

## NEST RECORD SCHEME BREEDING TRENDS — LATEST RESULTS

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*Dave Leech and Humphrey Crick summarise the latest findings from the Scheme.*

### TENDENCIAS REPRODUCTIVAS DEL PROGRAMA DE REGISTRO DE NIDOS – ÚLTIMOS RESULTADOS

*Dave Leech y Humphrey Crick resumen los últimos hallazgos del programa.*

One of the perks for the predominantly desk-bound staff working at the BTO is the chance to experience the birding year by proxy via the many e-mails, phone calls and letters received from nest recorders, ringers and surveyors out in the field. This summer, for example, fewer Long-tailed Tits were caught at our regular ringing site on The Nunnery reserve, an interesting observation in itself, but one made all the more intriguing by the fact that several nest recorders have mentioned that it has been a productive year for the species on their local patches.

So, was it a good year for Long-tailed Tits or not? While knowledge of what is happening locally is important, it is vital that we collate and analyse the information we receive at a national scale if we are to identify species that are in need of conservation action. This is where the *Breeding Birds in the Wider Countryside Report* (WCR) comes in. The purpose of this web-based report ([www.bto.org/birdtrends2005](http://www.bto.org/birdtrends2005)) is to summarise and to publicise annual trends in population sizes and breeding success for over 100 British bird species. Information about the success of individual breeding attempts is provided by the Nest Record Scheme (NRS) and each year trends in laying date, clutch size, brood size and nest failure rates for over 90

species, based on information collected by nest recorders, are published in the WCR. And what a data source this is — the most recent analysis utilised over 365,000 records collected between 1966 and 2004!

### CHANGES TO THE NRS CONCERN LIST

Each year the BTO produces the *NRS Concern List* incorporating those species that are currently demonstrating statistically significant declines in both breeding performance and abundance (see Box 1 for details). The list is intended to act as an early-warning system, focusing attention on those species that may be in greatest need of conservation action in the future and, as such, it is sent to the Joint Nature Conservation Committee (JNCC), the UK government's conservation adviser and joint funding body of the NRS under the BTO/JNCC partnership.

The number of species on the latest *NRS Concern List* (Box 2) has increased by two, with two species being dropped and four being added, bringing the total to 17. The reasons for the inclusion of Moorhen, Ringed Plover, Yellow Wagtail, Grey Wagtail, Dunnock, Willow Warbler, Linnet, Yellowhammer and Reed

**BOX 1 – NRS DATA ANALYSIS**

NRS data for 94 species were analysed using the methods 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 the egg and chick periods are described by linear or quadratic regression, as appropriate. Failure rate trends were not calculated for those species having a mean annual sample size of fewer than 20 records and species with a mean annual sample size of fewer than 10 records were excluded from analyses of laying date, clutch size and brood size.

Relative breeding performance in the current year was assessed by comparing the mean values for laying date, clutch/brood size and failure rate in 2004 with those values predicted from the trend calculated between 1966 and 2003.

Species are placed on the *NRS Concern List* if a) they demonstrate significant declines in some aspect of breeding performance over at least the last 15 years, and b) they are on the Red or Amber *Birds of Conservation Concern* list or there is some uncertainty over their population status.

**BOX 2 – NRS CONCERN LIST**

| Species                   | Years on list | Significant decline in:                   | Population trend  |
|---------------------------|---------------|---|-------------------|
| Moorhen                   | 12            | Clutch size & Nest survival (E)           | Fluctuating       |
| Ringed Plover             | 8             | Nest survival (E)                         | Uncertain         |
| <i>Barn Owl</i>           | 1             | <i>Brood size</i>                         | <i>Amber List</i> |
| <b>Skylark</b>            | <b>New</b>    | <b>Nest survival (E)</b>                  | <b>Red List</b>   |
| <i>Yellow Wagtail</i>     | 5             | <i>Brood size</i>                         | <i>Amber List</i> |
| <i>Grey Wagtail</i>       | 2             | <i>Clutch size &amp; Brood size</i>       | <i>Amber List</i> |
| <i>Pied Wagtail</i>       | 1             | Clutch size & Brood size                  | Fluctuating       |
| <i>Dunmock</i>            | 6             | <i>Nest survival (E)</i>                  | <i>Amber List</i> |
| Wheatear                  | 1             | Brood size                                | Possible decline  |
| <i>Mistle Thrush</i>      | <i>New</i>    | <i>Brood size</i>                         | <i>Amber List</i> |
| <i>Willow Warbler</i>     | 6             | <i>Nest survival (E)</i>                  | <i>Amber List</i> |
| <b>Spotted Flycatcher</b> | <b>New</b>    | <b>Brood size &amp; Nest survival (C)</b> | <b>Red List</b>   |
| <b>Starling</b>           | <b>New</b>    | <b>Brood size</b>                         | <b>Red List</b>   |
| <b>House Sparrow</b>      | <b>1</b>      | <b>Brood size</b>                         | <b>Red List</b>   |
| <b>Linnet</b>             | <b>13</b>     | <b>Brood size and Nest survival (C)</b>   | <b>Red List</b>   |
| <b>Yellowhammer</b>       | <b>2</b>      | <b>Nest survival (E &amp; C)</b>          | <b>Red List</b>   |
| <b>Reed Bunting</b>       | <b>13</b>     | <b>Nest survival (E)</b>                  | <b>Red List</b>   |

(E) indicates nest survival at the egg stage and (C) indicates nest survival at the chick stage. Population trends are taken from [www.bto.org/birdtrends](http://www.bto.org/birdtrends). Criteria for inclusion on the Red (**bold**) and Amber (*italic*) Lists (High and Medium Conservation Concern respectively) are explained in *BTO News* 242: 11–14.

Bunting, all of which have been included on the list for at least three consecutive years, are discussed in *BTO News* 249: 4–5. Barn Owl, Pied Wagtail, Wheatear and House Sparrow were all added to the Concern List last year. The reasoning behind these additions is discussed in *BTO News* 255:18–19.

Both Lapwing and Bullfinch were added to the list in 1996 but have been dropped in 2005. Lapwing was originally placed on the *Concern List* due to a steady increase in egg-stage failure

rates between the mid-1980s and late 1990s, possibly related to increasing rates of predation and destruction by livestock (Chamberlain & Crick 2003). However, success rates at the egg stage have been consistently higher over the last four years and the trend is no longer statistically significant. While this could be good news for Lapwings, it is important to remember that improvements in average breeding performance might also be due to decreasing competition between individuals as

### NEW ADDITIONS

Three of the four species added to the Concern List this year are on the *Birds of Conservation Concern* Red List as they have exhibited population declines of greater than 50% over the last 25 years:

**Skylark:** Common Birds Census (CBC) and Breeding Bird Survey (BBS) data indicate that Skylark numbers in England fell by 59% between 1978 and 2003. An increase in the sowing of winter cereals over this period may have decreased the availability of stubble fields in winter and also reduced opportunities for late-season breeding attempts (Chamberlain & Siriwardena 2000). It is therefore worrying that the latest NRS trends suggest that eggstage failure rates have increased significantly over the last 15 years, although both clutch and brood sizes are currently increasing.

**Spotted Flycatcher:** This is one of the UK's most rapidly declining species, with a decline of 81% over the past 25 years. The fall in numbers has been linked to declining survival rates of first-year birds (Freeman & Crick 2003). Now we find that productivity in the UK also seems to be falling, with brood sizes declining significantly since the mid-1990s (Figure 1) and failure rates at the chick stage increasing slowly but steadily since the mid-1960s.

**Starling:** While it is still thought of as a relatively common garden bird, CBC/ BBS trends indicate that the breeding Starling population in England has decreased by 78% over the last 25 years. During this period, clutch sizes and brood sizes increased and failure rates fell, indicating that falling survival rates, and not a reduction in productivity, were responsible for the decline (Freeman et al. 2002). However, since the mid-1990s brood sizes have started to fall rapidly (Figure 1) and the species has now been added to the NRS *Concern List*.

**Mistle Thrush:** This Amber-listed species, which has declined by 32% in the UK over the last 25 years, has also been added to the *Concern List* due to a significant decline in brood size of greater than 5%, despite an increase in average clutch size over the same period. This decline appears to have been particularly severe over the last 10 years (Figure 1).

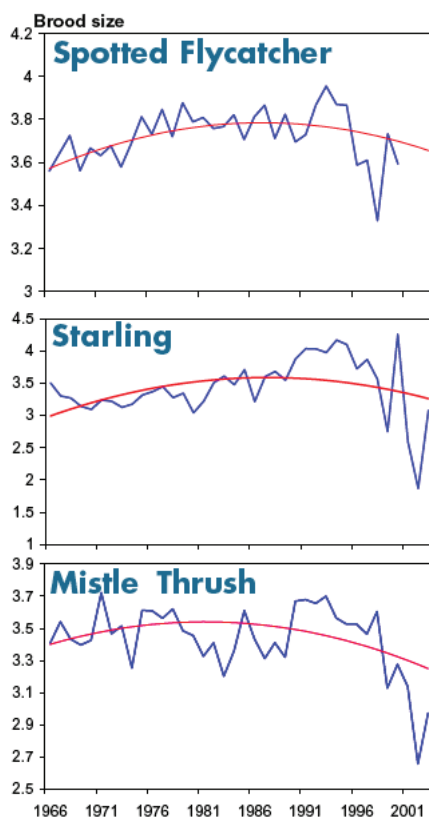


FIGURE 1. Changes in brood size.

the population declines, or to a decreased proportion of birds breeding in marginal habitats as the population contracts. Bullfinch was also previously included on the *Concern List* because of increasing egg-stage failure rates but, again, failure rates for this species have

decreased over the last five years (see New additions box).

### THE 2004 SEASON

The 2004 season appeared to get off to a bit of a

slow start, with eight species breeding on average later than was predicted from laying dates in previous years, and only two — Kestrel and Reed Bunting — breeding earlier. In terms of clutch sizes, larger birds seemed to have a better year, with Barn Owl, Little Owl, Jackdaw and Magpie all laying relatively large clutches whilst clutch sizes were comparatively small for Skylark, Chiffchaff and House Sparrow. Brood sizes were lower than predicted for eight species, but were high relative to previous years for Wheatear, Whinchat and House Sparrow (despite smaller clutch sizes for House Sparrow, suggesting that hatching success was actually rather high). In general, failure rates seemed to be relatively low, with the proportion of nests failing at the egg stage lower than predicted for nine species and the proportion failing at the chick stage lower than predicted for 13 species. In comparison, egg-stage failure rates exceeded predictions for five species and chick-stage failure rates exceeded predictions for only two species.

#### THANK YOU

None of this research would be possible without the fantastic amount of time and energy that nest recorders invest in collecting these data each year, so thank you very much to everyone

who has contributed to the NRS data set. If you have not yet contributed, but would like to in the future, contact us at [nest.records@bto.org](mailto:nest.records@bto.org) or look at our web pages at [www.bto.org/survey/nest\\_records/index.htm](http://www.bto.org/survey/nest_records/index.htm) for more information.

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