

CHARTING THE SUCCESS OF UK HERONS

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The long-running BTO Heronries Census was supplemented by a highly successful special survey in 2003, the first such survey since 1985. *John Marchant* discusses some of the results that are now emerging.

ANÁLISIS DEL ÉXITO DE LAS GARZAS EN EL REINO UNIDO

El longevo censo de colonias de garzas del BTO fue suplementado por un exitoso censo especial en 2003, el primero de su clase desde 1985. *John Marchant* comenta los resultados que comienzan a emerger.

The Heronries Census has proved remarkably successful at following trends in the size of the UK Grey Heron population over more than three-quarters of a century. The latest graphs (Figure 1) show the gradual increase of the population, interrupted, although not since the 1980s, by setbacks caused by extra mortality in hard winters.

The big samples in England give an especially clear pattern: the 85% confidence intervals are wider elsewhere, although shrinking. Increasing numbers of heronries counted annually in Scotland allow the calculation of a separate trend there, but this cannot extend back to the early decades of the survey. Uniquely, rather than an index of population size as is usual for other common birds, the graphs show annual estimates of actual breeding numbers. The new model for converting annual nest counts to population estimates was recently published in *Ibis* (146:2 323– 335). It produces corrected estimates of uncounted nests that can be added to the counted nests to produce each annual total.

Current estimates of nesting pairs for 2003,

and trends for recent periods, to 2002 from 1977, 1992 and 1997 are shown in Table 1. UK figures include the Isle of Man. Trends, which like the graphs are drawn from the new *Wider Countryside Report* on the BTO website, are positive for all the countries and periods for which we calculate them, showing how well this species has fared in the recent UK environment of milder winters and cleaner fresh waters.

THE 2003 SPECIAL SURVEY

The original 1928 survey, covering mostly England and Wales, was followed by further full surveys in 1954, 1964 (including the Irish Republic), and 1985, that ran alongside the normal annual coverage.

These periodic special heron surveys are designed to boost coverage of heronries across the UK beyond that normally achieved by the annual Heronries Census. In 1985, which was the most successful previous survey, 727 colonies and 7,653 nests were counted — doubling the 360 colonies counted the year before. Nowadays, the background level of

Table 1. Grey Heron nest counts, estimates and trends.

	Counted 2003	2003 estimate	25 years	10 years	5 years
England	7,389	8,410	+23%	+15%	+7%
Scotland	1,523	3,980	+7%	+16%	+19%
Wales	780	1,040	+4%	+17%	+9%
N Ireland	525	760	–	–	–
UK	10,260	14,200	+19%	+13%	+9%

Counts and estimates from the 2003 survey, and trends for the periods 1977–2002, 1992–2002 and 1997–2002.

counting is consistently much higher. It is this welcome development that has allowed us to publish trends for UK countries separately, as well as the UK one. In 2002, for example, 594 colonies held 8,447 nests, a higher total than was counted in any of the special surveys! The aims of the 2003 survey were not only to boost coverage still further, but also to collect extra information that would help us to refine the estimation of total population size.

As usual in such surveys, we asked the Census’s regional organisers to find volunteers to count as many as possible of the known heronries. The way the survey totals have dwarfed earlier figures, with unprecedented totals of 772 heronries counted and 10,260 nests found, is a measure of their success (see Table 1 and Figure 2). The map shows the concentrations of large heronries in the London area and on the Cheshire Plain, and in Northern Ireland around Loughs Erne, Neagh and Strangford. A line of heronries marks the English coast from Cornwall to Norfolk. Not all regions were well covered in 2003, however: few of the islands were covered from the Clyde north to Mull; there are no data from Armagh; most importantly, barely a handful of colonies were reported from the whole of northeast Scotland, including Perthshire, Angus and Aberdeen. Surprisingly perhaps, absences from Shetland, Scilly and the Channel Islands are real.

FROM COUNTS TO POPULATION ESTIMATES

The main problem for estimating the total population is to know how efficient we are at finding heronries. In 1928, for example, the count that was made then, approaching 4,000

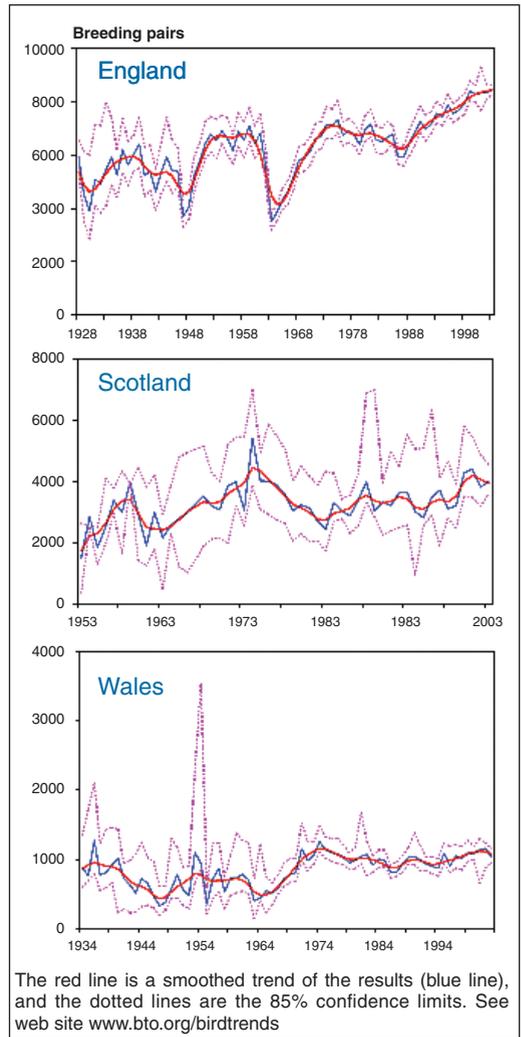


FIGURE 1. Grey Heron population trends for England, Scotland and Wales.

nests, was believed at the time to be a realistic estimate of the population, at least for England and Wales. We now estimate that almost 40% of



FIGURE 2. Heronries — special survey 2003.

the English and Welsh heronries active in 1928 were not located by that year's surveyors. Ideally, population estimates from new heron surveys should be proof against future discoveries of previously unknown heronries — otherwise, they and their calculated confidence intervals, like the 1928 figure, may also be widely inaccurate.

Population estimates from our current models are shown in Table 1, alongside the numbers of nests actually counted. We hope to assess, from the 2003 survey, whether these models can be improved further. The implication of the figures presented is that, despite tremendous efforts in 2003, 1,100 or so nests were missing from the English counts, and around 250 each for Wales and Northern Ireland. In Scotland there seem to have been around 2,500 nests missed — more than 60% of the estimated population there. Where could all these missing birds be?

Some of the nests missing from the counts can be accounted for by the colonies known or assumed to be active in 2003, but not counted in that year — for example the site by the Ythan

estuary that held 27 nests in 2002. Others will be in the regions, mainly Scottish ones, where few or no records were received for the 2003 survey — here, estimates can perhaps be made by extrapolation from data collected in 1985 or other previous years. In England at least, such colonies will account for only a small fraction of the 'missing' nests. The remainder would be, by definition, at unknown sites never reported to the Heronries Census.

An innovative feature of the 2003 survey was a random tetrad survey that was carried out alongside the normal counts. We selected 1,209 tetrads not known to hold nesting herons, and asked volunteers to search them for previously unknown heronries. More than 700 reports were received, including some from the 2004 spring season. Adding in reports from observers and regional organisers that a tetrad held no suitable habitat for the species, together with similar assessments made by reference to OS maps, raises the total coverage to 72%. Five new heronries were discovered by these random searches — one each in Lancashire, Cleveland, Northumberland, Dumfriesshire and Inverness — although none held more than five nests, and the Inverness-shire site had apparently been recently abandoned. It will be possible to multiply up (maybe by factors of 100 or so) to produce estimates, regionally and nationally, of how many completely unknown heronries exist in the countryside. Because there were so few new nests found, however, these results cannot be very precise. Regions covered poorly by heronry counts in 2003 were also generally poorly covered for the tetrad survey, and this will have to be taken into account in the final analysis.

HOW WELL IS EACH HERONRY COUNTED?

A further question about the accuracy of Grey Heron population estimates arises from work organised by Mick Marquiss in Scotland for the survey there in 1985. Intensive studies at colonies covered throughout the heron's long breeding season found more nests than were counted by the usual few visits made by BTO counters. Overall, it was estimated that BTO observers found only 68% of the actual nesting pairs (with 95% confidence limits of 56% and

83%). This result appeared to be independent of heronry size, and so should not affect population monitoring. If applicable widely, however, it suggests that we may need to add about a half again to our estimates of population size, to allow for under-counting!

New evidence from the 2003 census cards shows that early and late counts are not very efficient, compared with those in mid season (Figure 3). Thus, colonies counted only once, in late March or in late May, should be increased by about one-third to give a more realistic total. These data do not suggest that such a correction should be applied generally.

A second way to address this question is through the intensive coverage that was the third element of the special 2003 survey. We asked for volunteers who could count their heronries at short intervals throughout the nesting season, to see how count efficiency related to date. Initial results, drawn from a subset of eight heronries where the nest count was in double figures, are

presented in Figure 4. The number of active nests counted, expressed as a proportion of the final count for each of the eight heronries, is averaged across the counts made in each fortnight of the breeding season. Late February counts can be good (week numbers 7 and 8 in the diary), although visits then may miss around a third of the nesting pairs for the whole season. There is a clear peak in counting efficiency in late April to early May (weeks 17–18). Visits after mid June found very few nests still active. Again, these data could be used to correct singlevisit counts that were not made at the peak of the season.

The good news is that a visit in the second half of April, supplemented if possible by an earlier and a later visit, as has long been the standard procedure for the Heronries Census, should be finding at least 90% of the active nests at each site.

ACKNOWLEDGEMENTS

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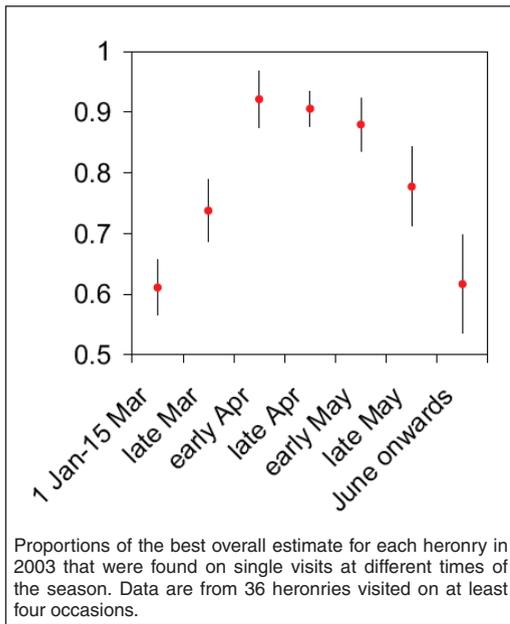


FIGURE 3. Proportion of overall numbers for each heronry in 2003.

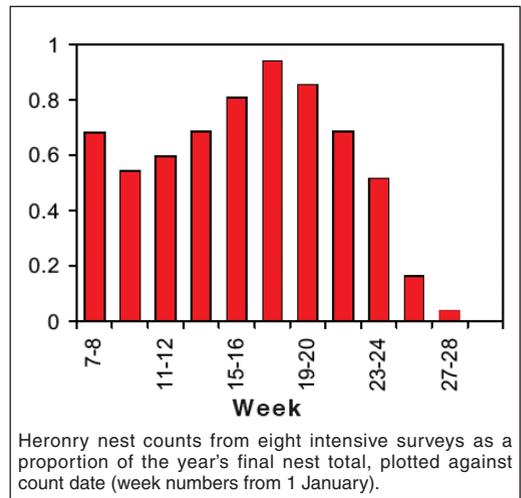


FIGURE 4. Heronry nest counts as a proportion of the year's final total.