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WELL-MONITORED WATERWAYS

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BTO volunteers continue to monitor the breeding birds of waterways through two separate but interlinked surveys — WBS and WBBS. *John Marchant* discusses recent progress and results.

MONITOREO EFICAZ EN CURSOS FLUVIALES
Los voluntarios del BTO continuan monitorizando las aves reproductoras de los cursos fluviales a través de dos censos separados pero interrelacionados, el WBS y el WBBS. *John Marchant* comenta resultados y avances recientes.

In 2005, the Waterways Bird Survey (WBS) completed 32 seasons of continuous monitoring. Despite WBBS (the Waterways Breeding Bird Survey, equivalent in many ways to the BTO/JNCC/RSPB Breeding Bird Survey (BBS)) providing a competing attraction for volunteers since 1998, support for WBS has stayed strong: an impressive 92 surveys were conducted — an increase over the previous two seasons, although still a little lower than the long-term average (103). We are very grateful to the many loyal observers from previous years, and to the contributors of 10 new sites. For six surveys, 2005 brought up 30 years of WBS mapping, although in each case the stretch had changed hands over the years, and no single observer has yet reached that milestone.

The results over this impressive timespan have contributed valuable data to the UK's monitoring programme for common birds. WBS is a major contributor to the *Breeding Birds of the Wider Countryside* reports on the BTO web site (www.bto.org/birdtrends): especially notable are trends for 14 species for which rivers and canals form the most important breeding habitat, and for which WBS currently provides our most reliable measure of population change. WBS also provides an archive of mapping data, available for research, which now covers 523 sites and some 2,400 km of waterways, distributed throughout the UK.

Major trends detected by WBS include: a collapse of the Yellow Wagtail population beside waterways, measured at a loss of 95% of breeding pairs between 1979 and 2004; an 80% decrease of Little Grebes over the same period; and doubling of the populations of Mallard, Greylag and Canada Geese, Oystercatcher, Whitethroat, and now Goosander. Long-term trends, for species including these, have been given previously in BTO News 253 and 261.

LATEST TRENDS FROM WBS

Of the 92 WBS surveys in 2005, 76 were direct repeats from the previous year. These surveys allow a clear view, detailed in Table 1, of changes since 2004. Changes were mostly numerically small, and just two reached statistical significance — an increase for Pied Wagtail, and

TABLE 1. Estimates of population change 2005, from WBS data.

Species	Territory totals 2004	2005	% change	lcl	ucl	Number of plots
Mute Swan	96	98	+2	–10	+17	49
Canada Goose	171	153	–11	–39	+24	37
Mallard	1884	1861	–1	–8	+6	76
Tufted Duck	56	67	+20	–50	+107	15
Goosander	58	51	–12	–29	+11	20
Moorhen	613	619	+1	–7	+9	64
Coot	255	321	+26	–2	+59	36
Oystercatcher	253	229	–9	–30	+12	24
Lapwing	136	130	–4	–24	+36	32
Curlew	51	46	–10	–29	+17	15
Common Sandpiper	88	85	–3	–21	+10	16
Kingfisher	52	43	–17	–37	+3	37
Sand Martin	1221	1365	+12	–84	+41	18
Grey Wagtail	139	150	+8	–7	+25	44
Pied Wagtail	152	187	+23 *	+10	+40	54
Dipper	73	75	+3	–15	+22	26
Sedge Warbler	395	326	–17 *	–26	-8	38
Reed Warbler	253	253	0	–12	+13	21
Whitethroat	251	259	+3	–12	+24	45
Reed Bunting	240	268	+12	–5	+34	41

Lcl and ucl = 95% lower and upper confidence limits; * = statistically significant change. Species shown as *italics* are Amber-listed, and those shown as **bold** are Red-listed, according to the 2002–07 assessments. Species with fewer than 15 plots contributing paired data are excluded.

a decrease for Sedge Warbler. In both cases, these neatly reversed significant changes recorded between 2003 and 2004, and reflect fluctuation rather than a directional trend.

More subtle changes, not reaching statistical significance in any single year-to-year comparison, may nevertheless be of greater biological importance. The rounded longterm trend data that will shortly be presented in the 'Wider Countryside' report update on the BTO web site show that, through the accumulation of small increases, 2005 provided the highest-ever WBS population index for seven species (Mute Swan, Canada Goose, Tufted Duck, Goosander, Oystercatcher, Reed Warbler and Whitethroat). Possible decreases for Canada Goose and Oystercatcher in 2005 do not affect this longerterm trend. The significance of the Reed Warbler result is unclear, because Constant Effort Sites (CES) ringers, operating in the species' prime habitat of extensive reed beds, have been catching progressively fewer birds. Maybe there has been some loss of habitat quality at some long-established reedbed sites, while Reed Warblers have been making greater use of small or more linear sites. For Whitethroat, it should be remembered that the higher levels recorded by the Common Birds Census (CBC) in the mid 1960s have never been regained, despite the increases over recent decades. Against this, the rounded index for 2005 was the lowest ever for five species (Little Grebe, Lapwing, Common Sandpiper, Sand Martin and Yellow Wagtail). For Little Grebe, breeding season data from CBC and BBS and non-breeding season data from the Wetland Bird Survey (WeBS) suggest that the population nationally has increased, so that a downward trend may in fact be restricted to rivers and canals.

NEWS FROM WBBS

The Waterways Breeding Bird Survey uses a transect method like that of BBS to count breeding birds along linear waterways. Since 1998, the scheme has operated in parallel to WBS. The WBBS sample has two main components — randomly selected stretches, and WBS-linked ones, on which observers conduct both kinds of surveys in parallel. The random

sample has been growing steadily, to 236 in 2005, and the WBBS total reached a new peak of 299 stretches in 2005 — tantalisingly close to the 300 that was our target for that year. We hope now to maintain WBBS at around this level, although funding difficulties for organising this scheme remain – and have temporarily put WBBS reporting into abeyance (but see below).

WBBS surveys are widely distributed in Britain but, sadly, none has been conducted in Northern Ireland since 2003. The random sample has a strong representation in the west of Britain and in the uplands, where there is a high density of watercourses compared, for example, to East Anglia, where just a handful of surveys are conducted. The full sample is about one-tenth that of BBS, but WBBS records many more birds per site. This is because WBBS transects average almost 3.3 km, against the BBS maximum of 2 km, and because WBBS habitat is consistently bird-rich, whereas BBS observers in poor squares may sometimes be struggling to find anything to record.

BBS creates UK indices for species that it records on more than 40 sites per year, and uses a lower threshold of 30 sites for regional indices. Since WBBS sites hold more birds than BBS ones, it might be possible, theoretically, to create equally precise indices from fewer sites. Taking the BBS levels as a guide, however, WBBS had 74 species in 2005 that occurred on more than 40 sites, including 20 waterbirds (see Table 2). Among waterbirds, there are four species — Dipper, Kingfisher, Common Sandpiper and Goosander — where there are more WBBS than BBS sites, and others where WBBS could add a substantial number of birds to a combined monitoring sample. Using a threshold of 30 WBBS sites would bring in three more waterbirds: Shelduck, Redshank and Great Crested Grebe. For some of the more marginal species, it would not be possible to begin population indices as early as 1998, because of smaller WBBS samples in the initial years.

For birds that are largely confined to waterways for breeding, such as Kingfisher, Dipper and Grey Wagtail, the WBBS sample can be taken as representative of the whole British population. For other species it is representative of that section of the population that breeds alongside waterways, in some cases as part of uniquely riparian ecosystems. A WBBS index for any species could therefore be very useful — for example, an index from waterways compared with those from other habitat types covered by BBS could shed light on the way that birds

TABLE 2. WBBS sample sizes for water birds in 2005.

Species	Number of sites	Number of birds	Number of BBS squares
Mallard	269	5782	1414
Pied Wagtail	192	673	1467
Moorhen	173	1221	702
Grey Wagtail	171	544	280
Mute Swan	133	914	272
Reed Bunting	127	629	559
Lapwing	111	801	786
Canada Goose	109	1058	530
Sedge Warbler	107	705	294
Dipper*	93	268	64
Sand Martin	91	1514	143
Coot	90	846	297
Oystercatcher	86	999	343
Kingfisher*	85	127	62
Common Sandpiper*	79	380	56
Curlew	73	315	473
Reed Warbler	66	508	137
Tufted Duck	55	491	161
Goosander*	54	188	36
Greylag Goose	51	658	193

For species marked with an asterisk, there are more WBBS sites than BBS sites.

interact with habitat as their numbers change.

A series of multi-species indicators from WBBS data is already at the planning stage. These could give simple indications of overall trends in bird numbers, in a way that might influence management policies for waterside habitats. It would be ideal to extend the run both of indices and of indicators back to the 1970s, by linking them to the WBS trend data. Whether this will be possible will depend on how well the trends correspond between WBS and WBBS during the overlap period, work on which is still in progress. Comparison of trends so far between the mapping and transect methods has shown mixed results. This is partly because WBS mapping has territories as its counting unit whereas individual birds are the unit for WBBS transects. A similar difficulty has been overcome, however, in linking BBS results to the earlier CBC counts.

MORE SURVEYS, PLEASE

We are hoping that both WBS and WBBS surveys will be operating as usual in 2007, but the final decision of which waterways survey is likely to be continued in the long term will not be taken until later in 2007. The Environment Agency has just agreed to fund analyses of the 2005 and 2006 WBBS data, which will aid in this process and allow the new WBBS trends to be reported. For WBS, you can choose your own stretch of river or canal to cover, provided that it is at least 3 km in length and does not overlap with any existing survey stretches. For WBBS, there are still many plots in the random selection that await an observer, or have fallen vacant. Another way to contribute is by setting up a WBS mapping survey and then also making WBBS transect visits to the same site. Please contact me at the BTO Thetford HQ or e-mail: wbbs@ bto.org for more information.

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