

Breeding Waders of Wet Meadows 1982

Title

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Description and Summary of Results

Wet lowland grassland as a habitat has been disappearing quite fast over the last few decades as more and more has been drained (in the 1970s this was estimated to be about 8000ha per annum) or otherwise rendered less suitable for breeding birds, especially some of the waders, which in the past have been more or less dependent on it. This survey was planned to identify all areas of damp lowland grassland in England and Wales and to count the numbers of breeding waders using them. Five species were counted: Lapwing *Vanellus vanellus*, Snipe *Gallinago gallinago*, Curlew *Numenius arquata*, Redshank *Tringa totanus* and Oystercatcher *Haematopus ostralegus*. The information was intended to give an assessment of the remaining grasslands and their bird populations, and also to provide an inventory of the important sites as an aid to the conservation organisations.

The problems of agricultural improvement were no less acute in Scotland, where the breeding wader populations of the straths and glens were under severe pressure. A parallel survey of breeding waders of Scottish agricultural land was launched in 1982 by Hector Galbraith and continued in 1983, looking at the same five wader species on all agricultural land.

In 1982, records were received from 1178 grassland sites in England and Wales. Data were also available from 104 additional sites covered in 1980 and 1981 (during the pilot survey) but which were not resurveyed during the main survey of 1982, thus making a grand total of 1282 sites covering approximately 240000ha. The area could be measured for 944 of these sites, and ranged from 2 to 1097ha with a median of 71ha (upper and lower quartiles 146ha and 30ha).

A total of 11995 pairs of the five key wader species (6721 Lapwing, 1979 'drumming' Snipe, 540 Curlew, 2218 Redshank and 537 Oystercatcher) was reported. In only three counties did the total exceed 1000: Norfolk, with 1983 pairs on 149 sites; Cambridgeshire, with 1422 pairs on 60 sites; and Kent, with 1262 pairs on 50 sites. It was particularly noted that 48% of the Snipe and 36% of the Redshank were on five sites -- the Ouse Washes, Nene Washes, North Kent Marshes, Derwent Ings and Somerset Levels -- and that both species had become unusual breeding birds over most of lowland Britain.

A further 97 surveyed sites (7.6% of the grassland total) had greater than 30% of their area as artificial habitat -- 53 gravel pits, 6 sewage works, 8 reservoirs and 30 unclassified industrial sites. In total, these held 840 pairs of waders and, although a small fraction of the overall total (7.0%), these sites were very important in some, especially some inland, counties.

Seventy-nine sites surveyed had more than 30% of their area as fen, bog, carr, reedswamp or saltmarsh. These held 847 pairs of waders (7.0% of the grassland total), and were most significant in Cumbria, where 273 pairs of waders were found on mainly saltmarsh and coastal grazing marsh sites and which comprised 45% of the county total. In Norfolk 252

pairs of waders (equal to 12.7% of the county grassland total) were found on 28 sites which were largely fen/carr and cut reedbeds.

(Note: The above totals are those reported at the time of the analysis of the 1982 survey. When comparing the numbers with those from subsequent surveys (1989 and 2002) the totals have been revised: Lapwing and Redshank numbers were raised by 34% and 35% respectively although other species numbers were unchanged. This follows fieldwork and analysis of the relationship between census results and the numbers of nesting pairs present for these species and which was carried out subsequent to the 1982 survey. They in turn have allowed the interpretation of the results to be improved, and they have been used to "clean up" the 1982 survey results to make them directly comparable to the data collected in 1989 and in 2002.)

Methods of Data Capture

The survey was designed to cover all sites which were wet lowland grassland. For details of how these were found see Notes on Survey Design below.

Fieldwork was mainly carried out by volunteers organised through BTO's Regional Representatives. In Norfolk though there were a large number of sites to be surveyed, and the volunteer effort was supplemented by two professional full-time fieldworkers. All observers were asked to make three visits to their site between April and late June and to walk systematically through it, counting the total number of each wader species seen or heard. In addition, they were asked to estimate the number of pairs of each they thought were present on each visit. The following observations were treated as 'pairs': (a) two birds behaving as a pair; (b) an individual bird displaying or singing; and (c) isolated individual birds showing attachment to the area but not in flocks. To minimise disturbance, observers were not encouraged specifically to look for nests or broods, but were asked to record any that were seen in the course of the survey. To allow for the possibility that some pairs would not necessarily be recorded on every visit, a final overall assessment of the number of pairs of each species present (based on the data from all visits) was made by the observers. For Snipe, counts of drumming or chipping birds and the total numbers seen were made.

It was recommended that poor weather conditions, particularly high winds, should be avoided and where possible the survey should be completed in the early morning. To provide an unambiguous definition of the area surveyed, each observer was provided with a 1:25000 map on which to mark the exact boundaries of the site and to indicate the approximate location of each wader seen or heard. They were also asked to make an assessment of the dampness of the site and its management, and to mark in any areas of standing water present on their first visit.

In addition to the wader observations, records of other wetland species were specifically requested: Teal *Anas crecca*, Mallard *A. platyrhynchos*, Shoveler *A. clypeata*, Moorhen *Gallinula chloropus*, Yellow Wagtail *Motacilla flava*, Meadow Pipit *Anthus pratensis* and Sedge Warbler *Acrocephalus schoenobaenus*.

Purpose of Data Capture

The stated aim of the survey was to provide information on the current status of waders breeding on wet lowland grassland in England and Wales.

Geographic Coverage

The survey aimed to cover all sites which met the specified criteria of being "wet lowland grassland" -- see below for a definition -- in England and Wales.

Temporal Coverage

The breeding season of 1982.

Three visits were requested to be made to each site between 15 April and 30 June with at least two weeks between visits. Observers were asked to complete visits before midday and avoid adverse weather conditions of rain or moderate to high wind.

Other Interested parties

The survey was run jointly with the Royal Society for the Protection of Birds (RSPB) and what was then the Nature Conservancy Council (NCC).

The funds for the survey came from BTO itself and RSPB, and the maps were provided from NCC funds. The Manpower Services Commission Community Enterprises Project funded the two professional fieldworkers in Norfolk.

Organiser(s)

Dr Ken Smith as a BTO staff member.

Current Staff Contact

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Publications

The final report of the survey is:

Smith, K.W. 1983. The status and distribution of waders breeding on wet lowland grasslands in England and Wales. *Bird Study* 30: 177-192.

The survey was noticed in *BTO News* numbers 112, 115, 117, 121, 125, 131, and 136 with the last one mainly concerned with the continued monitoring which followed the 1982 survey.

The report of the parallel survey in Scotland is:

Galbraith, H. & Furness, R.W. 1983. Breeding waders on agricultural land. *Scottish Birds* 12: 148- 153. (And was noted in *BTO News* number 117.)

Extensive pilot studies were carried out to determine the methods to be used for the survey. These are summarised in:

Fuller, R.J. 1981. Aspects of counting Lapwings and Curlews breeding on lowland grasslands. *Wader Study Group Bulletin* 33: 14-16;
Smith, K.W. 1981. Snipe censusing methods. *Bird Study* 28:246-248; and
Galbraith, H. & Furness, R.W. 1981. Methodology for censusing breeding waders on agricultural land. *Wader Study Group Bulletin* 33: 12-13.

Available from NBN?

Yes.

The dataset on the NBN Gateway contains records from the 1982 and 2002 surveys. They are collated with summary 1-km grid references, and they also incorporate the improvements in interpretation of field results noted above in the last paragraph of Description and Summary of Results.

The BTO computer files contain the data as recorded in the field by the observers.

Computer data -- location

The BTO Windows network central area.

Computer data -- outline contents

The original bird data input from the survey cards in 12 files although several are subsets of ALLRESULTS.TXT.

Computer data -- description of contents

ALLRESULTS: all the 1982 bird data for all sites. **ALLGRASS**: contains only the grassland sites.

For both these (and some other files) the format is more or less that on the original data card:

Line 1: Site Number, Water Authority Region, Number of Visits, Area (ha); *Line 2*: Observer Name. *Line 3*: Site Name. *Line 4*: River/Stream Name. *Line 5*: Nearest village. *Line 6*: County. *Line 7*: Central Grid Reference. *Line 8*: Date(s) of visits; *Lines 9* (Lapwing), *10* (Snipe), *11* (Curlew), *12* (Redshank), *13* (Oystercatcher): 7 columns on each line containing numbers of birds; *Line 14*: totals for other species (7 columns for Teal, Mallard, Shoveler, Moorhen, Yellow Wagtail, Meadow Pipit, Sedge Warbler respectively); *Line 15*: % of site which was dry on the 3 visits. *Line 16*: % of site under 6 different management types (hay, silage, grazed by cattle, grazed by sheep, arable, other). *Line 17*: Number of Cattle, Sheep and Horses on site (Maximum over 3 visits). *Line 18*: **.

12 "xxx.txt" files contain the data. Note that these are the original data as supplied by observers. The estimates of numbers of birds (pairs) were recalculated coincident with the 2002 survey using the same criteria to make the two surveys directly comparable -- see survey 2002 data and notes.

Other files contain: 1982 data (format as above) for the sites selected for 1989 sample; Site information for these sorted by County and by Grid Reference; Listing of industrial sites with number of waders etc; and various summary files.

Information held in BTO Archives

2 archive boxes containing copies of the data cards -- all have been scanned; 1 Transfer Case containing the analysis.

The original cards are housed at RSPB.

Notes on Access and Use

Full disclosure or display of site locations to the public might lead to environmental harm, and may jeopardise the goodwill of land managers/owners in terms of access for future survey work.

Other information needed

Notes on Survey Design

For the purposes of the survey, wet grassland was defined broadly as any area of grassland subject to freshwater flooding or waterlogging. Therefore floodplain grasslands, coastal grazing marshes and washlands were included, as well as isolated pockets of poorly drained grassland. The survey was aimed primarily at lowland grasslands and coverage was arbitrarily restricted to land below 183m (600 ft) in altitude. Hence the uplands and their fringes were specifically excluded. Similarly, no attempt was made to survey any areas subject to regular tidal flooding. Within the guidelines, the actual areas to be surveyed were selected initially by reference to the BTO Register of Ornithological Sites, water authority reports of land drainage needs, and county bird reports. BTO regional representatives, regional officers of the Royal Society for the Protection of Birds, Nature Conservancy Council and county Wildlife Trust officers and county bird recorders were then consulted to produce a final list of areas that were thought to be worthy of survey in each county. All areas selected were divided into sites -- each site consisting of a geographically well defined area which could be covered easily in one visit. A final comprehensive list of approximately 1200 sites was produced for England and Wales. This was thought to include all the major lowland breeding wader sites within the survey definition. In some counties it was possible to include habitats such as gravel pits and sewage works, known to hold breeding waders, though strictly not falling under the definition damp (or wet) grasslands.

Specific Issues for Analysis

Breeding waders are particularly difficult to census accurately and the survey methods were designed to minimise these difficulties. The major problems arise principally from a marked seasonality in the behaviour of the birds. For more details see Fuller (1978 *Bird Study* 25: 97-102).

Early in the season, during display, breeding waders are relatively conspicuous but they can become extremely secretive during incubation. After the chicks hatch the parents again become very conspicuous and will mob any intruder. Lapwing and Oystercatcher, which nest in more open locations, are more amenable to survey and tend to mob intruders throughout the nesting cycle. The survey period, from mid-April until June, was chosen after extensive pilot studies had demonstrated that it spanned a period of good detectability for all five wader species being surveyed. The pilot studies also showed the importance of walking through the site to make the count, thus ensuring that the birds reacted to the presence of the observer. For Lapwing, Curlew, Redshank and Oystercatcher the number of pairs on the site was interpreted as the maximum number of pairs recorded

in late April and May. This avoided the problem noted on some sites, where birds displayed in April but apparently did not stay to breed. However, it will lead to an overcount if parents moved their young to the site from adjacent land. Any birds which failed early in the breeding cycle and did not lay a repeat clutch will also have been missed. In a few instances no count was made in May, and in this circumstance the maximum number of pairs recorded was used.

In the case of Snipe, the number of “drumming” or “chipping” birds was counted as it has been found that the maximum number of these found drumming on any of the visits is a good indication of the number of pairs attempting to breed, provided some birds were present at least up to early May. If no birds were present in May, then breeding was assumed not to have occurred on the site. Thus sites with only sporadic drumming in April were excluded, which may have resulted in the inclusion of some non-breeding birds in the totals but will also have excluded any breeding attempts which failed early on.

Note that the totals for Lapwing and Redshank have subsequently been revised upwards from the totals reported at the time of the publication of the survey results, following extensive subsequent work on the relation between numbers recorded by such censuses and the number of nesting pairs found to be present.