

NEST RECORD SCHEME: LATEST RESULTS

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Analysing over 350,000 Nest Records Cards for 94 species brought the total on the NRS Concern List to 15 species. The latest trends and results are reported by *Humphrey Crick, Dave Leech* and *Peter Beaven*.

PROGRAMA DE REGISTROS DE NIDIFICACIÓN: ÚLTIMOS RESULTADOS

El análisis de 350,000 registros de nidificación de 94 especies aumentó el número total de especies amenazadas del NRS a 15. *Humphrey Crick, Dave Leech* y *Peter Beaven* informan sobre las últimas tendencias y resultados.

The female House Sparrow dives quickly into her nest hole — a small hole at the apex of a roof on an old timber-framed house. She has a beak full of food for her young and they call noisily at her, trying to attract her attention so that they get fed first. This House Sparrow family is lucky — they live in a small village where food is abundant – lots of insects in the rather neglected gardens surrounding the house and a small yard nearby where chickens and other livestock are kept by a hobby farmer. Elsewhere in the country, House Sparrow broods are not doing so well.

In fact, the latest results from the BTO's Nest Record Scheme (NRS) suggest that average brood sizes of House Sparrows have now fallen sufficiently for there to be a statistically significant downward trend since 1980. In 1980, House Sparrows were producing, on average 3.5 young per brood, but by 2003 this has fallen to 2.8, with annual averages consistently dropping below three young since 1999. This is just one of a number of disturbing trends that are revealed by the latest analysis of NRS data.

Every year the BTO issues an NRS Concern List to highlight potentially important declining trends in breeding performance. We do this specifically for the Joint Nature Conservation

Committee (JNCC), which is the UK Government's conservation advisor and jointly fund the scheme as part of the BTO/JNCC partnership to monitor bird populations. This year the number of species on the list has increased by 4, bringing the total to 15 species (see Box 1). The new species are Barn Owl, House Sparrow, Wheatear and Pied Wagtail. These join those that have been on the list for a number of years: Bullfinch, Dunnock, Grey Wagtail, Lapwing, Linnet, Moorhen, Reed Bunting, Ringed Plover, Willow Warbler, Yellowhammer and Yellow Wagtail. The reasons for their inclusion on the list are given in Box 1 and we examine the new species in more detail below, the other species having been considered previously (*BTO News* 249: 4–5). Methods of analysis are briefly described in Box 2. One species, the Red-throated Diver, has had to be removed from the list because the BTO has received too few records since 1999 to be able to monitor it effectively.

NEWLY DETECTED DECLINES

Barn Owl: Barn Owls are now the subject of a special scheme, the BTO's Barn Owl Monitoring

**BOX 1
THE NRS CONCERN LIST**

Species	Years on List	Significant decline in	Population trend
Moorhen	11	Clutch size & Nest survival (E)	Fluctuating
Ringed Plover	7	Nest survival (E)	Uncertain
Lapwing	8	Nest survival (E)	Amber List
Barn Owl	New	Brood size	Amber List
Yellow Wagtail	4	Brood size	Amber List
Grey Wagtail	1	Clutch & Brood size	Amber List
Pied Wagtail	New	Clutch & Fluctuating Brood size	
Dunnock	5	Nest survival (E)	Amber List
Wheatear	New	Brood size	Possible decline
Willow Warbler	5	Nest survival (E)	Amber List
House Sparrow	New	Brood size	Red List
Linnet	12	Brood size & Nest survival (C)	Red List
Bullfinch	8	Nest survival (E)	Red List
Yellowhammer	1	Nest survival (E)	Red List
Reed Bunting	12	Nest survival (E)	Red List

(Trends come from www.bto.org/birdtrends: Red and Amber Lists are of species with high or medium conservation concern, respectively, as explained in *BTO News* 242: 11–14).
E indicates nest survival at the egg stage; C at the chick stage.

**BOX 2
NRS DATA ANALYSIS**

NRS data for 94 species were analysed using methods that are outlined in a recent review paper in *Bird Study* 50:254–270. Trends in laying date, clutch and brood sizes and in daily nest failure rates over egg and chick stages are described by linear or quadratic regression, as appropriate. Trends were not calculated where the mean annual sample size was less than 20 for nest failure rates or less than 10 for the other measures. Breeding performance in 2003 was assessed by comparing the observed annual mean in 2003 with that predicted from the trend calculated from 1966–2002.

Species are placed on the **NRS Concern List** if (a) they show statistically significant declines in some aspect of breeding performance over at least the last 15 years and (b) they are on the red or amber list of conservation concern or there is some uncertainty over their population status.

Programme (BOMP), but the nest record information from BOMP feeds through into the NRS as well. Worryingly, for the first time we have detected a downward trend in average brood size for the species, down from 3.43 chicks in 1987 to 3.16 in 2003 (see Figure 1a). The trend is a result of a series of poor years in the 1990s and 2000s, particularly in 1998 and 2001. BOMP suggested that the latter was a result of severe autumn flooding in 2000 that appeared to affect the numbers of small mammals that Barn Owls feed on (*BTO News* 242: 24). Although this was a oneoff (we hope!), the overall trend

appears to be for smaller broods. It is possible that the trend indicates that breeding season food supplies for Barn Owls are becoming less abundant.

House Sparrow: This species was recently the subject of a government-funded study (Defra) (*BTO News* 242: 4–5). One of its conclusions was that rural House Sparrow declines were due to declines in survival rates and that the population decline was eventually halted mainly by improvements in breeding performance. The accelerated decline in brood size since 2000 is thus a cause for concern (see

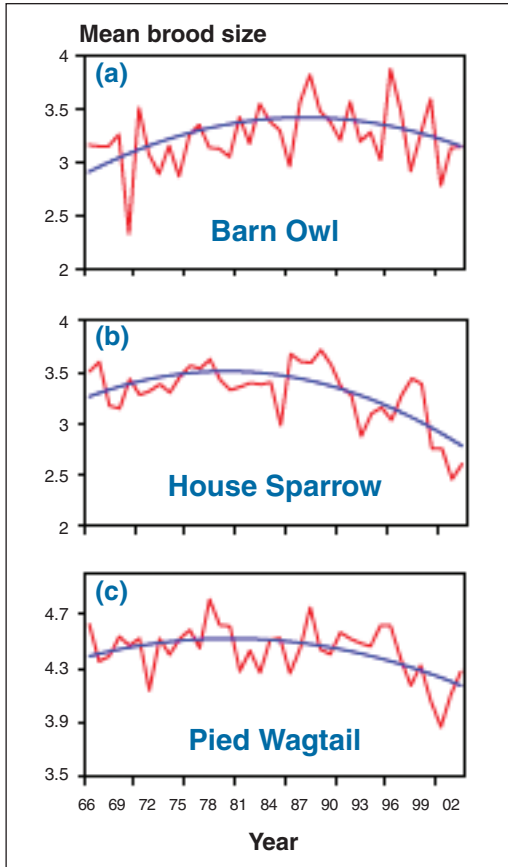


FIGURE 1. Changes in brood sizes.

Figure 1b). Work by Kate Vincent at the University of Leicester has suggested that insect food for chicks may be limited in certain situations and the new trend may be a manifestation of this at a wider scale.

Pied Wagtail: Pied Wagtail populations have fluctuated a great deal since the 1960s, but populations monitored by the Waterways Bird Survey (WBS) declined by nearly 50% since 1975. It is thus of some concern that both average clutch and brood sizes show significant declines: clutch size from 5.14 in 1966 to 4.94 in 2003, and brood size from 4.52 in 1980 to 4.16 in 2003, although these may be counter-balanced somewhat by improvements in nest survival at the egg stage (see Figure 1c). The species is little studied (surprisingly) and thus the possible reasons for the new trend can only be speculated upon at the moment.

Wheatear: This charismatic species was not well

monitored by BTO schemes until the inception of the BTO/JNCC/RSPB Breeding Bird Survey in 1994. The only information available came from the *New Breeding Bird Atlas* (1988–1991), which suggested that losses had occurred on the margins of its main range. The decline in its average brood size from 5.1 in 1963 to 4.5 in 2003 is relatively large and warrants further consideration, given the lack of information about its long-term status.

OTHER TRENDS

The general pattern of long-term trends are as follows:

Laying dates: Trends were estimated for 64 species, and nearly half (31) showed statistically significant trends towards earlier laying over at least the past 15 years. This increases the number of species apparently affected by climate change from the 42% of 60 species reported last year. Only one, Yellowhammer, showed a significant trend toward later laying.

Clutch sizes: While the majority of the 72 species analysed showed no trend in clutch size over time, of those that did, twice as many showed declines than increases (18 vs. 9). The majority of those with declining clutch sizes also have increasing trends of population abundance and thus may be experiencing competition for breeding space, and a greater proportion may be in less suitable habitats than when they were less numerous.

Brood sizes: A similar pattern is evident for average brood sizes. 28 species show declining average brood sizes, 16 show increases and 29 show no trend. Many of the declines are again associated with population increases.

Failure rates of nests: At the egg stage, trends were estimable for 74 species: 37 showed significant declines, but only 12 showed increases. At the chick stage, 69 species were analysed and 19 showed declines in failure rates and only 6 showed increases. Generally then, nest success has improved, affecting two main groups of birds: (a) those suffering from declining abundance, such as Marsh Tit and Starling and therefore likely to be affected by reduced competition and reduced use of suboptimal habitats, and (b) those that are no longer affected by the side-effects of pesticides used in the 1960s and 1970s and those that may have benefited

from the reduction in gamekeeper pressure in the UK, such as raptors and corvids.

THE 2003 SEASON

The 2003 nesting season appeared to be a relatively 'ordinary' one for birds breeding in the UK. Overall 10 species bred significantly early compared with the expected dates predicted from long term trends, *versus* four species breeding later than expected. Clutch and brood sizes and nest failure rates were generally unexceptional when compared to recent trends.

THE BENEFITS OF IPMR

Probably the most stunning difference between this and previous annual reports has been the huge additional input made by records submitted on Integrated Population Monitoring Reporter (IPMR) software. The number of records analysed this year has tripled as large numbers have been submitted using the home inputting program developed by volunteer Mark Cubitt. Not only has this increased the

numbers of records of nestbox species that we could analyse, but there has been a noticeable effect on the numbers of records of open-nesting species received.

This is hugely beneficial for the scheme's aim of monitoring the breeding performance of the UK's birds and we would like to thank all volunteers who made the effort to use the new program. We hope that more members will be encouraged to visit and record the nests of birds, particularly those of open-nesting species such as thrushes, warblers and finches to help ensure that the BTO can continue to track the fortunes of our nesting birds for their future.

If you would like a free 'Starter Pack' or information about IPMR, please contact Peter Beaven at nest.records@bto.org

The NRS is funded by a partnership of the BTO and JNCC and we are very grateful to all the volunteers who send in their valuable records, without whose efforts none of this monitoring would be possible. We also thank Karen Wright for help with the NRS database and to David Glue for his contributions to the scheme.