

THE NEST RECORD SCHEME 2002 — HAS LINNET TURNED THE CORNER?

PETER BEAVEN, DAVE LEECH AND HUMPHREY CRICK

*British Trust for Ornithology
The National Centre for Ornithology
The Nunnery, Thetford
Norfolk, IP24 2PU, United Kingdom*

The NRS results for 2002 provided several surprises and analysis of long-term trends has led to an increase in the number of species on the NRS Concern List to 12 species. However, there are some encouraging results for Linnet — at last! *Peter Beaven, Dave Leech and Humphrey Crick* have been assessing the results.

EL PROGRAMA DE REGISTRO DE NIDOS 2002 – ¿HA PASADO YA LO PEOR PARA EL PARDILLO COMÚN?

Los resultados del Programa de Registro de Nidos (Nest Record Scheme) para 2002 revelaron diversas sorpresas y el análisis de tendencias de largo plazo ha causado el aumento del número de especies a conservar a 12. Sin embargo, hay resultados esperanzadores para el pardillo común, ¡por fin! *Peter Beaven, Dave Leech y Humphrey Crick* evalúan los resultados.

Over 27,600 individual nest records were submitted for the 2002 breeding season. Data have now been sorted, input, computer-checked and analysed. While each record provides a fascinating insight into the private lives of a pair of birds for an individual nest recorder, the sum of all the records provides much-needed information, describing how the population of each species is faring as a whole. Here we compare the results for 2002 with previous years (back to 1966) and discuss the long-term trends that are of conservation importance.

2002 — A PECULIAR YEAR!

Most species began nesting particularly early in 2002, even allowing for the trends towards earlier laying that we have found in the past. We compared average laying dates in 2002 with those predicted from the trend calculated over the period 1966–2001. This analysis showed that 13 of 41 species tested started laying

significantly earlier in 2002, with a further four species laying non-significantly earlier (41% of species in total, see Box 1 for details of analysis). In contrast, only seven species laid later. The majority of the early species were those that are resident in the UK and are therefore best placed to take advantage of the warm early spring we had in 2002.

Results for clutch sizes in 2002 were mixed. Four species (Moorhen, Kestrel, Spotted Flycatcher, Wren) laid significantly smaller clutches on average in 2002 than over the period 1966–2001, while five (Redshank, Ringed Plover, Blackcap, Reed Warbler and Goldfinch) laid significantly larger clutches.

Brood sizes in 2002 tended to be small. Fifteen species produced significantly smaller broods than predicted from trends measured over 1966–2001. The mean brood sizes of a further 17 species were smaller, but not significantly so. Thus 32 species produced smaller broods than predicted, whilst only eight

BOX 1. THE EARLY BIRDS

Expected laying dates in 2002 can be calculated for each species by extrapolating the trend calculated for the period 1966–2001. The table below indicates the difference between these values and the actual values for 2002 (positive numbers indicate earlier laying dates than expected, an asterisk indicates that the difference was statistically significant.)

Yellowhammer	16 days*
Wren	12-1/2 days*
Dunnock	12 days*
Great Tit	10-1/2 days*
Blue Tit	9 days*
Reed Warbler	9 days*
Crow	9 days*
Reed Bunting	8-1/2 days*
Oystercatcher	7-1/2 days*
Chiffchaff	7 days*
Linnet	7 days
Blackbird	6-1/2 days*
Kestrel	6 days*
Nuthatch	5-1/2 days*
Sedge Warbler	5 days
Chaffinch	4-1/2 days
Tree Sparrow	4 days

produced larger broods. Species producing particularly small broods included: Starling, down from 3.8 young on average to 1.9 young in 2002; Moorhen down from 4.7 to 3.6 young; Mistle Thrush down from 3.5 to 2.7 young and Little Owl down from 2.8 to 2.2 young. Again, it was mainly resident species that had reduced brood sizes.

These results contrasted sharply with nest failure rates. Of 43 species tested, 25 (55% of species) exhibited lower young-stage failure rates (i.e. improved success) in 2002 than predicted, and the difference was statistically significant for 11 of these species. Results for egg-stage failure rates were similar, with five of the 39 species analysed experiencing significantly low failure rates (i.e. more successful) in 2002 and 12 exhibiting near-significant reductions (44% in all). Only six species displayed higher failure rates (i.e. less successful) at either the egg or the nestling stage in 2002.

So which species appeared to do unusually well? Again, it was predominantly the resident species that experienced a drop in failure rates, such as Blue Tit, Barn Owl, and Goldfinch.

Overall, therefore, a very warm spring in 2002 permitted early laying, particularly for resident species. This was followed by poor weather during incubation, resulting in hatching failures, or losses of small young, such that brood sizes were small. However, warm weather during the nestling period meant that failure rates were low.

LONG-TERM TRENDS

While the results for 2002 are very interesting, it is the long-term trends in productivity that provide the most useful insight into the status of populations, as they have the potential to explain changes in abundance. Laying dates of Britain’s birds continue to advance further. Of 60 species, 25 (42%) show a significant trend towards earlier laying since 1966 (see Figure 1), although trends for some species are apparent only over the last 10–15 years. Detailed analyses have shown that these trends are largely due to climate warming in the UK and provide one of the best examples that global climate change is already affecting wildlife in the UK (see *BTO News* 223: 2–3).

Ten species have significantly increased average clutch sizes since 1966, whilst brood sizes have increased for 16. A number of these species, such as Dunnock, Skylark and Starling,

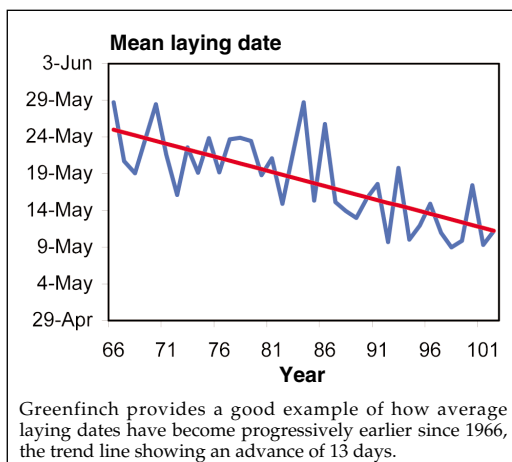


FIGURE 1. Greenfinch laying dates.

may be responding to declines in competition with their own kind as their populations become smaller. In addition, raptors have benefited from declines in pesticide pollution levels.

Statistically significant declines in clutch (10 species) and brood sizes (15 species) are slightly more prevalent than increases since 1966, although many are likely to be due to increased competition as populations have increased in size e.g. Buzzard, Nightjar and Nuthatch.

Declines in nest failure rates (i.e. improvements) far outweigh increases (i.e. lower success), and for many species breeding performance has therefore improved since 1966. Twenty-eight of 59 species analysed (48%) exhibit trends towards lower egg-stage nest failure rates and 19 out of 57 (33%) show progressively lower failure rates at the young stage over this period. Again, the breeding success of many of these species may have been affected by their rising population level.

Most worrying are declines in breeding performance of species that are showing declines in population levels. Such declines in breeding performance have the capacity to retard population recovery, although in most cases this may need exploring further. We highlight the following species, four of which — Grey Wagtail, Dunnock, Bullfinch and Yellowhammer — are new or have come back onto the List of NRS Concern (see Box 2).

Grey Wagtail — Over the last 15–20 years, average clutch size has fallen from 5.0 to 4.8 eggs and average brood size from 4.4 to 4.2 young.

BOX 2. THE NRS CONCERN LIST

Species are placed on the NRS Concern List if:

- They show statistically significant declines in some aspect of breeding performance measured from 1966 to present
AND
- They show declines of >25% in population abundance or geographical range
OR
- There is no known information on their population status except for NRS data.

Although these declines are relatively small, they are statistically significant and perhaps indicate a reduction in the quality of their riverine habitats. Grey Wagtail was recently added to the amber list of birds of conservation concern because the population has declined by >25% over the past 25 years (see *BTO News* 242: 11–14 about the new amber and red lists).

Dunnock — Egg stage failure rates of this amber-listed species have risen since the mid-1980s to levels found previously in the 1960s.

Bullfinch — Egg-stage failure rates of this red-listed species declined from the 1960s to 1980s, possibly due to the withdrawal of organochlorine pesticides from the marketplace, but they have risen again through the 1990s.

Yellowhammer — This species was recently added onto the red-list of conservation concern because of population declines of >50%. Declines in brood size and increases in egg-stage failure rates warrant its inclusion on the NRS Concern List.

Lapwing — This species is amber-listed and continues to show increases in failure rates at the egg stage. The recent survey of waders on lowland wet grassland identified a 40% population decline between 1982 and 2002 (*BTO News* 247: 12–13).

Ringed Plover — Although Ringed Plover is not on the red or amber lists, it is poorly monitored and little is known about its population trends. As the NRS is the only BTO census scheme monitoring this species during the breeding season, it is worrying that the results show increasing rates of nest loss at the egg-stage since the 1990s (Figure 2).

Moorhen — The NRS has been concerned about declines in clutch sizes and increases in egg-stage failures for the past 10 years. These trends are continuing, with average clutch size nearly half an egg less than it was in 1966 (down from 6.5 to 6.1) and daily failure rates at the egg-stage doubling over the same period, coinciding with a decline in Moorhen abundance on Common Birds Census (CBC) farmland plots of >25%.

Yellow Wagtail — The average clutch size of Yellow Wagtail has fallen from 5.4 to 4.9 and brood size from 4.9 to 4.4 since 1966. Concern over this amber-listed species has led to the formation of a Yellow Wagtail Study Group (*BTO News* 245: 14–15).

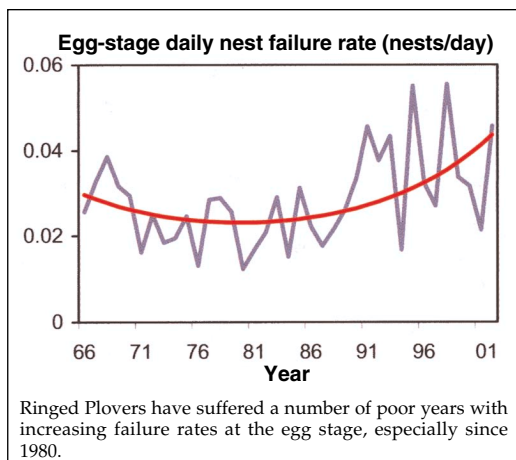


FIGURE 2. Ringed Plover nest failure.

Willow Warbler — A recent addition to the amber list due to population declines of >25% exhibited over the last 25 years, this species was included on the NRS Concern List in 1998 because of increasing failure rates at the chick stage since 1966 which have continued into 2002. This year, we have also detected a trend of increasing failure rates at the egg stage, a worrying development.

Linnet — Increases in nest failure rates at the egg stage appear to have been the main reason for the population decline (>50%) of this species since the mid-1960s and its subsequent addition to the red list. There is some indication that brood sizes have fallen recently (by 0.1 young), and failure rates at the chick stage have continued to increase, and so we are able to report here that failure rates at the egg-stage have finally begun to fall (Figure 3), suggesting that Linnet populations may start to increase again. Although the BTO/JNCC/RSPB Breeding Bird Survey shows no change in abundance since 1994, Linnet numbers on farmland CBC plots increased by 23% from 1989-2000. It is possible, therefore, that government agri-environment schemes, including those for the improved management of hedgerows, are bearing some 'fruit' for this species.

Reed Bunting — This red-listed species exhibited large increases in nest failure rates at

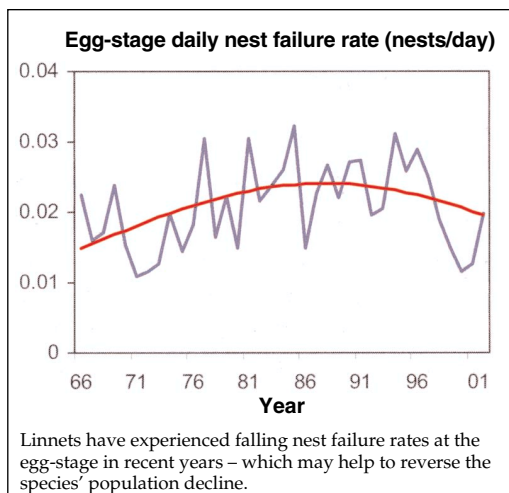


FIGURE 3. Linnet nest failure.

the egg stage since the 1990s and detailed analyses of BTO's datasets suggested that this might hold back the species' recovery.

Overall, the number of species on the NRS Concern List has increased to 12. This information provides conservation bodies with a tangible starting point for developing further research and policies to bring about species recoveries.

WHY NOT START RECORDING NESTS TOO?

As the number of nest records increases, so too does the accuracy with which we can monitor a species' productivity. We are incredibly grateful to those volunteers who go out and put a great deal of effort into finding and recording nests as part of the NRS, but we could always use more, particularly of open-nesting species!

If you would like a free 'Starter Pack', please contact Peter Beaven at nest.records@bto.org and you will be ready for the next season – some birds start now in December!

The NRS is funded by a partnership of the BTO and JNCC. We are very grateful to Karen Wright for help with the NRS database and to David Glue for his contribution to the scheme.