

## WATERWAYS BIRD SURVEYS — LATEST RESULTS, AND A NEW CHALLENGE

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Renewed funding has given us the opportunity to increase the Waterways Breeding Bird Survey sample during 2002-3. Are BTO volunteers up to the challenge? *John Marchant* reports the results of Waterways Bird Survey and WBBS in 1999 and 2000 and looks to the future of surveying breeding birds along waterways.

### MUESTREOS EN CURSOS ACUATICOS – ULTIMOS RESULTADOS Y UN NUEVO RETO

La renovación del financiamiento nos ha brindado la oportunidad de aumentar la muestra del Muestreo de Aves en Cursos Acuáticos en 2002-3. Aceptarán el reto los voluntarios de BTO? *John Marchant* informa sobre los resultados del Muestreo de Aves en Cursos Acuáticos y el WWBS en 1999 y 2000 y analiza el futuro del muestreo de aves reproductoras en los cursos de agua.

### WATERWAYS BIRD SURVEYS – DERNIERS RESULTATS ET NOUVEAU DEFI

Le renouvellement du financement nous donne l'opportunité d'augmenter l'échantillon pour la Waterways Breeding Bird Survey durant 2002-03. Est-ce que les bénévoles du BTO sont prêts pour ce défi? *John Marchant* expose les résultats du Waterways Bird Survey et du WBBS en 1999 et 2000, et envisage l'avenir des recensements d'oiseaux nicheurs le long des cours d'eau.

### FLIEßGEWÄSSER-BRUTVOGELBESTANDSMONITORING – JÜNGSTE ERGEBNISSE UND EINE NEUE HERAUSFORDERUNG

Aufgestockte Finanzmittel geben uns die Möglichkeit, das Flächennetz im Fließgewässer-Monitoring in den Jahren 2002-03 auszuweiten. Werden sich die Mitarbeiter dieser Herausforderung stellen? *John Marchant* fasst die Ergebnisse des WBS und WBBS für 1999 und 2000 zusammen und beleuchtet die Zukunft von Bestandserfassungen an Fließgewässern.

Observers for the Waterways Bird Survey (WBS) began mapping breeding birds along linear waters (rivers and canals) in 1974. Back then, special monitoring of the riparian habitat was recognised as necessary because of its important numbers of breeding birds, including specialists rarely present in other habitats. This habitat was also under constant threat from water-borne pollution or from insensitive management that could, relatively quickly, severely reduce

populations of waterside birds such as Dipper and Kingfisher in a whole water catchment.

These threats are still present today, although the risk of catastrophe has reduced, largely through the role of the Environment Agency and the Scottish Environmental Protection Agency as conservation-minded managers and pollution watchdogs.

The BTO/JNCC/RSPB Breeding Bird Survey (BBS) has now taken over from the Common

Birds Census (CBC) the role of monitoring bird populations in the wider countryside but it is already clear that BBS cannot provide a full replacement for WBS's data for waterbirds. This is because, although some BBS routes cross rivers at bridges, few follow them, and so birds like Common Sandpiper and Grey Wagtail that live close to the water are unlikely to be recorded. BTO has a commitment to provide ongoing annual indices for certain waterside birds to feed into overall assessments of avian trends. There is a continuing role, therefore, for targeted annual surveys of breeding birds along waterways, alongside the more general role of the BBS.

The Waterways Breeding Bird Survey (WBBS) was piloted in 1998 to see whether BBS methods could be successfully adapted for surveying transects alongside rivers and canals. A small test sample of 200 sites were selected randomly, and these were augmented by a further series of canal plots chosen specifically to investigate the effects of a fishing close season on the numbers of breeding birds. The field method used was very like BBS, with two transect walks during the season, but with a single transect route alongside the chosen waterway. Transect sections were each 500 metres, to match the Environment Agency's River Habitat Survey protocol, not 200 metres as in BBS, and observers were allowed to select from one to ten contiguous sections, depending on access. In contrast to WBS, in which only wetland bird species are recorded, WBBS is like BBS in covering all species of birds and (optionally) of mammals too.

### PROGRESS WITH WBBS

Further funding for WBBS allowed us to proceed to a second phase in 1999-2000, in which BTO volunteers continued their surveys on random stretches and direct comparisons of

WBS and WBBS results were begun, by asking WBS observers to contribute to both schemes.

The first three seasons of WBBS, 1998-2000, have established that covering a random selection of linear waterways is a viable proposition for the BTO. The adaptations made to the BBS method work well, and volunteers have proved willing to survey the random sites. Problems have been reported with access permissions, and with finding a safe route that can be followed, not only early in the season, but also in June after the vegetation has grown, perhaps to more than head height! Some sites present special challenges, perhaps having a lot of water noise that hides those made by birds or, because they are in ravines for example, with no visibility beyond 25m. Many observers have it easy, with a clear, level waterside path, a good view of surrounding land, and more birds than would be enjoyed in almost any other habitat. Whatever the situation, the reaction of observers has almost always been positive. At my own site, encounters with Stone-curlew and Woodlark, and once a Long-eared Owl, have made the walks especially exciting!

Table 1 summarises the scheme's development so far. A notable feature is the way WBS observers have risen to the challenge since 1999, while the canal sites that were chosen in the study of fishing seasons in 1998 have been dropped. The 263 sites that have so far been randomly selected for coverage, and the 144 of these that have been surveyed at least once in 1998-2000 are mapped in Figure 1. The map shows that plots have been selected in all regions and that WBBS volunteers have come forward in all parts of the UK.

### POPULATION CHANGES FROM WBS FOR 1999-2000

We now have a number of options for estimating population changes for waterbirds,

TABLE 1. Totals of WBBS stretches surveyed in 1998-2000.

Reason for survey	1998	1999	2000	Surveyed at least once
Random stretches	107	115	104	144
For comparison with WBS data	15	63	60	70
Other non-random stretches	46	4	5	4
<b>TOTAL</b>	<b>168</b>	<b>182</b>	<b>169</b>	<b>261</b>

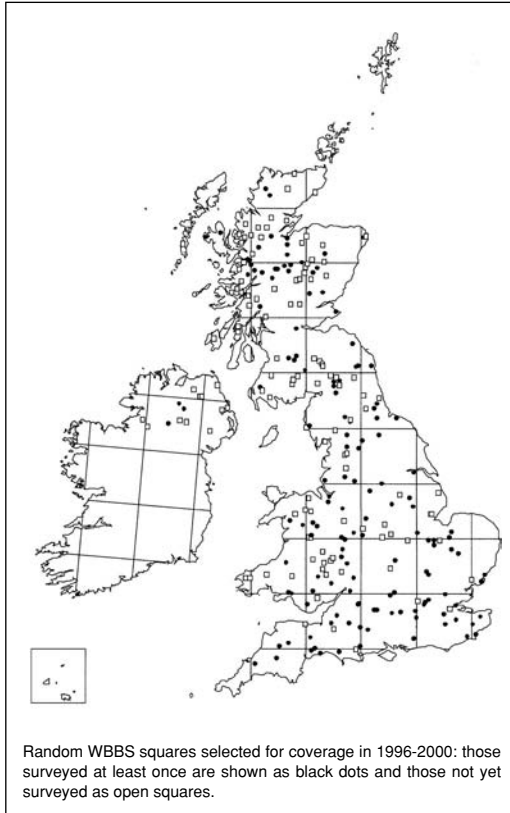


FIGURE 1. WBBS squares selected for coverage in 1998-2000.

including the WBBS results that are randomised and therefore representative of the UK. As the established scheme, however, and with its large sample of high-quality mapping surveys, WBS is still vitally important.

Results from WBS on population changes of waterways birds have been reported annually

since the 1970s, most recently in *BTO News* 231: 12-13, covering the period to 1999. For the years 1999-2000, Table 2 summarises the contributing surveys. Each one of these 85 represents a well-conducted WBS mapping survey in both years, for which we are very grateful. WBS plots have always had a strong representation of slow rivers in the south and east of England but, compared with CBC, there is better support in the north and west; a map was included in the previous WBS report.

Drawing data from these 85 WBS plots, each of which was surveyed in a comparable way in both years, enables us to calculate percentage changes between 1999 and 2000 for 22 species (Table 3).

Table 3 shows the numbers of sites and territories from which the percentage changes were estimated. Where the sample sizes are small, or changes very variable from plot to plot, there may be a wide confidence interval around the percentage change, indicating uncertainty, and we cannot be sure that there was a real change in population. For two species, Canada Goose and Grey Wagtail, population changes between 1999 and 2000 were statistically significant. For the goose, another large increase compounds the population growth that has been measurable by WBS since 1980 (see *BTO News* 222: 14). Grey Wagtail has been in significant long-term decline, so that its increase in 2000 leaves it well short of its population level in the mid-1970s.

Setting other results into their longer-term context, Whitethroat and Sand Martin have continued their upward trends since the lows of the early 1970s. Lapwings have apparently increased in the WBS sample long-term, although the confidence interval for this estimate is

TABLE 2. Plots contributing to the estimates of population change 1999-2000.

	Fast-flowing rivers	Slow-flowing rivers	Canals	Other or mixed types	Totals
Southern England	3	9	2	0	14 (16%)
Eastern England	0	10	8	1	19 (23%)
Western England	4	6	8	1	19 (23%)
Northern England	6	6	8	1	21 (25%)
Wales	1	3	0	0	4 (5%)
Scotland	4	2	1	1	8 (10%)
<b>Totals</b>	<b>18 (21%)</b>	<b>36 (42%)</b>	<b>27 (32%)</b>	<b>4 (5%)</b>	<b>85</b>

TABLE 3. Population change as measured by the WBS, 1999-2000, and summary figure for 1975-99

Species	23-year trend 1975-2000	1999 territories	2000 territories	% change	Number of plots
Little Grebe	-57 *	18	17	-6	10 !
Mute Swan	+76 *	110	105	-5	52
Greylag Goose	-	64	58	-9	11 !
Canada Goose	-	192	244	+27 *	36
Mallard	+190 *	2022	1944	-4	84
Tufted Duck	+41	100	82	-18	26
Goosander	-	60	58	-3	25 !
Moorhen	-10	711	746	+5	74
Coot	+61 *	405	405	0	43
<i>Oystercatcher</i>	+110 *	115	113	-2	22 !
<i>Lapwing</i>	+165	93	104	+12	37
<i>Curlew</i>	+72 *	48	46	-4	17 !
Common Sandpiper	-18 *	85	83	-2	17 !
<i>Kingfisher</i>	-8	44	49	+11	39
<i>Sand Martin</i>	+54	767	1014	+32	19 !
Dipper	-14	77	83	+8	27
Grey Wagtail	-42 *	123	142	+15 *	51
Pied Wagtail	-48 *	138	142	+3	54
Sedge Warbler	-13	397	439	+11	50
Reed Warbler	+79 *	283	286	+1	27
Whitethroat	+69	243	263	+8	58
<b>Reed Bunting</b>	-68 *	202	190	-6	52

\* change statistically significant at the 5% level

! small sample size in 1999-2000 (between 10 and 25 plots)

Species in *italics* are Amber-listed in *Birds of Conservation Concern*; Reed Bunting is Red-listed.

exceptionally wide; the trends for the last 10 and five years, which are more reliable, are both downward (see <http://www.bto.org/birdtrends>). The species is undergoing rapid decline in the CBC farmland sample and is retracting from westerly parts of its former breeding range. An increase in 2000 is thus against the recent trend. Reed Bunting, already subject to high conservation concern because of its severe and apparently accelerating decline, reversed the small gain it made in 1999.

Missing from this year's table are Redshank and Yellow Wagtail which, after their worrying long-term declines in the WBS habitat, were each present on only eight plots.

### WBBS MONITORING RESULTS TO DATE

An important question for the future of waterways bird surveys is how the results compare between the long-running WBS and the new WBBS. This is analogous to the

comparison of CBC with BBS but with the extra benefit that, thanks to many WBS observers, we also have a direct comparison of results at the same sites. If we find similar estimates of population trend, we will be encouraged to continue towards WBBS as the BTO's main method of monitoring common waterside species. Also, if WBBS results for other species match those from BBS, they may be able to boost the existing BBS sample.

We are also investigating the value of WBBS as a predictor of bird populations when linked to the River Habitat Survey. WBBS is already becoming established with the Environment Agency as the standard method of bird survey in this habitat.

Parallel series of population change results from WBS and WBBS have been prepared and tabulated in an interim report to the Environment Agency. It is really still too early to say what the results are showing, however, and the data collected over the next few seasons will be crucial. Trend data from WBBS cover only three

seasons so far, and have wide confidence intervals because WBBS sample sizes have not yet grown towards those that would be needed for a full ongoing survey. We know from BBS that results from transect surveys will be more variable than will those from mapping.

Matched WBBS and WBS data from the same plots span only two years but these are the data we would expect to show the closest similarities. Plotting these percentage changes for 1999-2000 (Figure 2) suggests that results from the WBBS transect method found more negative trends between years than the WBS method and that, as yet, we have not achieved significant agreement between the results from the two survey methods (the diagonal line in Figure 2). For Sand Martin, which showed the largest change on these plots, estimates were very similar between the two methods, and for Mallard, the most abundant WBS species, they were identical. Given more years, and a larger annual sample for WBBS, we would expect these differences to shrink. This is what we will be investigating over the next few seasons.

### NEXT STEPS FOR WBBS

Clear results from WBBS will require a substantial increase in surveys over the next two breeding seasons, 2002-03. *A new challenge to the BTO's network of Regional Representatives and survey volunteers is therefore to double the coverage of random stretches to over 200 by 2003.* We hope this can be achieved without affecting the levels of coverage for either WBS or BBS, which will need to continue at full strength, and despite the start of this new phase of WBBS having been delayed from 2001 by Foot & Mouth Disease. This new level of annual coverage would make WBBS viable as a long-term monitoring scheme (although its operation beyond 2003 will require further funding).

We hope that as many observers as possible will continue to survey their existing sites, whether as WBS observers contributing WBBS data too or as part of the random sample. New observers will also be needed. Open squares in Figure 1 represent the existing opportunities for

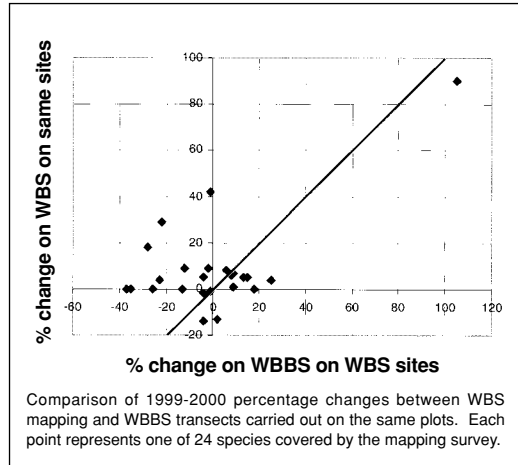


FIGURE 2. Comparison of 1999-2000 WBS and WBBS.

extra observers to become involved. There are many stretches in Scotland, Wales, Northern Ireland, and in much of the Midlands and north of England, where sites selected in 1998 have not yet found an observer. These will remain the top priorities for new coverage in 2002-03.

Early this winter, we plan to inform Regional Representatives of a further set of additional new sites selected for coverage next season. These will fall in all parts of the UK, so that there will be opportunities everywhere for new observers to join the scheme. Potential new observers should make themselves known, either to their RR or to me, during this autumn and winter, so that they can be matched to the sites available.

*Please help WBBS to realise its full potential.*

### MANY THANKS

The Census Unit is very grateful to the many observers who contribute survey data from waterways, using either survey method. Your efforts are much appreciated.

*The development of WBBS is supported by the Environment Agency and by Essex & Suffolk, Anglian, Northumbrian, and Severn Trent Water Companies.*