES at 1-km scale, little AES at 3-km scale

Little AES at 1-km scale, much AES at 3-km scale
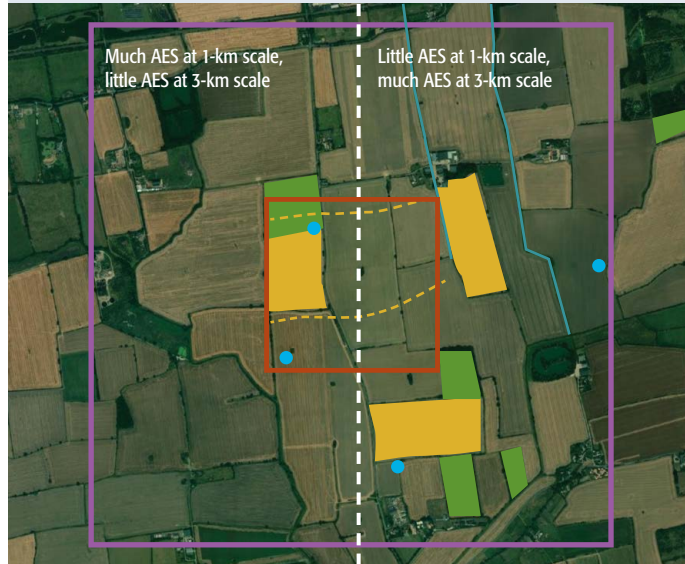
strongest where resources are limited and local populations are, therefore, less abundant. This study has also underlined the value of winter bird monitoring in identifying management effects that are not detectable from breeding-season survey data. Future winter surveys can build on these results to refine survey design. ◾

WINTER

◀ Chaffinch and Goldfinch are among the species that are expected to benefit from AES management increasing winter seed availability.

▶ Brown Hare is monitored annually by the Breeding Bird Survey, but the best time to count them is actually in late winter.

Brown Hare

Arable farmland supports a greater abundance of Brown Hare than pasture, woodland or uplands. However, where arable farming has intensified, numbers have declined. Brown Hare is therefore a key AES target species, but the effects of these management options have not yet been evaluated, and there has previously been no national monitoring. We found Brown Hares to be associated with stubble management and WBS at the landscape scale, with numbers increasing through the winter. However, there was no indication that Brown Hares were increasingly drawn to WBS patches through the course of the winter. This would suggest that the effects of these AES measures are more beneficial, or detectable, in a wider landscape context.