



JNCC Report

No. 368

SERVICES IN ORNITHOLOGY ANNUAL REPORT 2002-03 & 2003-04

This report should be cited as:
British Trust for Ornithology (2004)
Services in Ornithology: Annual Report 2002-03 & 2003-04
JNCC Report, No. 368

© JNCC, Peterborough 2004

Nominated Officers:

British Trust for Ornithology

Dr Nick Carter
British Trust for Ornithology
The Nunnery
Thetford
Norfolk IP24 2PU

Joint Nature Conservation Committee

Dr Ian McLean
Joint Nature Conservation Committee
Monkstone House
City Road
Peterborough PE1 1JY

For further information please contact:
Cherry-Ann Vickery
Joint Nature Conservation Committee
Monkstone House, City Road
Peterborough PE1 1JY

ISSN 0963-8091 (Online)

TABLE OF CONTENTS

Foreword	3
Introduction	4
Programme 1: Licensing	6
Programme 2: Surveys of British Non-Breeding Waterbirds	7
Wetland Bird Survey: Low Tide Counts	7
Other Wetland Bird Survey Research	8
Wetland Bird Survey Alerts	9
WeBS Dispersed Waterbirds Survey	10
Programme 3: Surveys of British Terrestrial Birds	11
Breeding Bird Survey	11
Winter Farmland Bird Survey	13
Programme 4: National Ringing Scheme	16
Numbers of Birds Ringed and Recovered in 2001 and 2002 and Research	16
Programme 5: Bird Survival and Movements	19
Population Dynamics	19
Retrapping Adults for Survival	20
Constant Effort Sites Scheme	21
Programme 6: Breeding Performance and Productivity	23
Programme 7: Alerts and Population Assessment	25
Programme 8: Environmental Change Prediction	26
Joint JNCC/BTO Publications 2002 and 2003	28
Financial Statement	32

Foreword

The long-standing partnership between the statutory conservation agencies and BTO supports many of the bird surveillance schemes currently organised in Britain and Northern Ireland. This report gives an overview of some key results from the current BTO/JNCC Partnership and it is intended to help you locate more detailed information should you wish to do so.

The work of the Partnership is only possible because of the dedication and hard work of thousands of volunteers who give freely of their time and expertise in counting birds throughout Britain and Northern Ireland. The BTO and JNCC are greatly indebted to all those who contribute in this way to all the surveys and investigations organised by the Partnership and would like to record here their sincere thanks for all these good efforts.

At the centre of the Partnership is a suite of long-term surveillance schemes that assess annually the abundance of birds in Britain and Northern Ireland. Together with two additional schemes, funded also by other partners (the RSPB for the Breeding Bird Survey and the RSPB and WWT for the Wetland Bird Survey), this surveillance covers the great majority of breeding and wintering birds with the exception of very scarce species.

The results from different schemes are combined in various ways to give a more complete picture of how bird populations are changing and whether recruitment, survival or movement are responsible for the patterns observed. The web pages for each species under the heading of Breeding Birds of the Wider Countryside Report (www.bto.org/birdtrends/index.htm) give summaries of their trends and some interpretations of the probable causes.

The work of the BTO/JNCC Partnership is also the basis for much further surveying and research funded by other organisations, including Defra and other agencies. This further work seeks to investigate some species in more detail and also to discover more of the reasons for the overall changes observed. Thus, the Partnership is the foundation for an extensive body of research that examines the responses of birds to changing environmental conditions and will enable predictions to be made on the consequences of alternative scenarios for the future of our birds.

The work of the Partnership is reported extensively in technical peer-reviewed scientific journals, other periodicals, books and increasingly via web pages that can be readily accessed via the Internet (www.bto.org). This report includes a list of publications and other outputs from the Partnership to facilitate access to detailed information, analyses and interpretations.

We hope that you find this report informative and a useful link to more detailed and extensive information about changes in bird numbers and some of the factors that are responsible. If you would like to know more, please explore the BTO and JNCC (www.jncc.gov.uk) websites and then follow the links to the different subject areas.



Dr Nick Carter
British Trust for Ornithology
October 2004



Dr Ian McLean
Joint Nature Conservation Committee

INTRODUCTION

The Joint Nature Conservation Committee (JNCC) is the forum through which the three Country Nature Conservation Agencies, the Countryside Council for Wales, English Nature and Scottish Natural Heritage, deliver their special statutory responsibilities for Great Britain as a whole and internationally. These responsibilities, known as special functions, contribute to sustaining and enriching biological diversity, enhancing geological features and sustaining natural systems. For the purposes of the Partnership with BTO, JNCC also represents the Environment and Heritage Service Northern Ireland.

The special functions are: to devise and maintain common standards and protocols for nature conservation; to promote, through common standards, the free interchange of data between the country agencies and with external Partners; to advise on nature conservation issues affecting Great Britain as a whole; to pursue wider international goals for nature conservation (encouraging sustainable development, biological diversity and earth science conservation), including the provision of relevant advice to the Government; and to commission new research and collate existing knowledge in support of these activities, and to disseminate the results.

The British Trust for Ornithology (BTO) promotes and encourages the wider understanding, appreciation and conservation of birds. A key element of BTO's approach is the synergistic combination of unpaid contributions of the time and expertise of over 30,000 members and volunteers, with the professional skills of trained staff.

In pursuit of its aims, the Trust seeks to: conduct high-quality, impartial research in field ornithology; provide scientific evidence and advice on priority issues in bird conservation; and base this work on a partnership between amateurs and professionals, conducting fieldwork that is both enjoyable and scientifically rigorous.

Co-operation between JNCC (and its predecessor bodies) and BTO has been long and particularly fruitful. JNCC and the country agencies have used data and information collected by thousands of BTO members to promote the conservation of sites and habitats of importance for bird conservation throughout Britain, as well as to highlight the specific needs of individual species. More detailed research has been undertaken to investigate conservation problems and to suggest solutions.

As well as applying the results generated by BTO, JNCC contributes its conservation expertise to the Partnership, thus helping to ensure that the work addresses priority issues. BTO contributes not only the fieldwork of the volunteers but also both the ornithological and ecological expertise of its staff and members and the experience that it has of organising large-scale surveys, collating the data, and analysing the results. Both Partners contribute to the costs.

The BTO/JNCC Partnership overlaps with Partnerships responsible for the Breeding Bird Survey (with RSPB) and the Wetland Bird Survey (with WWT and RSPB).

Birds are hugely popular and the public demands their conservation. Ornithology has made an enormous contribution to the advancement of wider nature conservation goals by virtue of this popular support. The value of birds as environmental indicators has been greatly enhanced by voluntary data collection on a wide scale over many years, resulting in the use of bird population trends as one of the Government's headline indicators for sustainable development. Working with volunteers has enabled the development both of extensive and intensive methods of data collection in an extremely cost-effective manner.

This report covers BTO work under the Partnership during 2002/2003 and 2003/2004 (the final two years of the agreement), including much collation and analysis of studies for which the fieldwork was undertaken in previous years. It also, where relevant, looks back on progress since the start of the current agreement, which started in 1998/1999.

Thanks to volunteers

We are grateful to the many volunteers who contribute so much to the conservation of wildlife in the UK by participating in the BTO/JNCC work programme. The time they spend on fieldwork alone is the equivalent of many hundreds of full-time staff. We particularly thank the BTO Regional Representatives who, also in a purely voluntary capacity, organise the fieldwork at local level.

Thanks to land owners and managers

We would also like to thank all of the farmers, land owners and managers, who have been supportive of our work, especially in allowing volunteers ready access to their land.

PROGRAMME 1: LICENSING

Background

The individual Country Agencies have statutory responsibility for the licensing of ringing activities within their countries. They have related responsibilities for licensing the visiting of nests of species on Schedule 1 of the Wildlife and Countryside Act 1981 for the purpose of ringing and nest recording. The Country Agencies allow the BTO to issue permits on their behalf to suitably qualified ringers through a system of a delegated block licence issued to the BTO. As part of this procedure the Country Agencies require the BTO to produce reports on the numbers of licences for different activities issued.

There are three categories of BTO ringing permit: A (fully independent); C (limited independence); and T (training, operating under direct supervision only). All permits expire on the 31 March each year but the renewal period is staggered to spread the process.

Objectives

To operate a fair and strict licensing system to ensure that birds are ringed safely in accordance with high standards to ensure their welfare and to ensure that nests are recorded without harming the birds concerned.

Key Results

The number of licensed ringers in the UK gradually increased over the lifetime of this agreement. Only in Wales has there been no growth over the six years.

Table 1. Total Numbers of The Three Types of Permit Issued, by Country of Residence of Ringer, in 1998 (first year of agreement), 2002 and 2003

	ENGLAND	SCOTLAND	WALES	N IRELAND	TOTAL
1998	1,409	318	106	47	1,880
2002	1,458	328	100	50	1,936
2003	1,505	327	105	52	1,989

The number of ringers with cannon-net endorsements has increased slightly over the period, from 63 in 1998 to 65 in 2003, although it had been 67 in 2002. The number of licences to use unconventional marks and methods has increased rapidly from 86 in 1998 to 117 and 150 in 2002 and 2003, respectively. The number of licenses for disturbing species on Schedule 1 increased slightly over the period, from 362 in 1998 to 389 and 379 in 2002 and 2003, respectively.

Key Events

5,000th ringer licensed in total since numbered permits issued, see website:
www.bto.org/ringing/ringinfo/birdingpermit5000.htm

Further Sources of Information

Blackburn, J.R. (2003) *Report of the British Trust for Ornithology to JNCC on Licences Issued during 2002*. British Trust for Ornithology, Thetford.

Blackburn, J.R. (2004) *Report of the British Trust for Ornithology to JNCC on Licences Issued during 2003*. British Trust for Ornithology, Thetford.

See website: www.bto.org/ringing/ringinfo/become-a-ringer.htm

Contact Points

Jez Blackburn is the Recoveries and Licensing Team leader in the Ringing Unit of the Populations Research Department. Email: ringing@bto.org



PROGRAMME 2: SURVEYS OF BRITISH NON-BREEDING WATERBIRDS

Wetland Bird Survey: Low Tide Counts

Background

The primary reason for non-breeding waterbirds to be present at an estuary is to feed, so an understanding of their distribution away from the high tide period is of great importance. For this reason, the WeBS Low Tide Counts (LTC) were initiated in the winter of 1992-93, initially by the BTO and RSPB, but integrated within WeBS the following year. The LTCs add a further dimension to our understanding of estuaries gained from the WeBS Core Counts at high tide. They contribute to our knowledge of the abundance of waterbirds, help with national and international surveillance and are useful to determine the likely impacts of potentially damaging developments on part of an estuary.

Objectives

To count accurately feeding and roosting waterbirds on defined sectors of intertidal habitat on major estuaries, as part of the annual surveillance of wintering waterbirds in Britain and Northern Ireland.

Methods

Volunteers count feeding and roosting waterbirds each month between November and February on pre-established areas of the intertidal habitat in the period two hours either side of low tide.

Key Results

In 2002/2003, the north Kent shoreline of the Thames Estuary was counted at low tide to provide further information to guide decision making concerning the Cliffe Airport proposal. Lavan Sands (Traeth Lafan) was counted for the second time, with new areas covered along the Anglesey shore. Data for second winters were also collected for the Dyfi Estuary, Pegwell Bay and the Tamar Complex; the last already counted at low tide during the core WeBS counts. Sites more regularly covered were the Stour and Orwell Estuaries, Belfast and Strangford Loughs, Breydon Water, Portsmouth Harbour and Lindisfarne. Partial counts were also made at the Blackwater and Duddon Estuaries whilst another set of mid-tide counts were made in the north-west part of Morecambe Bay. By far the largest area covered however was the Severn Estuary, for which almost complete coverage was achieved for the first time, mostly by volunteers but the more remote areas were sampled by BTO staff.

The winter of 2003/2004 saw Swansea Bay counted at low tide for the first time, with 12 other estuaries also sampled including, notably, the Firth of Forth and Humber Estuary, as well as the Adur Estuary, Belfast Lough, Breydon Water, Burry Inlet, Morecambe Bay (north-west part at mid-tide), Langstone Harbour, Lindisfarne, Stour and Orwell Estuaries and Strangford Lough.

The Low Tide Counts from the winters of 2001-02 and 2002-03 were analysed and summarised in preparation for *Wildfowl & Wader Counts*. A huge amount of data has been collected for the sites involved and only a few key findings can be picked out here. One general trend at many UK sites has been the increasing ubiquity of Little Egrets on estuarine habitat in the south, from Norfolk to the Wirral, with the highest low tide site count being 120 on the Tamar Complex. Another species doing well is the Avocet, increasing in numbers at existing key sites (with the highest ever recorded count of 1,765 on the Alde at low tide in February 2002) and also consolidating in small numbers at new sites such as Chichester and Pagham Harbours. Some of the larger sites covered by the scheme during this period provided some impressive numbers, with over 30,000 each of Oystercatcher, Knot and Dunlin counted on the Dee Estuary and 41,000 Dunlin on the Severn Estuary. The increasing importance of Breydon Water, which holds very high densities of birds, was illustrated by the count of 16,000 Wigeon there in January 2003. New areas covered included the Dyfi Estuary, including the isolated flock of Greenland White-fronted Geese there, although the peak of 212 of this species was somewhat swamped by counts of over 2,000 Canada Geese at the same site. Repeat counts of Lavan Sands this time took in the Anglesey shoreline of the Menai Straits, revealing Brent Geese, Teal, Ringed Plovers and Turnstones that had not been apparent during the last survey here. Finally, on a more negative note, the decline in Knot on Portsmouth Harbour over the last 15 years since extensive development of the site has continued and the peak low tide count at this site during the 2002-03 winter was just two birds. (Photo: Little Egret by Tommy Holden)



Little Egret numbers have increased dramatically over the last decade.

Key Events

Publication of the book *Estuarine Waterbirds at Low Tide* in 2003 (see reference below) and the launch of this book on 26/1/04 with Environment Minister Elliott Morley.

WeBS Counters' Conferences during March 2003 and March 2004.

Further Sources of Information

Musgrove, A.J., Langston, R.H.W., Baker, H. & Ward, R.M. (Eds.) (2003) *Estuarine Waterbirds at Low Tide: The WeBS Low Tide Counts 1992-93 to 1998-99*. WSG/BTO/WWT/RSPB/JNCC, Thetford.

Website: www.bto.org/survey/webs/webs-ltc.htm

Contact Points

Dr Alex Banks is the WeBS National Organiser (Low Tide Counts).
Email: lowtide@bto.org



Other Wetland Bird Survey Research

Background

A wide variety of other work was carried out by the BTO under the auspices of WeBS, with the aim of supporting the key aims of the scheme. Two key areas of work were:

Wetland Bird Survey Alerts

Background

The BTO, in discussion with the other WeBS Partners, has been developing a standardised method of determining the direction and magnitude of changes in waterbird numbers, at a variety of spatial and temporal scales. These "Alerts" are intended to be advisory and, subject to careful interpretation, to provide a platform from which to direct research and subsequent conservation efforts.

Methods

The Alerts process assesses the change in numbers over short-, medium- and long-term periods (5, 10 and 25 years, respectively). Raw counts are first converted into annual indices (using counts from those months in which wintering numbers of the particular species are most stable). A smoothed line is fitted through the indices using a 'Generalised Additive Model' (or GAM), a specialised statistical technique. Changes in numbers are then calculated using values from the smoothed trend.

Increases or decreases in the smoothed trend are calculated as the proportional change over the relevant time period and are categorised according to its magnitude and direction: thus, declines of between 25% and 50% trigger Medium Alerts and declines of greater than 50% trigger High Alerts. Although they do not trigger Alerts, increases of 33% and 100% (values chosen to be those necessary to return numbers to their former size following declines of 25% and 50%, respectively) are also identified.

Key Results

A schedule has been identified that will assess national trends for all species annually, while protected sites (SPAs and SSSIs/ASSIs) with a waterbird interest will be assessed on a rolling cycle (once every three years for the former, six years for the latter). To date, the Alerts status of waterbirds has been reported for 61 designated sites (50 SPAs and 11 SSSIs) helping to focus attention on those species and sites giving particular cause for concern.



Goosander is one of the wildfowl species triggering a medium alert for a decline in its wintering numbers.

At the UK level, the most significant decline has been for European White-fronted Goose (high alerts over 10- and 25-year periods), whilst medium alerts for a variety of time periods have been triggered for Mallard, Pochard, Pintail, Bewick's Swan, Goosander, Ringed Plover, Dunlin and Turnstone. Conversely, a number of species have shown substantial increases in numbers, most notably Little Grebe, Gadwall and Avocet. (Photo: Goosander by Tommy Holden)

The full report can be found at <http://blx1.bto.org/webs/alerts/index.htm> where information for particular regions or sites can be downloaded.

Key events

Online reports produced in 2002 and 2003, initially for the WeBS partner organisations but with completely open access from summer 2004.

Further Sources of Information

Austin, G.E., Jackson, S.S.F. & Mellan H.J. (2003) WeBS Alerts 2000/01: Changes in numbers of wintering waterbirds in the United Kingdom, its Constituent Countries, Special Protection Areas (SPAs) and Sites of Special Scientific Interest (SSSIs). BTO Research Report 349, Thetford. <http://blx1.bto.org/webs/alerts/index.htm>

WeBS Dispersed Waterbirds Survey

Background

Although WeBS aims to assess numbers of waterbirds on all wetland habitats in the UK, inevitably efforts are concentrated on the larger wetlands with high numbers of birds. Relatively little is known about the numbers of waterbirds such as Mallard, Moorhen, Little Grebe and Grey Heron that winter on small waterbodies, streams, flooded fields, ditches and dykes. The Dispersed Waterbirds Survey (DWS) aimed to improve the population estimates of these waterbird species on areas within Britain not currently counted by other WeBS surveys. The intention was to compare estimates generated using the data from this survey with published national population estimates to indicate, firstly, those species for which the DWS could be a useful source of additional information for calculating national population estimates and, secondly, those species for which sites included in the DWS could improve overall WeBS coverage.

Methods

Fieldwork for this survey was carried out during the winter of 2002-03. Volunteers were asked to survey intensively 1-km grid squares, recording numbers of waterbirds in different broad-scale habitats (*e.g.* river, woodland, arable, *etc.*) in a single visit during 2002/03. Just over half of the WeBS Local Organiser network assisted with the survey and forms for a total of 1,230 1-km squares in Britain were allocated. Coverage of just half of these was requested and completed forms were returned for 54% of the target squares. The selection of target squares was stratified according to the proportion of urban, wet, upland and lowland areas in the square. Collectively, 108 species were recorded on 59 different habitat types, in a total area exceeding 132,000 ha.

Key Results

For 16 of the 20 species for which it was possible to calculate national population estimates, DWS estimates were much larger than published national estimates. Furthermore, for 12 of these, DWS estimates were more than double the size of the published estimates. This was not the case for numbers of Great Crested Grebe, Pochard and, in particular, Moorhen, the existing estimate of about 750,000 of the latter species, although very approximate, was much higher than the DWS estimate of 215,000. (Photo: Great Crested Grebe by Derek Belsey)



Most Great Crested Grebes are detected in the national WeBS Survey.

A survey of this type enables the assessment of the importance of little-surveyed habitats for waterbirds. Indeed, for most of the species analysed it would appear that such areas do support substantial proportions of the national population. Thus, to improve the current national population estimates the inclusion of such habitats within schemes such as the WeBS Core Counts requires further consideration. In this respect, repetition of the survey, attempting to improve on current coverage, would give an indication as to those areas and habitats most suitable for future incorporation into existing WeBS surveys. Improved species monitoring would enable more targeted efforts as regards their conservation, either in the form of protected area selection or through the implementation of wider countryside measures.

The discrepancies discovered between published national estimates and the DWS extrapolations could clearly be the result of a number of reasons. For example, it is likely that the DWS still underestimated the true numbers of many species either because the most suitable habitats (*e.g.* reedbeds and other dense waterside vegetation) were not fully covered or because some species are particularly secretive (*e.g.* Jack Snipe).

Key Events

A draft paper reporting on the Dispersed Waterbirds Survey was submitted to the WeBS Partners at the end of March 2004 (and was submitted to *Bird Study* in October 2004).

Further Sources of Information

Austin, G.E., Jackson S.F. & Armitage, M.J.S. (submitted) The Dispersed Waterbirds Survey: implications for waterbird population estimates in Britain. *Bird Study*.

Contact Points

Dr Andy Musgrove is WeBS National Coordinator at the BTO. Email: webs@bto.org



PROGRAMME 3: SURVEYS OF BRITISH TERRESTRIAL BIRDS

Breeding Bird Survey

Background

The status of wild bird populations is an important indicator of the health of the countryside. In 1994, after two years pilot work the BTO/JNCC/RSPB Breeding Bird Survey (BBS) was launched, with the aim of improving the geographical scope of UK bird monitoring by including all habitats, and, therefore, more species of breeding birds than the previous Common Birds Census (CBC). Since the final year of the CBC in 2000, the BBS has become the primary scheme for monitoring the population changes of our common and widespread bird species in the UK. More than 2,000 sites are surveyed each year allowing the population trends for 100 species to be generated for the UK. The methodology for producing long-term joint CBC/BBS trends for about 70 species was developed under the BBS programme. These results are published annually on the BTO website, and BBS results also contribute to the Pan-European Common Bird Monitoring initiative funded by the RSPB. BBS data are also used in various research and conservation projects, including the development of maps of relative abundance, for estimating national population sizes, and for determining the influence of changes in land management.

Objectives

To provide population trends for a range of common and widespread birds in the UK.

Methods

The BBS uses a line-transect method in randomly selected 1 km squares. Each surveyor visits their plot twice within the breeding season, walking two 1 km transects across their square and recording all birds seen or heard. Birds are recorded in one of three distance bands, to allow species density to be calculated and detectability to be assessed, or in flight. A separate visit is made to record habitat. A large proportion of surveyors also monitor mammals in their bird transects.

Key Results

A total of 212 species and subspecies were recorded in both 2002 and 2003 in 2,136 and 2,254 squares respectively. This compares with 215 species in 2,297 squares in 1998. In 2002, 29 species declined and 52 increased significantly between 1994 and 2002 while in 2003 these figures changed to 26 species declining and 44 increasing significantly. The remaining species showed no significant change in abundance. Table 2 shows the species that either declined or increased during either or both of these two overlapping periods (8 and 9 years, respectively).

Table 2. Declining and Increasing Populations of Bird Species in one or both periods (1994-2002 and 1994-2003).

	Declining	Increasing
>50%	25-50%	>50%
Wood Warbler	Great Crested Grebe	Greylag Goose
Willow Tit	Shelduck	Canada Goose
	Kestrel	Tufted Duck
	Grey Partridge	Buzzard
	Golden Plover	Coot
	Curlew	Snipe
	Common Sandpiper	Kingfisher
	Cuckoo	Great Spotted Woodpecker
	Turtle Dove	Grey Wagtail
	Tawny Owl	Stonechat
	Swift	Raven
	Goldcrest	Tree Sparrow
	Sand Martin	
	Lesser Whitethroat	
	Spotted Flycatcher	
	Pied Flycatcher	
	Hooded Crow	
	Starling	
	Siskin	
	Bullfinch	
	Corn Bunting	

Key Events

BBS-online, the development of which was funded by the RSPB, went live in October 2003, allowing observers to submit their BBS records electronically via the web, manage their data, view results of the BBS and download reports (see website address below).

Further Sources of Information

Raven, M.J., Noble, D.G. & Baillie, S.R. (2003) *The Breeding Bird Survey 2002*. BTO Research Report 334, British Trust for Ornithology, Thetford.

Raven, M.J., Noble, D.G. & Baillie, S.R. (2004) *The Breeding Bird Survey 2003*. BTO Research Report 363, British Trust for Ornithology, Thetford.

Website: www.bto.org/bbs

Contact Points

Dr David Noble is the Head of the Census Unit, in the Populations Research Department, and oversees the running of the BBS and other bird surveys.

Mike Raven is the National Organiser for the BBS and is responsible for its day-to-day running.

Email: bbs@bto.org



Dr David Noble



Mike Raven

Winter Farmland Bird Survey

Background

Farmland accounts for most of the lowlands of Britain and supports large numbers of birds. Some species such as Grey Partridge and Corn Bunting are largely restricted to farmland, and many farmland bird species have declined since the mid 1970s. For many of these species, agricultural intensification is thought to have decreased over-winter survival and underlies their population declines. In such cases, understanding how these species use farmland through the winter may be crucial if declines are to be reversed.

A range of other British breeding species, breeding in woods (*e.g.* Chaffinch) and uplands (*e.g.* Meadow Pipit), move to farmland in winter, where they may form large conspicuous flocks. Additionally, Britain plays host to thousands of immigrant Starlings, thrushes and plovers, many of which utilise British farmland. For many of these species we know little about their numbers, where they occur and how they use farmland. The Winter Farmland Bird Survey, organised by BTO and part of the BTO/JNCC partnership and involving thousands of volunteer birdwatchers, aimed to fill some of these gaps in our knowledge.

Objectives

To determine the population status and distribution and crop and habitat usage in winter of the 30 species listed below. Many were Birds of Conservation Concern, some were widespread common species, others were immigrants, and three (*) were scarce localised farmland species.

Grey Partridge	Golden Plover	Lapwing	Snipe	Curlew
Stock Dove	Woodlark*	Skylark	Meadow Pipit	Pied Wagtail
Stonechat	Fieldfare	Song Thrush	Redwing	Mistle Thrush
Starling	House Sparrow	Tree Sparrow	Chaffinch	Brambling
Greenfinch	Goldfinch	Linnet	Twite*	Redpoll
Bullfinch	Snow Bunting*	Yellowhammer	Reed Bunting	Corn Bunting

Methods

Four methods were used to gather the data, each starting in 1999/2000 and running over three winters (the Foot and Mouth outbreak in 2001 delayed the final year of the random square survey):

- Winter Walks – details of farmland birds seen during regular visits to an area of the observer's choice – *e.g.* where you walk your dog every week.
- Casual Records – records of large concentrations of farmland birds seen anywhere during each winter.

- Square Survey – visits to randomly selected 1km squares throughout lowland farmland three times each winter to count farmland birds and record what types of habitat are used and which are avoided.
- Golden Plover and Lapwing Survey – a small survey targeted at obtaining information on plover abundance and habitat use on individual flock ranges.

Key Results

Winter Walks and Casual Records were popular and each winter yielded several hundred-thousand records. The tables below break down the numbers of forms, routes or squares visited and total numbers of birds reported. These add up to a staggering 5.2 million birds over the period of the survey.

Casual Record statistics

	1999/2000	2000/2001	2001/2002
Forms received	440	302	280
Flock records	7301	4860	5353
Total birds	1,238,477	852,530	893,045

Winter Walks statistics

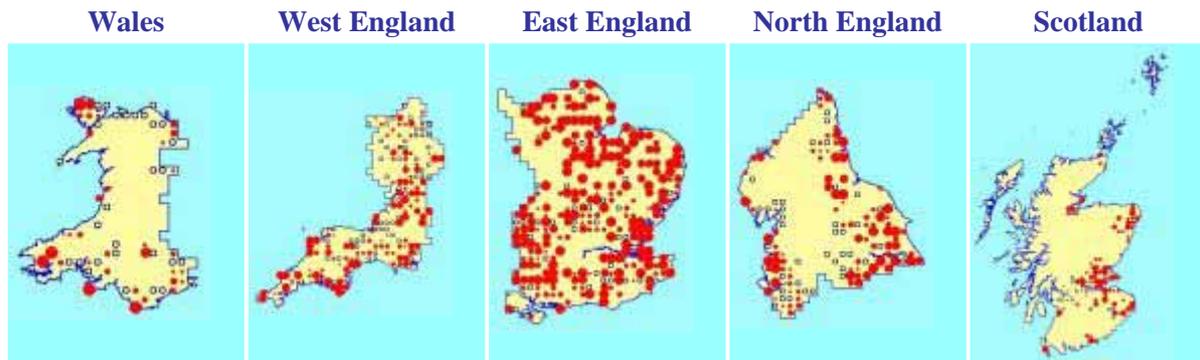
	1999/2000	2000/2001	2001/2002
Routes visited	447	275	303
Records	21,810	13,688	15,990
Total birds	554,861	351,240	395,686

Square Survey statistics

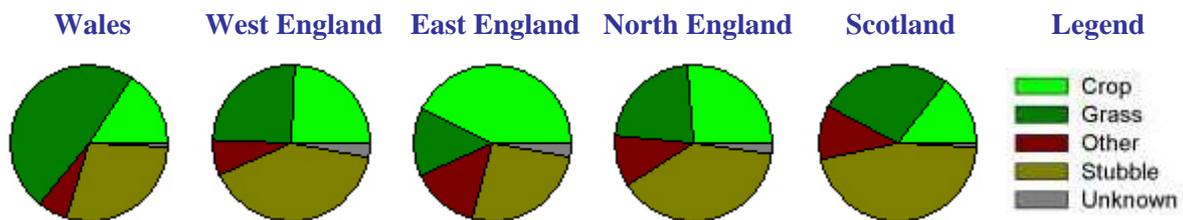
	1999/2000	2000/2001	2002/2003
Squares surveyed	870	801	745
Field records	36,522	69,273	76,502
Total birds	404,775	532,997	546,035

For each of the 30 species, detailed results including distribution maps, seasonal reporting rates, flock sizes and habitat use are available on the web (see website address on the following page). Examples for Skylark are shown on the following page. Ongoing research is assessing the differences in winter bird populations between arable, mixed and pastoral farming systems; the effects of field habitat on winter distributions; the effects of winter habitat availability on breeding bird distribution and population trends.

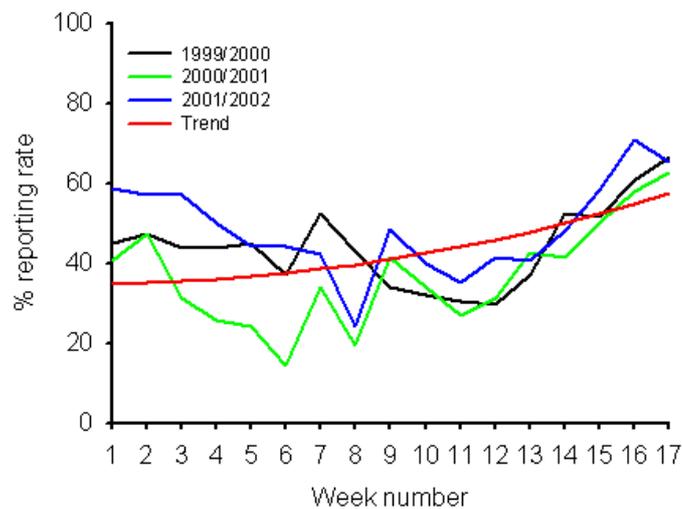
Regional maps showing frequency of occurrence from 1-km squares



Regional pie charts of habitat use from 1-km squares



Weekly percentage of Winter Walks routes reporting Skylarks. Week 1 = beginning of November.



Further Sources of Information

More information on aims, methods and specific results for each species can be accessed via: www.bto.org/survey/special/wfbs/introduction.htm

Gillings, S. & Beaven, P. (2004) Wintering farmland birds: results from mass-participation surveys. *British Birds* **97**: 118-129.

Contact Point

Dr Simon Gillings is a Research Ecologist in the Terrestrial Ecology Unit in the Habitats Research Department.

Email: wfb@bto.org



PROGRAMME 4: NATIONAL RINGING SCHEME

Numbers of Birds Ringed and Recovered in 2001 & 2002 and Research

Background

Much has been discovered about birds by watching and counting them, but such methods rarely allow birds to be identified as individuals. This is essential if we are to learn about how long they live and when and where they move, questions that are vital for bird conservation. Placing a lightweight, uniquely numbered, metal ring around a bird's leg, provides a reliable and harmless method of identifying birds as individuals. Each ring also bears an address so that anyone finding a ringed bird can help by reporting its whereabouts and fate. Some ringing projects also use colour rings to allow individual birds to be identified in the field.

Methods

Birds are caught for ringing in a variety of ways. About twenty percent are ringed as chicks in the nest; this is valuable because their precise age and origin are then known. The method most frequently used to catch fully-grown birds is the mist-net, this is a fine net erected between poles and is designed to trap birds in flight. This method is very effective but birds can only be removed safely from mist-nets by experienced ringers, who have received special training.

Objectives

The primary aim of the Ringing Scheme is to contribute to our understanding of population changes by monitoring the survival rates, productivity and dispersal of a wide range of species. The Ringing Scheme places increasing emphasis on the development of planned projects following specific study designs. The Scheme also makes an important contribution to our knowledge of bird movements, particularly through analyses of ring recoveries. The Ringing Scheme also aids other aspects of basic science, particularly studies of life history strategies, moult, condition and taxonomy.

Key Results

2001

The number of birds ringed (648,936) was 16% below the mean of the previous five years, largely as a result of the Foot and Mouth Disease, which restricted the areas ringers had access to. The recovery total of 10,692 was 6% lower than the mean of the previous five years. Recoveries of particular note included the first recovery of a Great White Egret involving Britain and Ireland, the first recoveries of BTO-ringed Honey Buzzards, a BTO-ringed American Golden Plover recovered in Italy, an Hungarian-ringed Knot found in England and the first foreign-ringed Yellow-browed Warbler (from Norway) to be reported in Britain and Ireland.

As part of the BTO's production of the landmark *Migration Atlas: movements of the birds of Britain & Ireland*, which reviews movements of birds using Britain & Ireland, novel approaches to the investigation of the movement patterns and distances were developed. These allowed the objective comparison of whether different species are sedentary, short-distance or long-distance migrants and the investigation of differential migration between birds of different age and sex.

An investigation of Song Thrush population dynamics showed that the survival rates of young birds was key in the population decline; reduction in survival rates also seemed to have driven the fall in numbers of Marsh Tits.

Work on movements of waders between roosts on the Moray Basin showed little movement for most species; important information when the possible effects of disturbance are being considered. An investigation of the biometrics of the Redshank wintering on Severn Estuary found that the proportions of Icelandic and British breeders varied between sites; again an important factor in assessing the possible consequences of disturbance.

Recent studies of declining seed-eating birds have indicated that decreases in annual survival rates, with winter being the key season, are responsible for population declines. Four important topics requiring further research are (i) the ranges of resident passerines in winter, (ii) winter habitat preferences, (iii) over-winter survival rates and the factors that influence them, and (iv) the extent to which immigrants occur in Britain & Ireland and the implications of these for conservation objectives focused on the winter period. In the winter of 2000/01, resources from the BTO/JNCC Partnership Work Programme were devoted to guiding a pilot study in Fife which assessed the practicalities of volunteers with limited time carrying out standardised ringing of farmland birds. The pilot study showed that a workable catching regime could be established but that there were other issues that need to be considered such as the trade-off between keeping baiting to a minimum, to reduce its influence, whilst catching enough birds to generate movement estimates. The pilot work continued in 2001/02 using three study sites in Fife and Grampian. A staff field coordinator will help to further develop this pilot work in collaboration with volunteer ringers during a six-month project over the winter of 2002/03.

Recovery data for 27 species were supplied to 17 ornithologists to assist with their research. Summaries of recoveries relating to all species in Argyll, Cumbria, Derbyshire, Doncaster, north Lancashire and south Cumbria and Shetland and all recoveries involving Wales for 40 species were supplied for local avifauna. Biometric data were supplied for Turtle Dove (CES) indices for Reed Bunting, Reed Warbler and Sedge Warbler and CES summaries for Hertfordshire. In 2001, 48 papers by non-BTO staff were published that used ringing data.

2002

The number of birds ringed (791,102) was the highest since 1997 and was 4% higher than the mean from the previous five years. The recovery total of 11,041 was the highest since 1998 and is very similar to the mean of the previous five years (11,005). Recoveries of particular note include three transatlantic reports, firstly of a Gannet involving Britain and Ireland (ringed in Newfoundland and found in County Mayo), a Roseate Tern from Rockabill (Dublin) which was recaptured in Brazil in the following January when it would normally have been wintering in the Gulf of Guinea and a BTO-ringed Arctic Tern found in Minnesota.

During the year a major report on the demography of House Sparrows and Starlings was completed. The work showed that while the decline in House Sparrows is likely to be due to a decline in the survival rate of first-year birds, changes in productivity appear to have helped to halt the decline in recent years. For Starlings, changes in survival of first-year birds was the best way of explaining the population decline, although changes in adult survival rate may also be implicated in eastern Britain. A novel analysis of recoveries showed that the origins of Willow Warblers moving through Dungeness Bird Observatory in the autumn varied through the migration period and that the patterns of movement had changed in recent years.

Work on wader age ratios showed that the proportion of juvenile waders in flocks caught in winter in Britain & Ireland may provide information about breeding success of high arctic species. Such data are hard to gather on the breeding grounds because of their remoteness and the dispersed nature of the breeding birds.

Recovery data for 21 species were supplied to 17 ornithologists to assist with their research. Summaries of recoveries relating to all species ringed or recovered in Argyll, Bodorgan (Anglesey), Derbyshire, Gibraltar Point, Suffolk and Denmark were also supplied. Biometric or moult data for six species were supplied to six researchers. A list of publications resulting from the analysis of recoveries and other studies involving ringing is included below. In 2002, 32 papers by non-BTO staff were published that used ringing data.

Key Events

Revised *Ringers' Manual* (which includes the rules of the Scheme, as well as providing advice and information to ringers) was published in 2001.

In 2001 80% of data was submitted electronically. This increased to nearly 90% in 2002.

Publication of *The Migration Atlas* in 2002.

House Sparrow and Starling report published for Defra in 2002 (see website below)

The BTO's Journal, *Ringling & Migration*, went on-line from 2004 (with contents and abstracts available for earlier editions).

Further Sources of Information

Clark, J.A., Balmer, D.E., Adams, S.Y., Grantham, M.J., Blackburn, J.R., Robinson, R.A., Wernham, C.V., Griffin, B.M. & Milne, L.J. (2002) Bird ringing in Britain and Ireland in 2001. *Ringling & Migration* **21**: 80-143.

Clark, J.A., Robinson, R.A., Balmer, D.E., Blackburn, J.R., Griffin, B.M., Adams, S.Y., Collier, M.P. & Grantham, M.J. (2003) Bird ringing in Britain and Ireland in 2002. *Ringling & Migration* **21**: 234-267.

Wernham, C., Toms, M., Marchant, J., Clark, J., Siriwardena, G., & Baillie, S. (2002) *The Migration Atlas Movements of the Birds of Britain and Ireland*. T. & A.D. Poyser, London.

Website: www.bto.org/ringing

Ringling and Migration website: www.bto.org/ringing/rmj

House Sparrow & Starling Report:
www.defra.gov.uk/wildlife-countryside/resprog/findings/sparrow.

Contact Points

Jacque Clark (Head of Ringling Unit)



PROGRAMME 5: BIRD SURVIVAL AND MOVEMENTS

Population Dynamics

Background

Information on changes in abundance, changes in productivity and changes in survival rates can be drawn together as part of the Integrated Monitoring Programme to help understand the demographic and environmental causes of population change. This then helps to inform the Partnership about where conservation action and research might be focussed.

Objectives

Three specific work elements were included in the programme of work: (a) an analysis of nesting success and weather, within the context of global climate change; (b) an analysis of survival rates and weather within the context of global climate change; and (c) the commencement of work on an analysis of temporal trends in reporting rates and how they vary between species and regions, to be completed in 04/05.

Methods

The climate change analyses involved the development of statistical models to explore which weather variables (based on temperature and precipitation) appeared to be most influential with respect to changes in survival rates and breeding success. Survival rates were estimated from the reported recoveries of dead ringed birds of 10 common passerines. Information on breeding performance was derived from the Nest Record Scheme for 17 species of single brooded bird. Such species provide a relatively simple system for exploring climate change impacts, compared to multi-brooded species.

Trends in reporting rates initially involved the extraction of data from the ringing database and tabulation of the frequencies of reporting rates for a range of species with respect to different regions as well as for the UK as a whole.

Key Results

First-year birds tended to be affected by adverse weather more than adult birds and winter weather was more influential than spring or summer weather. Ground foraging Dunnock and Robin were affected most by long periods with snow on the ground whereas Song Thrushes, that can dig through snow, were more affected by long periods of frost. Wren, being small bodied, was affected most strongly by winter weather, particularly long periods of frost. Frost also affected Greenfinch survival. Great Tit, which often forages on the ground, was most affected by snow-days, but the canopy-feeding Blue Tit was most affected by long periods of cold/wet weather. Summer weather had marginal impacts on Blackbird survival, but summer drought affected Song Thrushes quite strongly. The other two species examined, Starling and Chaffinch, showed no relationship between survival and the weather factors included in the analyses. Overall, the forecast of warmer winters in the future is likely to benefit these species, although more variable weather, with increased extreme events in the future may be detrimental; drier summers are likely to be disadvantageous to the thrushes.

The impact of weather on breeding performance was found to vary with species, such that opposite effects could be found in their responses. For example, although clutch size tended to increase under warmer spring conditions, raptors (Buzzard and Kestrel) showed declines in clutch size with spring rainfall,



Breeding success in Kestrel is affected by weather conditions, with spring rainfall decreasing clutch size.

whereas insectivorous Chaffinch and Great Tit tended to lay larger clutches as spring rainfall increased. Such relationships are likely to reflect the impact of weather on the species' food supplies. Overall, future scenarios of climate changes suggest that conditions for breeding will become more favourable for many species, but it should be noted that there is also evidence for warmer spring weather leading to a loss of synchrony between birds and their food supplies. (Photo: Kestrel by Tommy Holden)

Key Events

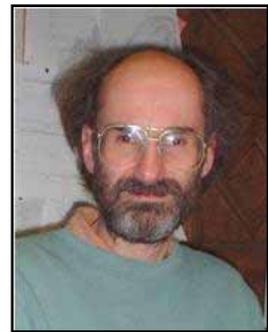
Paper on weather and survival rates has been submitted to *Journal of Avian Biology*.

Further Sources of Information

For reviews of climate change on birds and on the survival rates of Birds of Conservation Concern see: <http://www.bto.org/research/advice/conserv-advice.htm>

In addition, see:

Crick, H.Q.P. (2004) The impacts of climate change on birds. In: Rehfisch, M.M., Feare, C.J., Jones, N.V. & Spray, C. (Eds) *Climate Change and Coastal Birds*. *Ibis* 146 (suppl.1): 48-56.



Contact Point

Dr Humphrey Crick is Senior Ecologist in the Populations Research Department. Email: humphrey.crick@bto.org

Retrapping Adults for Survival

Background

Retrapping Adults for Survival (RAS) uses captures (or resightings of colour-marked individuals) of adult birds to calculate what proportion survive each year. Recaptures generally give much higher quality information on adult survival per unit ringing effort than recoveries of dead birds.

Objectives

RAS aims to provide information on adult survival for a range of species in a variety of habitats, particularly those of conservation concern and those not well monitored by other current BTO ringing.

Methods

An individual ringer or a group of ringers choose a study species and a study area. They aim to catch all of the adults (or adults of one sex) of their chosen species in the study area each year. The retrapping of marked individuals means that survival can be estimated precisely and has advantages over ringing recoveries for species that have low recovery rates. Species targeted under RAS need to show a high level of breeding site fidelity from year to year, otherwise birds that die cannot be separated from those that move away from the study area. Each RAS study must run for a minimum of five years, but preferably much longer, so that high quality survival rates can be calculated and changes monitored.

Key Results

In 2002, 107 datasets covering 42 species were received. This increased to 111 datasets and 43 species in 2003. The majority of species covered were passerines although there were a small number of studies on seabirds, waders and other non-passerines. Pied Flycatcher, with 17 and 18 studies in 2002 and 2003 respectively, Sand Martin with 15 and 11, and Swallow with 7 and 5, were the most popular species for studies.



Pied Flycatcher is the most common species selected for RAS studies.

Analysis of the results from 16 long-established sites for Pied Flycatcher showed that trends in survival rates differed in different parts of the country. Those in Wales and Midlands (South) were constant during the 1980s and 1990s, while in Cumbria they have declined markedly and in the northern parts of Wales and the Midlands they have improved since the early 1990s. (Photo: Pied Flycatcher by Tommy Holden)

Key Events

In 2003 a major review of the RAS scheme was undertaken. We assessed the size and quality of each RAS study in relation to the overall goal of providing sufficient information to monitor survival rates over the longer term. Some studies were excellent, and most provided adequate data. As a result of this exercise we were able to provide specific advice on how studies could be improved for survival monitoring. This was circulated to all participants.

Further Sources of Information

Website: www.bto.org/ringing/ringinfo/ras.

Contact Point

John Marchant is a Team leader with the Census Unit of the Populations Research Department. Email: ringing@bto.org



Constant Effort Sites Scheme

Background

The Constant Effort Sites (CES) scheme was the first national standardised ringing programme within the BTO Ringing Scheme and has been running since 1983. Ringers set their nets in the same pattern, for the same time period at regular intervals through the breeding season at around 130 sites throughout Britain and Ireland.

Objectives

The scheme provides valuable key information on (1) changes in population size, (2) changes in breeding success and (3) adult survival rates for 28 species of common songbird. The species provides such information from habitats that are not well covered by other schemes: particularly reedbeds and lowland scrub.

Methods

The CES scheme uses catches from standardised mist-netting to monitor key aspects of the demography of 28 common breeding songbirds. At over 130 sites throughout Britain and Ireland, dedicated ringers erect mist-nets in the same positions and for the same length of time, during twelve visits spread between early May and late August each year. Changes in the total number of adults caught provide a measure of changing population size, while the proportion of young birds caught forms an index of breeding success. Retraps of adult birds ringed in previous years are used to estimate annual survival rates. The ringers also collect detailed habitat information about their sites every three years.

Key Results

A total of 120 and 121 sites were covered in 2002 and 2003 respectively. Coverage after the Foot and Mouth outbreak in 2001 has not yet returned to the record level of 147 sites in 2000. The majority of sites are located in reedbeds, wet and dry scrub and a small number of sites in deciduous woodland. After the poor breeding season in 2001 and the relatively frosty and snowy conditions the following winter the dip in the adult populations of many species in 2002 was not surprising. Eight species (4 resident, Blackbird, Blue Tit, Great Tit and Chaffinch and 4 migrants, Sedge Warbler, Reed Warbler, Garden warbler and Willow Warbler) all showed significant declines while only Bullfinch showed a significant increase. Following the successful breeding season in 2002 and the generally mild winter, adult populations of some resident species in 2003 were higher than the previous breeding season. Wren, Song Thrush, Chiffchaff, Blue Tit, Great Tit and Linnets all showed significant increases. The breeding season was however a poor one for many species. Twelve species (9 resident species: Wren, Dunnock, Robin, Blackbird, Long-tailed Tit, Blue Tit, Great Tit, Bullfinch and Reed Bunting, and 3 migrants: Reed warbler, Blackcap and Chiffchaff) all showed significant declines in productivity between 2002 and 2003 while there were no significant increases.

Key Events

CES News published in March 2002 & 2003

CES meeting at the BTO Annual Conference, December 2003

Further Sources of Information

Website: www.bto.org/ringing/ringinfo/ces

Contact Points

Dawn Balmer is a Population Biologist in the Demography Unit in the Populations Research Department. Email: ringing@bto.org



PROGRAMME 6: BREEDING PERFORMANCE AND PRODUCTIVITY

Background

The British Trust for Ornithology's (BTO's) Nest Record Scheme (NRS) gathers data collected by volunteer birdwatchers throughout Britain and Ireland who find individual nests and record their progress. It is the largest and most computerised survey of its type in the world and is an important component of the BTO's Integrated Population Monitoring Programme, which aims to understand the demographic and environmental factors underlying population changes of birds in the UK. Over 250 papers that use NRS data have been written since the scheme began in 1939, covering not only information on the breeding biology of UK birds, but also providing contributions to population dynamics studies. More recently, the long-term nature of the NRS dataset has allowed it to play an important role in the study of the impacts of global climate change.

Objectives

To monitor the productivity of the UK's bird populations, producing annual trends for a range of breeding parameters, including laying dates, clutch size, brood size and failure rates during the egg and young stage. These trends are reported annually to the JNCC and are published in the web-based *Breeding Birds in the Wider Countryside* report (<http://www.bto.org/birdtrends/>), which highlights statistically significant declines in reproductive success over a range of time scales for over 90 species. The Scheme makes important contributions in the diagnosis of the demographic and environmental causes underlying population changes of birds in the UK, in combination with data on abundance and survival from other BTO schemes. The Scheme also aims to improve our understanding of the nesting habits of the UK's birds, identifying preferred nesting sites and habitats and investigating their influence on the productivity of breeding attempts.

Methods

A network of approximately 600 volunteer nest recorders and recording groups across the UK currently submit about 30,000 records to the Nest Record Scheme each year. Each record details the history of a single breeding attempt at an individual nest. Observers record species, county, year, place name, six-figure grid reference, altitude, dates of each visit, numbers of eggs or young, standardised codes to describe the developmental stage of nests, eggs, young, activity of the parents and the outcome of the nest (giving cause of failure if known). In addition, observers record specific details of the nest site and the habitat surrounding it, using a set of standard habitat codes. Data are computerised, undergo integrity checks and are then incorporated into the NRS Oracle database. A range of specially-developed analytical programs are then used to produce information on the key breeding performance variables for the Scheme.

Key Results

The total number of nest records submitted for 2003 was 27,104 (164 species), a slight drop relative to the 2002 total of 28,410 and the 2000 total of 30,878 (2001 totals were unusually low due to Foot and Mouth Disease-related access restrictions), but a considerable decrease when compared to annual totals of over 40,000 in the mid to late 1990s. In 2003, 6016 records for 92 species were computerised and incorporated into the NRS Oracle database.



Yellow Wagtail one of 11 species recently placed on the NRS Concern List.

Species are placed on the NRS Concern List if they display statistically significant declines in any aspect of breeding performance measured over at least the 15 years prior to the analysis, providing that they are also either on the BoCC Red or Amber List or there is some

uncertainty over their population status. The most recent analysis (October 2003) placed 11 species on the Concern List: Moorhen, Ringed Plover, Lapwing, Yellow Wagtail, Grey Wagtail, Dunnock, Willow Warbler, Linnet, Bullfinch, Yellowhammer and Reed Bunting. Four of these species – Grey Wagtail, Dunnock, Bullfinch and Yellowhammer were new to, or returned to, the list in 2004. (Photo: Yellow Wagtail by Derek Belsey)

Key Events

The Pilot Constant Nest Monitoring Plots (CNMP) scheme was introduced in 2002 to explore the feasibility of monitoring the productivity (particularly the numbers of breeding attempts) of multi-brooded species over the whole breeding season. In January 2004, a workshop involving BTO, JNCC and Country Agency staff was held to discuss progress. While recorder take up of the scheme had been encouraging, with 16 recorders covering a total of 17 species over 34 separate plots, it was decided to simplify the methodology to encourage more nest recorders to participate.

Publication of a review of the Nest Record Scheme: Crick, H.Q.P., Baillie, S.R. & Leech, D.I. (2003) The UK Nest Record Scheme: its value for science and conservation. *Bird Study* **50**: 254-270.

As a result of vigorous promotion by NRS staff, about 44% of nest records were submitted electronically, using Integrated Population Monitoring Reporter, in 2003, a substantial achievement in its first full year of use. A detailed guide to using IPMR for nest recording was produced in 2004.

Nest Record News, the NRS newsletter sent annually to all nest recorders and ringers, was substantially redesigned in 2003 and is now produced in a larger (A4), more accessible format with more photographs and more articles written by nest recorders.

The first NRS Workshop was held at the annual BTO conference at Swanwick, Derbyshire in 2003, and was attended by over 45 recorders.

A NRS email discussion group was set up during the summer of 2003 to facilitate discussion between recorders. Membership currently stands at 89 recorders.

Further Sources of Information

Nest Record News for 2002 & 2003 (2003 & 2004), Nos 19 and 20.

Website (redesigned in November 2004): www.bto.org/survey/nrs.htm.

Contact Points

Dr David Leech is the Head of the Nest Record Scheme and Peter Beaven is the Nest Records Officer. Both work in the Demography Unit in the Populations Research Department. Email: nest.records@bto.org



Dr David Leech



Peter Beaven

PROGRAMME 7: ALERTS AND POPULATION ASSESSMENT

Background

This programme consists of a website (details below) that is a “one-stop-shop” for information about the population status of our common terrestrial birds (over 100 species). Each species has one page devoted to it giving details of trends in population size and breeding productivity, currently over the period 1967-2002 as measured by BTO monitoring schemes.

Objectives

To provide a comprehensive, easy-to-understand synopsis of the current state of the nation’s terrestrial birds.

Methods

A range of surveys organised by the BTO are utilised in this programme: Breeding Bird Survey; Common Birds Census; Waterways Bird Survey; Heronries Census; Constant Effort Sites; and Nest Record Scheme. For each species covered there is general information concerning species’ conservation listings, a brief summary of observed changes in the size of the population and information concerning the possible causes of these changes. A series of graphs and tables are presented showing the trends and changes in population size and breeding performance over the past 33 years. Trends from the BBS for England, Scotland, Wales and Northern Ireland are also presented. A system of Alerts has been developed to highlight population declines of greater than 25% or 50% that have occurred over the past 5, 10, 25 and 33years.

Key Results

Seventeen species have shown declines of over 50% since 1967 (from CBC and BBS results) and 6 have shown moderate declines of between 25 and 49%. Four other species, including Lesser Spotted Woodpecker and Woodcock that are not monitored in sufficient numbers by BBS, have shown declines of more than 50%. The other two species are House Sparrow (65% decline between 1977 and 2000) and Wood Warbler (58% decline from BBS between 1994 and 2002).

Species showing declines of 50% or greater and 25 to 49% between 1967 and 2000.

DECLINES OF		
	>=50%	25-49%
Grey Partridge	Turtle Dove	Cuckoo
Skylark	Tree Pipit	Dunnock
Song Thrush	Whitethroat	Mistle Thrush
Spotted Flycatcher	Yellow Wagtail	Willow Warbler
Marsh Tit	Tree Sparrow	Meadow Pipit
Starling	Lesser Redpoll	Willow Tit
Linnet	Corn Bunting	Reed Bunting
Yellowhammer		
Bullfinch		

Key Events

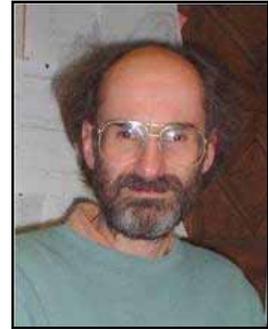
Website updated in May 2004 (updated annually).

Further Sources of Information

Website: www.bto.org/birdtrends/index.htm.

Contact Points

Dr Humphrey Crick is Head of the Demography Unit and has overall responsibility for producing the Breeding Birds in the Wider Countryside. Email: humphrey.crick@bto.org



PROGRAMME 8: ENVIRONMENTAL CHANGE PREDICTION

Background

Many changes in bird populations are caused by change in their environments. In particular, habitat loss and deterioration of habitats have frequently been identified as factors underlying population changes. The widespread declines in farmland birds since the 1970s form an especially clear example, though some of the recent declines in woodland birds may also be linked to habitat change.

Objectives

This programme covers a range of topics concerned with understanding and predicting the effects of environmental change, especially habitat change, on British bird populations. Several of the projects in this programme focus on habitat requirements of birds with the aim of identifying key habitats and solutions to the loss and degradation of habitats. Work was undertaken in 2002/03 and 2003/04 on issues relating to upland edges, lowland farmland and woodland. Objectives for each were as follows:

- (1) Upland edges: we aimed to understand what habitat factors affected distribution of birds within marginal upland areas in Wales and the eastern Highlands of Scotland. The reason for undertaking this work was to provide information that could be useful in understanding how recent and future changes in land use could affect birds in these areas.
- (2) Lowland farmland: a review was undertaken of the extent to which 'farmland birds' use uncropped areas and non-farmland habitat within agricultural landscapes. The purpose was to gain insights into how habitat creation on farmland might benefit declining farmland birds.
- (3) Woodland: two pieces of work were undertaken. First, a major review was completed of possible causes of recent declines in woodland birds with the aim of identifying the most important issues needing further research. Second, a specific piece of work was undertaken to assess whether woodland bird populations show stronger changes at the edges of woods than in the interior. This is of interest because it is possible that populations of woodland birds at woodland edges may have been affected by habitat changes on adjacent farmland and by increases in numbers of crows which are probably important predators at the woodland edge.

Methods

- (1) The data from Wales were collected in the 1980s at 120 sites spread throughout the Principality. The data from Scotland were collected in the 1990s at Dinnet National Nature Reserve, Grampian.
- (2) The review of habitat use by farmland birds involved landscape-scale analyses of BTO atlas data from ca. 1990 linked with land-use data collected by CEH as part of CS1990. In addition, information was drawn from the published literature to assess habitat associations at the scale of individual farms.

- (3) The review of causes of declines in woodland birds was based on an extensive review of published material and discussions with many ornithologists. The analysis of edge effects was based on a small number of woodland Common Birds Census plots for which long-term information was available on territory locations.

Key Results

(1) In the Welsh marginal uplands, bird communities in Bracken-dominated sites, and especially in sites with relatively high numbers of scattered trees and bushes, held more species than those in grassland-dominated sites. Abundance of trees and bushes is important for a diverse range of passerines. Extent of Gorse *Ulex* spp. scrub was important for Linnet, Stonechat and Dunnock. Geographical location and topography had relatively small effects on bird communities compared with vegetation composition. There is a need to assess whether these communities have changed since the mid 1980s, especially in relation to continued high grazing pressure from sheep but also Bracken control and tree planting. In the eastern Highlands, numbers of bird species also increased with tree cover from open moorland to birch woodland. Wetness also resulted in increasing numbers of species. Cattle grazing may be beneficial to some species within moorland / birch mosaics by creating a more diverse field layer. (Photo: Stonechat by Jill Pakenham)



Stonechat, together with Linnet and Dunnock, is positively monitored in scrub.

(2) Use of non-farmland habitats by species generally perceived as 'farmland birds' is common, yet these habitats are not always considered in conservation strategies aimed at population recovery. Within farmland landscapes, uncropped areas and patches of non-farmland habitat, can provide nesting, foraging or roosting resources. Habitats that are scarce on farmland and that provide potential supplementary or complementary resources to those available within the productive areas of farmland include ruderal vegetation, rough grassland and scrub. Enhancing habitat diversity through provision of modest quantities of these habitats will benefit farmland birds.

(3) Declining woodland species differ substantially in their ecology and life history patterns. No single general explanation can be identified for the declines and it is likely that multiple factors have exerted a combined effect on several of the species. Seven factors emerge as especially relevant and worthy of further study. These are (i) pressures on migrants during migration or in winter, (ii) climate change on the breeding grounds, (iii) general reduction in invertebrate food supplies, (iv) impacts of land use on woodland edges, habitats adjacent to woodland and hedgerows, (v) reduced management of lowland woodland, (vi) intensified habitat modification by deer and (vii) increased predation pressure from Grey Squirrels, Great Spotted Woodpeckers and corvids. The analysis of woodland edges found little evidence that birds had changed in their use of woodland edges relative to the interior of woods since the 1960s. However, there were some notable exceptions such as Willow Tit which now appears to make less use of edges than was the case 30 years ago.

Key Events

BOU Farmland Bird Conference at Leicester in March 2004.

Further Sources of Information

Upland edges: Article in *BTO News* No. 254 (Sept / Oct issue).

Woodland: Article in *BTO News* No. 253 (July / August issue).

Farmland: Forthcoming proceedings of conference to be published as a special issue of *Ibis*.

Contact Points

Rob Fuller is Director of Habitats Research. Email: rob.fuller@bto.org



Publications List 2002

Atkinson, P.W. & Robinson, R.A. (2002) Diversity and scale-dependency in agricultural landscapes: the need for regionally flexible agri-environment schemes. In: *Avian landscape ecology*, Chamberlain, D.E. & Wilson, A.M. (Eds) pp 289-299. IALE, Preston.

Austin, G.E., Musgrove, A.J., Rehfisch, M.M. & Armitage, M.J.S. (2002) An objective method of quantifying the avian interest of an area by means of a weighted population index. *Wader Study Group Bulletin* **99**: 60-63.

Benton, T.G., Bryant, D.M., Cole, L. & Crick, H.Q.P.C. (2002) Linking agricultural practice to insect and bird populations: a historical study over three decades. *Journal of Applied Ecology* **39**: 673-687.

Burton, N.H.K., Armitage, M.J.S., Musgrove, A.J. & Rehfisch, M.M. (2002) Impacts of man-made landscape features on numbers of estuarine waterbirds at low tide. *Environmental Management* **30**: 857-864.

Chamberlain, D.E. (2002) Effects of agricultural intensification on birds: Evidence from monitoring data. In: *Aspects of Applied Biology 67. Birds and Agriculture*. Association of Applied Biologists, Wellesbourne.

Chamberlain, D. & Vickery, J. (2002) Declining farmland birds: evidence from large-scale monitoring studies in the UK. *British Birds* **95**: 300-310.

Clark, J.A., Balmer, D.E., Blackburn, J.R., Milne, L.J., Robinson, R.A., Wernham, C.V., Adams, S.Y. & Griffin, B.M. (2002) Bird ringing in Britain and Ireland in 2000. *Ringing & Migration* **21**: 25-61.

Clark, J.A., Balmer, D.E., Adams, S.Y., Grantham, M.J., Blackburn, J.R., Robinson, R.A., Wernham, C.V., Griffin, B.M. & Milne, L.J. (2002) Bird ringing in Britain and Ireland in 2001. *Ringing & Migration* **21**: 80-143.

Crick, H.Q.P., Robinson, R.A., Appleton, G.F. Clark, N.A. & Rickard, A.D. (2002) (Eds) *Investigation into the causes of the decline of starlings and house sparrows in Great Britain*. BTO, Thetford.

Fuller, R.J., Ward, E., Hird, D. & Brown, A.F. (2002) Declines of ground-nesting birds in two areas of upland farmland in the south Pennines of England. *Bird Study* **49**: 146-152.

Gregory, R.D., Noble, D.G., Robinson, J.A., Stroud, D.A., Campbell, L.H., Rehfisch, M.M., Cranswick, P.A., Wilkinson, N.I., Crick, H.Q.P. & Green, R.E. (2002) *The state of the UK's birds 2001*. RSPB, BTO, WWT, JNCC: Sandy.

Musgrove, A.J. (2002) The non-breeding status of the Little Egret in Britain. *British Birds* **95**: 62-80.

Siriwardena, G.M. & Robinson, R.A. (2002) Farmland birds: demography and abundance. *Aspects of Applied Biology* **67**: 179-188.

Wernham, C.V., Toms, M.P., Marchant, J.H., Clark, J.A., Siriwardena, G.M. & Baillie, S.R. (Eds.). 2002. *The Migration Atlas: movements of the birds of Britain and Ireland*. T. & A.D. Poyser, London.

Publications List 2003

Austin, G.E. & Rehfisch, M.M. (2003) The likely impact of sea level rise on waders (Charadrii) wintering on estuaries. *Journal of Nature Conservation* **11**: 43-58.

Benton, T.G., Vickery, J.A. & Wilson, J.D. (2003) Farmland biodiversity: is habitat heterogeneity the key? *Trends in Ecology and Evolution* **18**: 182-188.

Chamberlain, D.E. & Crick, H.Q.P. (2003) Temporal and spatial associations in aspects of reproductive performance of Lapwings *Vanellus vanellus* in the United Kingdom, 1962-1999. *Ardea* **91**: 183-196.

Clark, J., Robinson, R.A., Balmer, D.E., Blackburn, J.R., Griffin, B.M., Adams, S.Y., Collier, M.P. & Grantham, M.J. (2003) Bird ringing in Britain and Ireland in 2002. *Ringling & Migration* **21**: 234-267.

Crick, H.Q.P., Baillie, S.R. & Leech, D.I. (2003) The UK Nest Record Scheme: its value for science and conservation. *Bird Study* **50**: 254-270.

Dolman, P.M. & Fuller, R.J. (2003) The processes of species colonisation in wooded landscapes: a review of principles. In: *The Restoration of Wooded Landscapes*. Humphrey, J., Newton, A., Latham, J., Gray, H., Kirby, K., Poulson, E., Quine, C. (Eds) pp 25-36. Proceedings of a conference held at Heriot Watt University, Edinburgh, 14-15 September 2000. Forestry Commission, Edinburgh.

Freeman, S.N. & Crick, H.Q.P. (2003) The decline of the Spotted Flycatcher *Musicapa striata* in the UK: an integrated population model. *Ibis* **145**: 400-412

Greenwood, J.J.D. (2003) The monitoring of British breeding birds: a success story for conservation science? *The Science of the Total Environment* **310**: 221-230.

Greenwood, J.J.D. & Carter, N. (2003) Organisation eines nationalen Vogelmonitorings durch den British Trust for Ornithology – Erfahrungsbericht aus Großbritannien. (Organising a national bird monitoring by the BTO-Experiences from Britain.) In: *Berichte des Landesamtes für umweltschutz Sachsen-Anhalt. Sonderheft 1/2003*: 14-26.

Greenwood, J.D., Crick, H.Q.P. & Bainbridge, I.P. (2003) Numbers and International Importance of Raptors and Owls in Britain and Ireland. In: *Birds of Prey in a Changing Environment*. Scottish Natural Heritage, Edinburgh. pp 25-49.

Mead, C. (2003) The Migration Atlas – 90 years of bird-ringing and recording migration. *British Wildlife* **14**: 313-319.

Musgrove, A.J., Langston, R.H.W., Baker, H. & Ward, R.M. (Eds) (2003) *Estuarine Waterbirds at Low Tide: the WeBS Low Tide Counts 1992-93 to 1998-99*. WSG/BTO/WWT/RSPB/JNCC, Thetford.

Pollitt, M.S., Hall, C., Holloway, S.J., Hearn, R.D., Marshall, P.E., Musgrove, A.J., Robinson, J.A. & Cranswick, P.A. (2003) *The Wetland Bird Survey 2000-01: Wildfowl and Wader Counts*. BTO/WWT/RSPB/JNCC, Slimbridge.

Rehfish, M.M., Austin, G.E., Armitage, M.J.S., Atkinson, P.W., Holloway, S.J., Musgrove, A.J. & Pollitt, M.S. (2003) Numbers of wintering waterbirds in Great Britain and the Isle of Man (1994/1995-1998/1999): II. Coastal waders (Charadrii). *Biological Conservation* **112**: 329-341.

Rehfish, M.M., Holloway, S.J. & Austin, G.E. (2003) Population estimates of waders on the non-estuarine coasts of the UK and the Isle of Man during the winter of 1997-98. *Bird Study* **50**: 22-32.

Robinson, R.A., Crick, H.Q.P. & Peach, W.J. (2003) Population trends of Swallows *Hirundo rustica* breeding in Britain. *Bird Study* **50**: 1-7.

Sparks, T.H., Crick, H.Q.P., Dunn, P.O., & Sokolov, L.V. (2003) Birds. In: *Phenology: An Integrated Environmental Science* (Ed. M.D. Schwartz) Kluwer, Dordrecht pp. 421-436.

Van Noordwijk, A.J., Speek, G., Clark, J.A., Rohde, Z. & Wassenaar, R.D. (2003) The EURING exchange code 2000. *Journal of Ornithology* **144**: 479-483.

Financial Statement

Total Costs	Income Net of VAT		
	JNCC	Others	BTO
2002/03			
£682,540	£424,055	£64,431	£194,054
2003/04			
£735,289	£464,602	£68,498	£202,189