

Lapwing 1987

Title

Lapwings in England and Wales 1987

Distribution and Summary of Results

The number of Lapwings *Vanellus vanellus* breeding in Britain fluctuated markedly during the 19th and 20th Centuries. There were widespread declines in the late nineteenth and early-twentieth centuries resulting mainly from the taking of eggs as a table delicacy. Numbers certainly increased rapidly in many areas after the Lapwing Act was passed in 1926 and, following recovery from the severe winters of 1961/62 and 1962/63, the Common Birds Census (CBC) index showed a comparatively stable population from about 1968 until the early 1980s, although Lapwings disappeared completely from some areas during this period. A more widespread decline was apparent from about 1984, perhaps the result of a series of severe winter spells although these declines have usually been attributed to the habitat changes resulting from changes in farming practice, farmland being the primary nesting habitat.

The two earlier national surveys, in 1937 and in 1960-61, were both confined to habitat use because it was thought impossible to attempt to count such a widespread and numerous species. The 1987 survey was the first attempt to estimate the total number of nesting birds in England and Wales -- inclusion of Scotland using the same methods and at the same time would have created logistical and practical problems, and numbers on lowland agricultural land in Scotland had been counted in 1982-83.

In the event the selected tetrad in 1316 of the 1713 10-km squares in England and Wales was visited, and a further 154 selected tetrads were entirely sea (considered as holding zero birds). Those not visited were considered to hold an 'average' number of birds.

The total population estimate for 1987 was 123134 breeding pairs in England and Wales with 95% confidence limits of around 11% on either side. The 1987 survey followed three successive cold winters and the CBC index had shown a decline of c.40% since 1984.

The considerable majority of pairs (just over 60% of the estimated total numbers and just over 40% of the occupied tetrads) occurred in northern England especially on and to the west of the Pennine Ridge, comprising about 24% of the total area. In the remainder, birds were scattered, though there appeared to be slightly more in Norfolk and central southern England than elsewhere, and there were especially few in the southwest peninsula of England and in west Wales.

Comparing counts made on sites in 1960-1961 and 1987 showed an average decline of 61% in total and which occurred in every region.

Overall, 96% of the pairs were found in farmland -- lowest in the Southeast region (90%) and highest in the North and East Anglia regions (98%). Outside farmland, pairs were recorded in saltmarsh (15), sand dunes (4), waste ground (47), airfields (18) and sewage farms (1), by gravel pits (4) and reservoirs (8), and in various other habitats (57).

The only consistent positive or negative preferences for crop types were that spring tillage was strongly favoured (especially when the fields were adjacent to grass fields), and autumn tillage was strongly avoided. Preferences for the different types of grassland were more

variable although leys were the least preferred, and there was a greater preference for grass in regions in which there was only a small area compared to tillage, showing that a mixture of spring tillage and grass is the best farming system for breeding Lapwings. Grazed grass was preferred to ungrazed.

Methods of Data Capture

The survey asked for a complete count of nesting Lapwings in one randomly-selected tetrad (2 x 2km square) in every 10-km square in England and Wales which contained any land. Lapwings often move from one field type for nesting to a different one for rearing chicks and this particularly affects pairs which nest in tillage, so counts of pairs with young may not accurately represent nest site preferences. Counts were therefore done in April, the peak period of the egg stage of the breeding cycle.

Counts were also made at 27 sites (all at least 80ha) that had been surveyed in 1960-61, or where there was information recorded in detail in local reports or supplied direct by individual observers from any of the 4 years on either side of that survey (ie 1956-1965). The recording cards listed 15 habitat categories of farmland (and included guidance on the main features of each) and 8 others, and observers were asked to record the number of pairs found in each type. They were asked to look thoroughly at every field in the tetrad and to count territorial males, pairs or, if possible, incubating birds. Each of the 4 1-km squares of the tetrad was recorded separately, although in analyses they were merged. Observers marked (onto a supplied 1:25000 map) the fields and their crops in which Lapwings were found, and to revise as necessary the mapped field boundaries. The median altitude (on an ordinal scale), the approximate proportions of farmland, woodland and urban areas, and the presence of sea, freshwater, marsh, and rivers or streams in each tetrad were extracted from 1:50000 Ordnance Survey maps. Average field size was estimated from the 1:25000 maps of those tetrads which had been recently surveyed or on which observers had specifically updated the boundaries. The overall mean field size for England and Wales so calculated was 8.74 ha.

Purpose of Data Capture

The objectives of the survey were: 1) to determine the size and geographic distribution of the nesting population of Lapwings in England and Wales; 2) to establish the relative importance of available habitat types to nesting birds; and 3) to try to find reasons for these and any apparent changes since the earlier surveys. The focus was on nesting habitat and therefore the survey examined the egg stage of the breeding cycle.

Geographic Coverage

England and Wales with one randomly selected tetrad from each 10-km square containing any land.

Temporal Coverage

The breeding season of 1987, primarily April.

Other Interested parties

The survey was organised, run and funded by the BTO. The production of the maps used in the field by observers was funded by the Royal Society for the Protection of Birds.

Organiser(s)

Mike Shrubbs (volunteer) and Peter Lack (BTO staff).

Current Staff Contact

archives@bto.org

Publications

The main report of the survey is:

Shrubbs, M. & Lack, P.C. 1991. The numbers and distribution of Lapwings *V. vanellus* nesting in England and Wales in 1987. *Bird Study* 38: 20-37.

The survey was noticed in *BTO News* numbers 142, 148 and 156.

Available from NBN?

No.

Computer data -- location

BTO Windows network central area.

Computer data -- outline contents

The main data are in a directory DATA, containing the data as input and some summaries. Also various programs used in the analyses.

Computer data -- description of contents

The directory DATA contains 6 files:

MAPDATA -- 10-km square and total count of Lapwings in the selected tetrad ready for the MAPPING program;
ORIGIN.INPUT -- the original data as input (should not be needed but contains survey dates and coverage);
TET.COUNTS -- one line for each tetrad containing: cols 1-2 Statistical Region; 3-8 County; 9-13 10-km square and tetrad; 14 covered fully (1) or not (0); 15-16 no. entries to come; then entries of counts of pairs in different habitat types: A. autumn cereals; AP autumn cereals with bare patches; AT autumn cereals with tramlines; AQ autumn cereals with both; SC spring cereals; SB Sugar Beet; OS other spring crops; BP bare ploughed; BT bare tilled; ST stubble; OR oilseed rape; L ley; P permanent; M moor; D 'don't know' grass; with C cow; S sheep; H horse; X cow+sheep; Y cow+horse; Z sheep+horse; W all three; U ungrazed; DN Dune; SM saltmarsh; GP Gravel Pit; WG waste ground; RR reservoir; SF sewage farm; AF airfield, OT other. TT is total and is always the last one. If total = 999 the square was not covered. The sea squares are scored 0 birds;

TET.HABITATS -- one line for each tetrad: 10-km square+tetrad; Altitude (1=1-100m, 2=101-200 etc, 0=all sea); then % Agriculture, Sea, Freshwater, River presence or absence, woodland, marsh, and other with a place wholly within the tetrad listed at the end;
SEASQ -- list of all tetrads wholly in the sea;
NOTCOVSQ -- list of the tetrads which were not covered at all.
Other directories: BOOTSTRAPS -- the program and the 3 necessary data files to run the bootstrap estimation for confidence limits; PROGS -- various analysis programs; REGRESSIONS -- datafiles of counts merged with habitat information.

Information held in BTO Archives

2 Transfer Cases containing letters and analyses. All data cards have been scanned but the original cards can no longer be found.

Notes on Access and Use

Other information

Notes on Survey Design

Specific Issues for Analysis

The distribution of counts in individual tetrads was very skewed, with 61% of tetrads surveyed containing no birds. Hence calculation of confidence limits needed special methods. Furthermore, 23% of all 10-km squares in England and Wales containing any land also contain some sea and numbers in these could differ systematically from those in inland squares.

Estimates of the total number present were made for each of the standard statistical regions independently and these were summed to give the overall total. Ninety-five per cent confidence limits were derived using a bootstrap method (with 999 simulations) to estimate the upper and lower 2.5 percentiles of the frequency distribution of estimates derived from these repeated simulations.

Details of the statistical procedures are given in the appendix to the published paper.