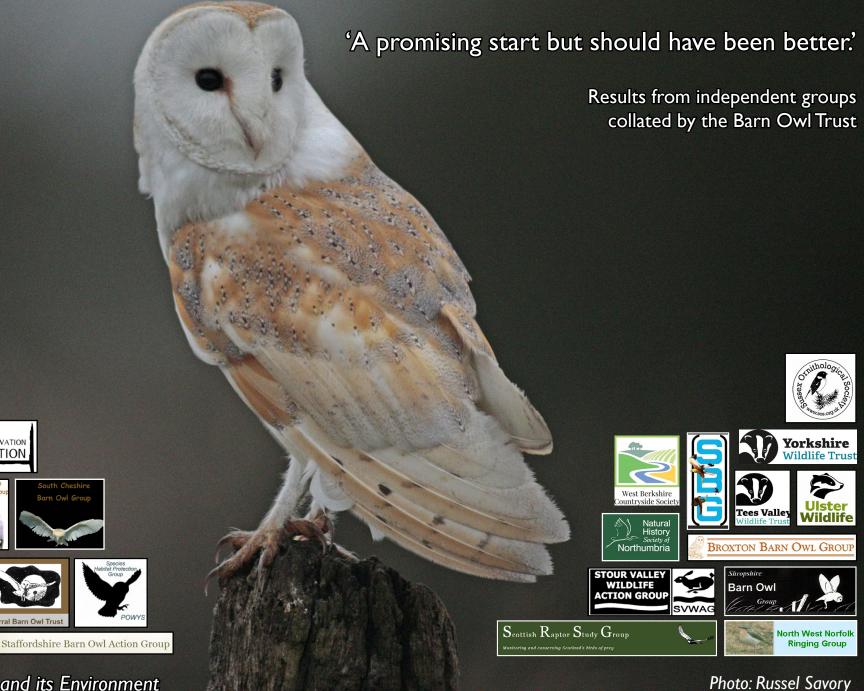
STATE OF THE UK BARN OWL POPULATION — 2021



Conserving the Barn Owl and its Environment

GRMG

Middle Thames Ringing Group

Derbyshire

State of the UK Barn Owl population – 2021 Contributing groups

Barn Owl Trust

Brandon Ringing Group

Broxton Barn Owl Group

Bucks Owl & Raptor Group

Cam Valley Wildlife Group

Derbyshire Ornithological Society

East Cheshire Barn Owl Group

East Cleveland Nest Box Network Project

East Riding Barn Owl Conservation Group

Garry Steele

Glamorgan Barn Owl Group

Gloucestershire Raptor Monitoring Group

Lewis Raptor & Owl Group

Manchester Raptor Group

Middle Thames Ringing Group

Mid Cheshire Barn Owl Group

North Cheshire Barn Owl Group

North-east Cheshire Barn Owl Group

North Dorset - Conservation Action

North West Norfolk Ringing Group

Philip Hanmer - Nat. Hist. Soc. of Northumbria Hancock Mus. R.G.

Powys - Species Habitat Protection Group

Rebekah Beaumont - Yorkshire Wildlife Trust

Scottish Raptor Study Group

Shropshire Barn Owl Group

South Cheshire Barn Owl Group

South Wirral Barn Owl Group

Staffordshire Barn Owl Action Group

Stour Valley Wildlife Action Group

Suffolk Bird Group

Sussex Ornithological Society

Southam & District Owl Conservation Project

Ulster Wildlife

Vale of Belvoir Barn Owl Conservation Group

West Berkshire Countryside Society Barn Owl Group

West Cornwall Ringing Group

Wirral Barn Owl Trust

Introduction

This report reveals findings from visits to 5,669 potential Barn Owl sites - a feat only possible through the efforts of many dedicated people. Renewed activity following the pandemic-related setbacks of 2020 has led to comprehensive monitoring of Barn Owls across the UK, and it is with immense gratitude to all those involved that we present their work. For details on those who have participated, please refer to the list of contributors on Page 2, 'Contributors' Notes/Comments' on Pages 13-19, and 'Extra Comments and Contributions' on Page 20.

This year, results from North Dorset Conservation Action and East Cleveland Nest Box Network Project are welcome additions to Table 1, where nesting occupancy and mean brood sized from 2021 are compared to averages calculated from their previous two years. Furthermore, Bekah Beaumont is a new contributor who has provided comments on sites monitored during 2021 in South Yorkshire and East Riding.

With every site visit there's a potential conversation about the year's weather, how things are going, and opportunities for habitat creation. These discussions are often with site owners and land managers, who generously give their permission to access sites. Indeed, some enthusiastically engage with the idea of monitoring and want to know how the owls are doing. All these conversations can make a huge contribution to awareness of the problems Barn Owls face.

Being cute when young and majestic as adults, Barn Owls are amazingly effective as a flagship species, drawing attention to not only their vulnerability, but the vulnerability of the wildlife that shares their environment. As well as being a flagship, Barn Owls also act as a sentinel species. Rodenticides monitored in Barn Owl carcasses highlight the extent of secondary poisoning, which has remained stubbornly high despite the Rodenticide Stewardship Regime implemented in 2016 (Walker et al. 2020). Thus, the extensive network of Barn Owl projects whose work is presented here creates enormous potential for enhanced awareness of wider important conservation issues.



Photo: Bekah Beaumont

Definition of Terms Used in Tables and Text

Start year - The year when the monitoring represented in this report was started.

Sites checked - The number of potential nest sites that were checked (inspected).

Nesting - The number of sites where nesting actually occurred (one or more eggs laid).

% nesting (nesting occupancy) - The percentage of sites checked where nesting occurred.

Average of All Previous Years (AAPY) - A mean value calculated from observed or estimated figures for each year from the effective start year, up to and including 2020.

% change from AAPY under nesting occupancy - The percentage change between the proportion of sites occupied in 2021 and the mean proportion of sites occupied in all previous years:

Brood size - The number of live young counted at any time between hatching and fledging.

Mean brood size - The total number of owlets, divided by the total number of broods. This excludes: 1) sites were there was no nesting, and 2) nests where there were no live young.

% change from AAPY under mean brood size - The percentage change in mean brood size between 2021 and the AAPY:

E - Estimated.

Please note that rounding table values to whole numbers can lead to apparent discrepancies in calculations of % change from AAPY.

*Unusual Exclusions

For three contributors, all the figures used to calculate the percentage change in nesting occupancy from AAPY are excluded from the summary row for the following reasons:

- I. Bucks Owl and Raptor Group. Less boxes than usual were checked in 2021 and monitoring prioritised sites that had been regularly used for breeding in previous years. Please note, the averages of all previous years do include 2020 for mean brood size, but do not for nesting occupancy (see Caveats).
- 2. Cam Valley Wildlife Group, Somerset. Approximately one third of the usual c. 100 nestboxes were checked. However, nest sites were successfully prioritised and the number of occupied sites was very similar to the average number of all previous years (see Numerical Change from AAPY in Table 1). Please note, averages for nesting occupancy and brood size do not include 2020 (see Caveats).
- 3. Sussex Ornithological Society. Occupancy figures were excluded from the summary row because of an increase in project size. Please note, averages for nesting occupancy do not include 2020 but do include 2020 for average brood size (see Caveats).



Owlet ringing by the West Berkshire Countryside Society Barn Owl Group.
Photo: John Dellow

Caveats

- I. The figures in Table I are accurate, unless marked 'E'. However, methodological variation between groups means that the summary row can only suggest how nesting occupancy and brood size changed in the UK population as a whole.
- 2. In some cases, averages of previous years are updated as projects accumulate enough years to rely wholly on observed data, rather than estimates, or as corrections are incorporated.
- 3. Anomalies can arise due to year-to-year changes in numbers of 'Sites Checked', affecting comparisons both in terms of the 'Average of All Previous Years' and 'Numerical change'. This is because the editors have not imposed criteria for the inclusion/exclusion of individual sites.
- 4. How potential nest sites are counted and the proportion of nest sites that were monitored varies between groups and, to a lesser extent, may sometimes vary between years.
- 5. The probability of individual sites being occupied varies tremendously. Some datasets include sites that may never have been occupied whilst others only include sites where pairs have nested previously.
- 6. The vast majority of sites are checked by inspection to confirm/discount breeding, and determine brood size. However, some groups accept reports from trusted/knowledgeable site owners, particularly when nest cavities are inaccessible.
- 7. At most sites, only one nest inspection is carried out. Chicks may die before this nest inspection or may die between inspection and fledging. Some sites are visited more than once and figures given for brood size may be derived from either one of these visits.
- 8. The calculation of all-years average varies between contributors according to how many years the project in question has been running.
- 9. One or two individual years may be omitted from calculations of averages because of restrictions on farm visits, such as in 1996 due to BSE, 2001 due to Foot and Mouth Disease, and 2020 due to Covid-19.

Table I. RELATIVE CHANGE IN NESTING OCCUPANCY AND BROOD SIZE

County / Group	Start year				Mea	7							
		2021			Average of All Previous Years (AAPY)			_	Numerical			% Change	See
, .		Sites checked	Nesting	% Nesting	Sites checked	Nesting	% Nesting	from AAPY	change from AAPY	2021	AAPY	from AAPY	notes
West Berkshire Countryside Society Barn Owl Group	2010	185	48	26	147	28	19	37	20	2.6	2.8	-6	
Berkshire (N) & Buckinghamshire (S) - Middle Thames Ringing Group	2015	95	23	24	101	20	20	21	3	2.4	2.3	3	2
* Buckinghamshire - Bucks Owl Raptor Group	2006	124	31	25	220	29	13	See unusua	l exceptions	1.7	2.6	-36	3
Cheshire Barn Owl Groups - John Wild	2006	950	153	16	1292	137	П	52	16	2.6	2.7	-3	4
West Cornwall Ringing Group	2011	93	58	62	57	32	56	Ш	26	2.8	3.1	-9	5
Derbyshire Ornithological Society	2019	84	19	23	72	16	22	5	4	3.3	2.9	14	6
Devon & Cornwall (E)- Barn Owl Trust	1993	65	35	54	78	35	45	21	0	3.0	2.9	4	7
North Dorset Conservation Action	2019	81	21	26	52	24	46	-44	-3	2.0	2.7	-26	8
C. Durham/N Yorkshire - East Cleveland Nest Box Network Project	2019	115	40	35	83	34	41	-16	6	2.0	2.9	-32	9

Table I. RELATIVE CHANGE IN NESTING OCCUPANCY AND BROOD SIZE - CONTINUED

County / Group	Start	Nesting Occupancy									Mean Brood Size			
		2021			Average of All Previous Years (AAPY)			% Change				% Change	See	
, .	year	Sites checked	Nesting	% Nesting	Sites checked	Nesting	% Nesting	from AAPY	change from AAPY	2021	AAPY		notes	
Galloway (W) - Scottish Raptor Study Group	2005	50	20	40	70	57	81	-50	-37	0.8	3.2	-75	10	
Glamorgan Barn Owl Group	2013	54	19	35	44	21	46	-24	-2	3.2	3.2	0	11	
Gloucestershire Barn Owl Monitoring Programme	2014	157	53	34	88	17	20	72	36	2.7	2.5	8	12	
Leicestershire - Vale of Belvoir Barn Owl Conservation Group (VBOC)	2009	141	64	45	162	25	16	188	39	2.3	2.4	-1	13	
Manchester Raptor Group	2010	139	56	40	82	30	28	10	26	2.2 E	2.7	-20	14	
NW Norfolk Ringing Group	2002	225	89	40	425	182	43	-7	-93	2.5	2.1	18	15	
Northumberland (N) - Natural History Society of Northumbria Ringing Group - Philip Hanmer	2006	100	15	15	100	30	30	-49	-15	1.5	2.3	-36	16	
Powys Species Habitat Protection Group	2014	69	39	57	60	22	36	55	17	4.0	3.3	21	17	
Shropshire Barn Owl Group	2002	203	73	36	204	42	20	75	31	3.2	2.8	14	18	

Table I. RELATIVE CHANGE IN NESTING OCCUPANCY AND BROOD SIZE - CONTINUED

County / Group	Start year				Mea	200							
		2021			Average of All Previous Years (AAPY)			% Change				% Change	See notes
		Sites checked	Nesting	% Nesting	Sites checked	Nesting	% Nesting	from AAPY	change from AAPY	2021	AAPY	from AAPY	notes
* Somerset - Cam Valley Wildlife Group	1995	33	12	36	96	11	12	See unusual exceptions	I	3.0 E	2.5	19	19
Staffordshire Barn Owl Action Group	2008	248	58 E	23	253	37	15	59	21	3.1 E	3.1	-0	20
Suffolk Bird Group	2007	1191	148	12	1150	205	18	-30	-57	2.6	2.2	18	21
* Sussex - Terry Hallahan	2007	200	56	28	130 E	60	46	See unusua	l exceptions	3.2	2.9	10	22
Ulster Wildlife - Katy Bell	2016	94	5	5	87	3	3	65	2	2.0	2.9	-30	23
Warwickshire - Stour Valley Wildlife Action Group/ Brandon Ringing Group	2011	117	28	24	260	51	20	23	-23	2.4	3.0	-21	24
Wiltshire - Lewis Raptor & Owl Group	2017	332	121	36	327	151	46	-21	-30	2.5	2.2	П	25
Yorkshire - East Riding Barn Owl Conservation Group	2013	450 E	116 E	26	500	97	19	33	19	2.9	2.9	0	26
		Grand total	Grand total	% Nesting	Grand total	Grand total	% Nesting	% Change	Numerical change	Mean	Mean	% Change	
Summary		5238	1301	25	5694	1295	23	9	6	2.6	2.7	-6.7	

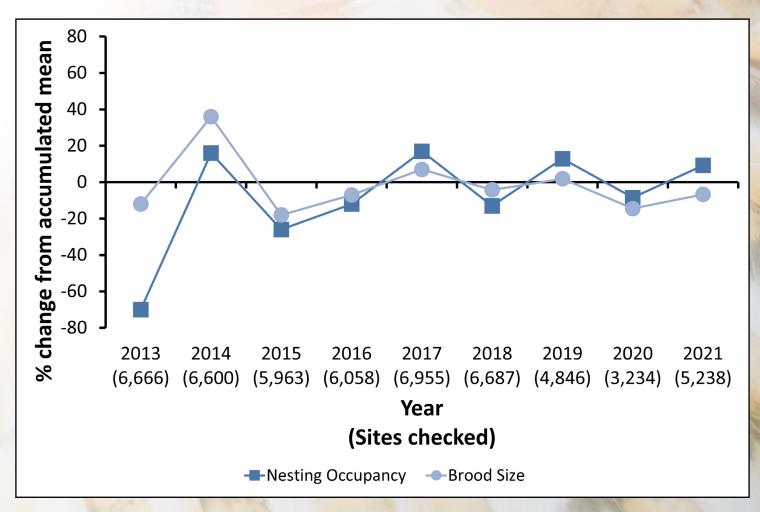


Figure 1. Variation in UK summary figures for Barn Owl nesting occupancy (squares) and brood size (circles) from 2013 to 2021. The vertical axis shows percentage change in summary figures relative to the accumulating mean of all previous years. 'Sites checked' refers to the sample size for calculations of percentage change in nesting occupancy.

General Summary

2021 showed a promising start for Barn Owls, with overall nesting occupancy 9% higher than average. After the peaks and troughs seen over the last five years, we were due a much-needed peak. While 2021 nesting occupancy was above average, unfortunately the increase wasn't as high as previous peaks. Nesting occupancy varied considerably across regions, with an extraordinary increase seen in Leicestershire (188%) and over 50% increases recorded in Cheshire, Gloucestershire, Powys, Shropshire, Staffordshire and Ulster. Noticeable decreases were seen in Galloway, Dorset, Northumberland and Suffolk, all of which reported a reduction of at least 30%.

Despite the overall optimistic start of the breeding season, brood size was 7% below the average of all previous years and only showed a slight improvement upon the really poor year of 2020. Galloway saw the most catastrophic decrease with a drop in average brood size of 75%.

Generally speaking, nesting occupancy and brood size usually follow the same pattern within a year, (i.e. they both increase or both decrease – see Figure 1). This leads us to question why with an overall increase in nesting occupancy did we see a decrease in average brood size? Where did it go wrong for Barn Owls - can the weather explain the conflicting results?

The winter of 2020/2021 was fairly normal, with rainfall and temperatures close to average for the season. This relatively normal winter was followed by a much warmer dry spell in the second part of March, possibly allowing prospecting adults to get off to a good start, with females able to get into good breeding condition. However, the dry period that began in the second half of March continued on for the whole of April, producing only 50% of average rainfall and resulting in the UK's fourth driest April seen in a series from 1862. Additionally, April was unseasonably cold (1.7°C colder than average) and provided the greatest number of air frosts seen in a series dating back to 1960. The very cold and dry April likely inhibited spring grass growth, which in turn reduced field vole numbers just as Barn Owls were incubating. This was then followed by an incredibly wet May (171% of average rainfall) which would have inhibited hunting when many Barn Owls were feeding nestlings or still incubating. Both these factors likely contributed to the limited brood sizes observed.

While the weather in June was largely good for Barn Owls, July and August were very unsettled with spells of heavy rain and July saw a new high temperature record of 31.3°C in County Tyrone, Northern Ireland. September, October, November and December were all relatively mild months with temperatures higher than average, especially September which was 2.1°C warmer. Time will tell how dispersing juveniles have fared in this weather, but with climate change producing more and more extreme weather events, new records, and periods of unseasonable weather, this can only provide more challenges for the birds.

2021 REGIONAL ROUND UP FOR THE STATE OF THE UK BARN OWL POPULATION

Green shaded counties indicate the general location of contributing projects and do not imply that sites were monitored across the whole county.

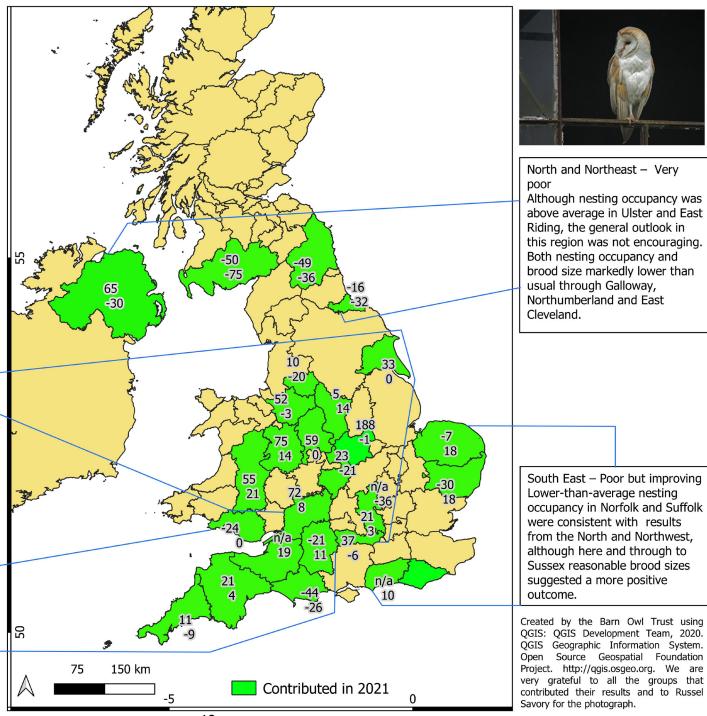
The figures shown for counties are the percentage change from the average of all previous years and indicate whether the 2021 results were above or below previous results for that county. The top figure is nesting occupancy and the bottom figure is mean brood size.

Mid-England, Mid-Wales and East Yorkshire— Quite good

This extensive region includes contributions from numerous groups that all recorded positive levels of nesting occupancy. Nesting occupancy was 188% higher than their average in Leicestershire and over 50% up in Cheshire, Shropshire, Staffordshire, Powys and Gloucestershire. Mean brood size was below average in Cheshire, Greater Manchester, Leicestershire, Warwickshire and parts of Buckinghamshire; nonetheless, this difference was very slight in Cheshire and Leicestershire and there were positive comparisons with averages in Derbyshire, Shropshire, Gloucestershire and Powys.

South West - Very mixed

Fairly positive nesting occupancy rates in Cornwall and Devon contrasted with Glamorgan, Wiltshire and Dorset, where cold and frosty weather early in the year was probably not conducive to nesting. While improving conditions seemed to contribute to reasonable brood sizes in Somerset and Wiltshire, Cornwall and Dorset were unsuccessful in this regard.



2021 Contributors' Notes/Comments

I. West Berkshire Countryside Society Barn Owl Group - John Dellow

2021 was our best year since 2014. We had 3 successful second broods. In our area it needs an exceptional season for second broods to be successful. 25.9 of our boxes supported successful breeding. Again, this is our best season since 2014. This was mainly due to favourable weather at the right time but we also like to think that we are getting better with site selection so that we don't install boxes in unsuitable habitat. Our largest brood size was 5 chicks. This was only achieved at one site with the average brood size being 2.65 chicks per brood.

2. Berkshire (N) and Buckinghamshire (S) - Middle Thames Ringing Group - Carl Hunter Roach

The warm start to spring was followed by a prolonged spell of cold and wet weather in May, causing several Barn Owl pairs to delay nesting.

All the nest boxes within our RAS (Retrapping Adults for Survival) study area were monitored, revealing a total of 23 nest attempts, a welcome increase from last year. A total of 45 chicks fledged from the 19 nests where chicks were ringed, an average of 2.4 chicks per nest.

At the 20 nest attempts where egg-laying dates could be determined, the earliest start was 24 March, and the latest was 19 July. Two second broods were discovered.

Nest attempts were distributed across South Buckinghamshire (14), East Berkshire (7), and South East Oxfordshire (2).

[Editors' note: The 2015 - 2020 AAPY mean brood size has been calculated and excludes estimates from prior to 2015. You can read the full MTRG 2021 Barn Owl report by following this link.]

3. Buckinghamshire - Bucks Owl and Raptor Group - Norman Shepherd

A cold and wet April and May caused many early nests to fail or fledge only a single chick (averaged 0.5 chicks). Those that laid later or second clutched fared much better at 2.9 chicks. Hopefully suggesting that the vole population is rising nicely, a good winter could create a much better prospect for 2022.

4. Cheshire Barn Owl Groups - Dr John Wild

Numbers approaching normal.



5. West Cornwall Ringing Group

The year was very disjointed, with both early and late broods and not much synchronicity. We also had two replacement clutches (unusual for our sites), resulting in us ringing our latest ever chicks (on 16th September). Clutch and brood sizes were both low, perhaps partly due to extremes (in all ways) of spring weather. One other unusual record involved a bird found breeding in one of our boxes in June 2020 (with three chicks) that had been ringed as a captive bird and subsequently 'escaped' during a flying display. It bred again in 2021 (in a different box), but was then sadly found injured six weeks later and taken back to the sanctuary it had originally escaped from. It was found to be too badly injured to be rehabilitated so was sadly put to sleep. More detail on some local movements are on the ringing group blog: https://cornishringing.blogspot.com/2021/09/barn-owl-2021-update.html

6. Derbyshire Ornithological Society - Dr Richard Winspear

The following comments come from Bill Cove, who monitored seven sites at Calke Abbey, south of Derby:

This was the first time we had two lots of Barn Owls fledged on the estate for several years. To have two clutches of three was great news for us. There was one new site in a tree in a very high-use visitor area and the other site had been used for nesting or roosting over several years.

7. Devon & Cornwall (E) - Barn Owl Trust

Both nesting occupancy and average brood size were above the long-term average. However, absence rate was also above average, meaning many sites were left untenanted, with fewer seemingly unpaired roosting individuals.

8. North Dorset Conservation Action - Alan Masterton

Another poor year for Barn Owls in North Dorset. Cold, windy and very wet first three months of 2021 then April which was cold and then damp again and getting less cold in May. With all this weather it was not surprising to have such a poor season. Our 1st brood (3) were ringed on the 10th of June and our last brood (3) were ringed on the 12th of October. We found at least 5 young (over 2 weeks old) dead in boxes, we had 6 broods of 1, 9 broods of 2 and 6 broods of 3 owlets. When checking boxes we processed 8 females, 4 adults and 4 second year birds all of good breeding weight. One adult female lost a brood of 3 after the 2nd of July and was found sitting on 4 more eggs on the 25th of August but she was very light in weight and was not successful.

9. East Cleveland Nest Box Network Project - Tees Valley Wildlife Trust - Kate Bartram & Colin Gibson

In 2021, with funding from the Tees Community Fund, the network was expanded with the addition of a number of new boxes. The first clutches of eggs were found in April with clutch sizes of five or six eggs. Met Office records show a record twenty three days of ground frost in April after which deserted eggs and new smaller clutches of three to four eggs were found. Two boxes had second clutches.

Comparable to last year, forty of our boxes were found to have breeding pairs. However, in fifteen boxes breeding failed with eggs either being deserted, not hatched or chicks dying in the boxes. Smaller clutches of eggs contributed to a fall in the mean brood size of -28%. Brood size recorded in this project is based on the number of owlets ringed.

Towards the southern area of the project area, a trend in increasing occupancy of the boxes by jackdaws has been observed, up from five boxes in 2020 to ten boxes in 2021. In three of these boxes barn owls occupied the boxes after the jackdaws fledged. Other occupants include one box with kestrels and five with stock doves. The increase in the number of boxes in the network area and the growing occupancy of boxes by jackdaws may have contributed to the -15% drop in occupancy rates.

10. Galloway (W) - Scottish Raptor Study Group - Geoff & Jean Sheppard

In contrast to 2020, this has been an annus horribilis for the Barn Owls of West Galloway. The initial visits, made in mid-May, revealed that about half the sites were occupied, similar to last year. Most of the occupied sites had eggs or small pulli. However, on subsequent visits, many of these sites were empty or contained cold, deserted eggs and the brood size for the few sites that were successful was generally low. This may be due to reduced vole numbers and poor weather in late spring.

Again, it was not possible to make early visits, thus reducing the number of adults trapped. Of the adults trapped, approximately half were ringed previously but, of these, only one was from last year's pulli. This poses the question of whether the mortality rate was high over the winter for these young birds. It also suggests that there are more unknown sites in this area or that young birds are travelling further from outwith our area to find a nest site.

II. Glamorgan Barn Owl Group - Guy Evans & Stephen Thomas

This year we have continued to consolidate our coverage of South Glamorgan whilst extending our reach with sites in Mid and West Glamorgan.

In contrast to 2020's disappointing brood size (2.4) we are pleased to report that this year's brood size has bounced back to 3.2. A reduction in nest site occupancy from 46% to 35% should take into account an additional 8 new nest boxes. Uptake of new nest boxes is always inconsistent with some proving an instant hit, whilst others require faith and patience. For example we were delighted that this year one nest box finally attracted a breeding pair 7 years after its installation.

We remain indebted to the hospitality of our friendly farmers and landowners who permit access to nest sites. In particular we are hugely grateful to Jude and Terry Edgell of Penllyn Castle for their generous donation of six beautifully made nest boxes.

[Editors' note: Many thanks to Guy Evans for providing results and comments for the State of the UK Barn Owl Population report since 2018, and with sincere apologies for not previously acknowledging his welcome participation.]

12. Gloucestershire Raptor Monitoring Group - Anna Field

Overall a good year for barn owls in Gloucestershire. Earlier broods were smaller, often with chicks dying in the nest, presumably due to the unseasonable cold, wet weather we had in the Spring. Later broods were larger, with some pairs attempting second broods and one late pair laying a remarkable 10 eggs in August (although only 4 went on to hatch). We attended two requests for help from homeowners with barn owls nesting in dovecotes - one in the wall of a house and the other in a standard garage, unusually both were at properties within a village setting

13. Leicestershire - Vale of Belvoir Barn Owl Conservation Group - Bill Glancy & Don Pritchett

In stark contrast to last year's 2020 disastrous results, this has been a particularly good year for Barn Owls in our area. We have seen a large increase in brood size and occupancy of our nest boxes. One next box had a brood of seven owlets, one of the highest broods we have had in the area.

14. Manchester Raptor Group - Judith Smith

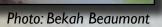
120 owlets presumed to have fledged is a minimum as in some cases exact number could not be determined. Where it was known that at least one had fledged, it was counted as one even though more might have fledged. So, 2.18 mean brood size is probably on the low side.

Of the 56 sites where breeding took place, 8 failed, 7 at egg stage, one at chick stage. At 11 sites where breeding has been regular in recent years, there was either no sign of any owls, or non-breeding singles. So not a good year really, probably because May was very wet and females couldn't get up to breeding weight. 88 were ringed.

15. North-West Norfolk Ringing Group – John Middleton Another poor year.

I6. Northumberland (N) – Natural History Society of Northumbria RingingGroup - Philip Hanmer

This study (of around 100 sites) in North Northumberland (outside the National Park) indicates that this was the worst breeding season since 2006 (even worse than 2018). At only 15% occupancy this was half the long-term average of 30%; with 15 pairs trying to nest and only 10 (10%) succeeding. The late winter and spring weather was poor right into June (a complete contrast to the previous year). Only 21 owlets were ringed/fledged. A search for late broods from July onwards proved unproductive.



When I have related these facts to members of the public most are surprised because many saw a larger number of adult Barn Owls flying in daylight in the spring and assumed this indicated a healthy population. In truth many of these owls were hunting for food which was scarce – and very difficult to find/catch because of the bad weather. A further confusion was caused by many pairs continuing to frequent their traditional nest sites for much of the year even though no eggs were laid. Several people reported that 'they had nesting owls' when in fact they were not nesting. Twenty-five new adult Barn Owls were ringed and 29 re-trapped; Jackdaws were still a problem occupying owl nest sites; and the disturbing development of two owl nests being destroyed by jackdaws burying owl eggs under 'jackdaw sticks' was observed. It's been a second difficult year but this time more because of the weather than the pandemic.

17. Powys - Species Habitat Protection Group - Jon & Jan Sloan

2021 was an excellent year for us with a good mean brood size which included 2 sets of 6 & 2 sets of 7 chicks. All adult birds & chicks were healthy, maybe "lockdown" suited these birds!! Let's hope 2022 proves to be as successful, although at the time of writing this the ground around us is saturated & the weather forecast is not too good.

18. Shropshire Barn Owl Group - Glenn Bishton & John Lightfoot

2021 proved to be a milestone year. We expected it to be a productive breeding season after last year's downturn and it was. In fact, it was the most productive breeding season in our twenty years of conservation work, with 233 young Barn Owls produced in nestboxes and natural sites, surpassing the previous record of 225 in 2017. In addition, a second milestone was achieved, with over 2000 chicks now produced in our nestboxes since 2002.

233 chicks were produced in 71 (34.9%) of those sites successfully producing chicks, 218 in nestboxes and 15 in natural sites. Broods ranged from one to six chicks and averaged 3.2 (the highest average rate since 3.4 in 2014). Broods faired particularly well in internal nestboxes with an average of 3.8 chicks, well above the long-term norm of 3.1. Forty-eight chicks were found dead in the nest on the first visit or dead or missing on a second inspection, presumed predated or consumed by their parents or siblings. Thirty-two of the dead chicks were noted in July, the age and condition of the owlets suggesting that they had probably succumbed to starvation following a period of heavy rain between the 3rd and 6th July. Unusually for a productive breeding season, no second broods were recorded. An additional six sites held a single adult. Eight new pairs were recorded.

Intriguingly, when one chick died in a nestbox site in an old smallholding building in June, the remaining four well-developed young were joined by a juvenile outsider, probably dispersing from its place of birth, and all five food-begged at the window of the building. One nestbox in Ellesmere was successfully occupied by a breeding pair and three late chicks in September after a lapse of 13 years.

19. Somerset NE- Cam Valley Wildlife Group - Gary Kingman

A pretty good year, after a start that wasn't that promising.

20. Staffordshire Barn Owl Action Group - Helen Cottam

The group managed to monitor more sites this year compared to 2020, although still not as many sites as pre-Covid times and some information was reported back to us by landowners. The mean brood size for Staffordshire was slightly up on 2020 and we found just a couple of nest sites with six owlets. Pellet analysis by one of our group members found that from 101 pellets collected from 26 sites, 318 prey items were identified with an average of 3 prey items per pellet. The Staffordshire Moorlands, with good foraging habitat and little disturbance continues to provide a barn owl stronghold in the county.

21. Suffolk Bird Group - Mike Crawford

It was not a good year last year, with weather conditions and Covid preventing some monitoring of boxes.

22. Sussex Ornithological Society Barn Owl Study Group - Terry Hallahan

Barn Owl (Tyto alba) fared well in Sussex in 2021 particularly regarding brood sizes encountered, where we found an average of 3.2. Chicks ringed were mostly of higher weights than previous years indicating high prey availability.

Sussex Barn Owl Study Group (SBOSG) volunteers ringed 191 Barn Owls in boxes, 181 were chicks plus 10 adults. 6 adults in their second calendar year (2CY), 3 in their third calendar year (3CY) and a bird in its 4th calendar year (4CY).

Adversely, a high number of boxes, historically occupied, housed a total absence of, or just single adults. Over 200 box visits were made of which 58 were occupied by Barn Owls, including 2 sites with just roosting males.

23. Ulster Wildlife - Katy Bell

3 nest sites failed so we had 2 pairs, each with 2 chicks fledging successfully in September. We had a terrible year because of the weather and a lot of failed nests. Most of our birds started nesting in April and then failed due to the cold May, they then tried again in the summer but failed due to the heatwave and long periods of rain. Luckily two of our pairs had late broods in September! We are hoping for a better year next year.

24. Warwickshire - Stour Valley Wildlife Action Group and Brandon Ringing Group - Paul Leadbeater

There were 32 nesting attempts, including four second broods or re-lays.

25. Wiltshire - Lewis Raptor & Owl Group - Major Nigel Lewis

The Spring weather of weeks of no rain followed by weeks of incessant rain and then night frosts in April upset the vole breeding cycle. Early broods failed or produced few owlets e.g. 27 pairs with 1 ringable young and 27 pairs with 2. Kestrels suffered too and had to resort to avian prey to feed their families.

Latterly the voles did well which resulted in many second broods with 4-6 owlets. This tends to distort the mean brood size. Because of the size of my area and number of boxes I was not able to check them all a third time. I suspect I missed many second broods. Because the mild weather has continued until December I'm hopeful that these late broods have fledged successfully. In sum, what appears to have been a poor season may have been quite good! Most of my boxes are in trees, the weather is an important factor; owls in barns with built-in cover, are better off.

26. Yorkshire - East Riding Barn Owl Conservation Group - Rob Salter

Generally a good barn owl year in East Yorkshire. If it wasn't for the very cold early spring it would of been a much better year. High vole abundance, lots of well fed young which continued to end of summer. Hopefully the high vole population will roll into this breeding season.



Photo: Bekah Beaumont.

Eds - Image cropped to form page background

Extra Comments and Contributions

Lincolnshire - Garry Steele

Garry checked 56 sites in Lincolnshire, which produced a nesting occupancy of 19 and a mean brood size of 3.05. A high proportion of the nestboxes had been put up recently and in a different area to where previous results are from. The nesting occupancy of 34% is much lower than the 63% that Garry recorded between 1999 and 2016 in established boxes and could well be influenced by the gradual uptake of these new sites. Other factors may be associated with the new area (e.g., habitat quality) and when combined with the influence of uptake these discouraged us from including Garry's results in Table 1.

In general, Garry's impression is that "for Lincolnshire at least 2021 it has been a good year for barn owls". Here are his other comments:

"2021 saw second brooding at four of my monitoring sites. A fair percentage of second brooding in 2021 was also reported by colleagues operating their own barn owl nest boxes schemes in various parts of Lincolnshire.

Of the total number of 56 boxes monitored, 22 of these were within a 10 mile radius of the city of Lincoln and from what will ultimately be a new, 30 box project (installed by me over an 18 month period) and funded by local members of the Lincolnshire Wildlife Trust.

At one of my sites I controlled, a previously ringed adult male barn owl that was 13.5 years in age, having been ringed as a pulli by a former ringing colleague at a site approximately 4km distant."

South Yorkshire and East Riding - Bekah Beaumont

Bekah Beaumont monitors boxes across South Yorkshire and East Riding for Yorkshire Wildlife Trust and other private sites. In 2021 she checked 18 sites, of which 11 were active nest sites, producing a mean brood size of 3.

Here are Bekah's comments from 2021:

In 2021 I took over the full monitoring of our Barn Owl boxes, we had a 65% occupancy rate for Barn Owl. I haven't been able to access previous year's data so I'm not able to make any comparisons. Where boxes were not occupied by Barn Owl these were mostly used by Stock Dove. We ringed a total of two adult females and 37 chicks. Our average Barn Owl brood size was 3 (ranging from 2-5). Eggs were laid between the end of March and mid-May with earlier breeders producing larger broods and those in May only producing two chicks each. Unfortunately, one of our chicks was found dead (road casualty) along the local road 99 days after it was ringed.

New Research: Radio-tracking Juvenile Barn Owls During Dispersal

The **Barn Owl Trust, Ambios Ltd** and **Lotek UK Ltd** have collaborated over a number of years on radio-tracking juvenile Barn Owls during their dispersal phase. Unlike GPS tagging, radio-tracking does not require recapture to access data, thereby providing a viable method of relocating juveniles roosting in new and unpredictable places. Nineteen juveniles from 8 broods where radio-tracked in the southwest. Owlets were fitted with TW-3 transmitters using Teflon® harnesses at approximately 40 days old, and 'Sika' receivers with 'Yagi Flex' antennas were used for tracking. Young were repeatedly recorded at the natal site after the tags were fitted. The mean age of dispersal onset was 94 days from hatching, with a range of 63 to 122 days. Interestingly, on only one occasion was an owl recorded returning to roost at the natal site after it had used a day-roost elsewhere.

Relocation data showed a much wider scatter in roost sites used by females than by males, implying a greater likelihood of hazardous interactions with major roads. Ten juveniles were tracked until they acquired home ranges. For these birds, the mean distance from natal sites to home ranges was less for five males (4.43 km) than for the five females (6.88 km). The owls mainly roosted in trees, despite most natal sites being in buildings, suggesting that nest boxes can provide juveniles with crucial protection from adverse weather. Greater natal dispersal among females is consistent with results on juvenile dispersal from the Shropshire Barn Owl Group, who also suggest that linked nestboxes might provide stepping-stones during dispersal (see 'Further Information', page 27).

The radio-tracking reported on here showed that during dispersal some juveniles roosted at higher altitudes than were subsequently recorded on their new home range, where altitudinal constraints may be more significant. No evidence was found to support a recurrent proposal that linear landscape features constitute dispersal corridors, or to suggest that hills were barriers to dispersal.

This overview is based on a peer-reviewed article: Ruiz, M.D.M., Ramsden, D., Roper, S., Cresswell, B. & Skuse, J. 2021. Juvenile Barn Owl *Tyto alba* dispersal: a radio-tracking study of roost site selection in relation to landscape features. *Bird Study* **68**(2), 245 – 257. https://doi.org/10.1080/00063657.2021.20

Field work was only possible with the help of a large team of volunteers and students, to whom much gratitude is owed.

To receive an off-print of the article, please send a stamped addressed A4 envelope to: The Barn Owl Trust, Waterleat, Ashburton, Devon, TQ13 7HU.



Barn Owl fitted with radio tag. Photo: Simon Roper

Previous Years: 1995 to 2020

1995-2009

The only reliable estimate of Barn Owl numbers in the UK was c. 4,000 pairs in the period 1995-97 (Project Barn Owl Report, 2000) and there is some evidence that numbers increased in the period 1997-2009 particularly in eastern England. Additionally, the BTO Bird Atlas 2007-11 showed a northerly range expansion since the previous 1993 atlas. These increases were probably the result of a general climate warming in the period 1989-2009 and the erection of numerous nestboxes in, for example, parts of The Fens and East Anglia. It is quite probable that in 2009 the UK Barn Owl population level was substantially greater than 4,000 pairs.

2009-2012

There can be little doubt that the unusually severe winters of 2009/10 and 2010/11 reduced total population size although 'before and after' population levels will never be known. In spite of these setbacks, additional data submitted to the authors suggest that 2012, with the hottest March since 1997, was quite a reasonable year. For example, the Suffolk Community Barn Owl Project which monitored a staggering 1,191 boxes in 2012 recorded 319 nests which, at the time, was the highest number since monitoring started in 2007. However, in some parts such as SW Scotland (Geoff Sheppard pers. com.) and Cumbria (Ian Armstrong pers. com.) 2012 was a very poor year and in Devon widespread nestling mortality resulted in the average brood size dropping from 3.68 to 2.75 during the wettest June since 1766.

2013

Given that 2012 was a relatively good year (overall) and winter '12/'13 was much less severe than the preceding three, Barn Owl numbers at the start of 2013 were probably quite reasonable (probably lower than in 2009 but possibly still higher than 1995-97). March 2013 was the coldest since 1962 and during that month the number of dead Barn Owls reported to the BTO was 280% above normal.

Without exception, every monitoring scheme that contributed data reported a high proportion of nest sites with no signs of occupation and Major Nigel Lewis's comment summed it up very well: "the worst year in the 30 years I have been owling in Wiltshire".

The State of the UK Barn Owl Population 2013 showed that nesting occupancy in 2013 was an estimated 72% below the all-years average and mean brood size (2.63) was down by 12% (based on information provided by 26 data contributors who between them checked an estimated 6,344 potential nest sites).

The widespread absence of adults from annual nest sites and exceptionally high mortality recorded by the BTO suggested that the missing birds were dead. Conversely, the exceptionally high nesting occupancy the following year suggested that the missing birds had been simply roosting away from their nest sites. Fortunately, the UK's largest county-wide survey was carried out that same year and this entailed the rechecking of all known roost sites as well as nest sites. If the birds were alive and roosting elsewhere, the big drop in nesting occupancy should have been mirrored by a similar or bigger increase in roost occupancy (bigger because of birds roosting singly). In the event this was not the case. The 2013 Devon Barn Owl Survey report, based on the checking of 1,070 sites, showed a 65% drop in nesting occupancy and an increase in roost occupancy of only 16.9%. These figures support the view that a high proportion of the missing birds were not simply roosting elsewhere but were in fact dead.

This begs the question "where did all the Barn Owls come from that nested in 2014?" They must have been a combination of those that survived 2013 and young birds produced very late in 2013 who were all probably helped by the fact that winter-spring 2013-14 was so mild that Field Voles were even breeding in mid-winter (see State of the UK Barn Owl Population 2013).

2014

With a mild winter followed by an early spring and a long and pleasant summer, 2014 turned out to be the warmest year ever recorded - according to the National Climatic Data Centre. Great weather happened to coincide with a peak year for small mammals and Barn Owls had a very productive year in many areas. Berkshire, Lincolnshire, Shropshire and Warwickshire did particularly well with nesting occupancy 71 to 193% above normal (UK average +16%). Brood sizes were phenomenal in many areas with records broken in Suffolk and Wiltshire. Broods in Somerset were, on average, 84% bigger than normal (UK average +35%).

Sadly, 2014 was not an amazing year everywhere. Brood sizes in parts of SW Scotland, east Wales and the Isle of Wight bucked the trend by being no higher than normal and the mean brood size of the biggest UK Barn Owl monitoring scheme in Lincolnshire (the Bowden and Ball Ringing Group) was only 13% above their all-years average (see State of the UK Barn Owl Population 2014).

2015

Overall, 2015 was a poor year for Barn Owls in the UK with nesting occupancy down by 26% and mean brood size down by 16%. Some quite extreme geographical variation occurred between regions, within regions and even within counties. Barn Owls in Lincolnshire experienced an even worse year than in 2013 with nesting occupancy 95% below the all-years average and mean brood size 41% down. In Mid Sussex nesting occupancy was 47% down but, in complete contrast, in West Sussex it was 16% up despite the fact that these areas are immediately adjacent and even overlap a little. Further north, where the Bisham BOG straddles the Berks/Bucks border, nesting occupancy was only 7% below average but the Bucks ORG reported it to be a disappointing 66% below. Given that winter

2014/15, and 2015 itself, were generally mild it is most unlikely that the poor results were due to the weather but due to a general lack of prey. It is well known that annual variations in small mammal abundance are not synchronised across the whole country and that certainly seems to have been the case in 2015.

2016

Sadly, 2016 was another poor year. Data received from 32 monitoring schemes shows that the number of nesting pairs in the UK was 12% below the all years average and the average number of young in the nest was 7% below. Barn Owls had a poor to very poor year in SW and S England, Jersey, N Norfolk, parts of Lincs. and E Yorkshire, parts of Powys in Wales and West Galloway in Scotland. Conversely, Barn Owls in the west of England (from Cheshire down to Buckinghamshire), and in North Northumberland, Suffolk, and the Isle of Wight had a quite good to good year.

Globally, 2016 was once again the warmest year ever recorded. Here in the UK, winter 15/16 was the third warmest and seconded wettest recorded since 1910. With few exceptions, such as November flooding thanks to Storm Angus, long-duration extreme weather events were not a major feature of 2016. Therefore the observed temporal changes in nesting occupancy and brood sizes were probably more influenced by variations in small mammal abundance than by the weather.

2017

Overall 2017 was a better year. Nesting occupancy was 17% above average and mean brood size 6.6% above average. This positive result coincided with weather that was slightly warmer than average, with marginally lower rainfall. In particular, unusually warm weather prevailed between February and June, when Barn Owl nesting commences. In fact, the Met Office reports that the spring of 2017 "was the equal-warmest on record, with 2011."

In Northumberland 64% of boxes had active nests in them, as opposed to the previous average of 25%. In the east of the country Norfolk had a notably high nesting occupancy, with 60%, and Suffolk also had a 51% increase on the average of all previous years. These areas also produced relatively higher brood sizes. Further west, Shropshire, Staffordshire and Warwickshire showed nesting occupancy that was 84%, 72% and 77% above average, respectively, and to the south Buckinghamshire reported 53% above average. Unsurprisingly, the trend was not without its exceptions. Poorer results came in from Galloway, Lincolnshire and Glamorgan, where nesting occupancy was 22%, 39% and 30% below average, respectively. Nesting occupancy and average brood size was also lower than average on the island of Jersey and the Isle of Wight.

2018

It was a generally poor year, with both below-average nesting occupancy (-13%) and brood size (-4.2%). Surprisingly good results from Shropshire (+78%) and Staffordshire (+65%) were swamped by negative reports from widespread groups, particularly northern and eastern England and south Wales. Notably poor nesting occupancy was recorded in Gloucestershire (39% below their average), Norfolk (-39%), Jersey (-40%), Suffolk (-29%), Warwickshire (-28%), and East Yorkshire (-28%).

Why did so many pairs not attempt to nest? In early 2018 an exceptionally cold easterly flow brought snow to many parts (the infamous 'Beast from the East'), including a level of 57 cm in Gloucestershire on March the 4th. Just as relevant for the Barn Owls were the cold temperatures (down to –II °C in Hampshire on February 28th) and prolonged periods of heavy rain and high winds in February and March. These adverse conditions must have impacted on preparation for egg-laying and influenced the low nesting occupancy.

Following on from this treacherous start to the breeding cycle, in 2018 the UK had the warmest and driest June on record since 1910. There was only 48% of the average rainfall across the nation and in some southern Counties it was down to just 10%. This drought must have reduced the availability of fresh shoots to eat, imposing a negative effect on vole numbers, and consequences that moved up the food-chain at a period when Barn Owl nestlings should have been developing. Hence, an average brood size at 4.2% below previous records could also have been partly caused by the weather. Unfortunately, one of worst results came from Staffordshire (–24.6%), effectively undermining the reasonable nesting occupancy established earlier in the year. None the less, Essex, Shropshire, Powys, and West Sussex had higher than normal values for both nesting occupancy and brood size.

2019

This was a fairly good year with, nesting occupancy clearly above average and brood size marginally so. Regarding nesting occupancy, there was a wide range of results, from highly positive such as Gloucestershire (+101%), Shropshire (+94%), Buckinghamshire (+78%), Berkshire (+43%), and Staffordshire (+71%), to fairly negative in Galloway (-41%), Leicestershire (-19%), Powys (-21%) and some areas of Sussex (-25%). In general, however, a fairly mild start to the year seems to have stimulated a fairly high rate of nesting attempts.

Brood size was especially good in Leicestershire (+34%), Manchester area (+45%), Northumberland (+37%) and Suffolk (+37%), but also reasonable in Gloucestershire (+12%), Buckinghamshire (9%), Shropshire (11%) and Somerset (11%). However, brood size was notably poor in West Berkshire (-11%), North Berkshire/South Buckinghamshire (-18%), Cheshire (-16%), north Norfolk (-32%), Sussex (-18% and -24%) and Wiltshire (-22%). An overall result of under 2% above average suggest that good nesting occupancy may not have realised its full potential in terms of fully fledged owlets joining the population.

2020

A very poor year for Barn Owls, with nesting occupancy down by 8.5% and brood size down by 14% when compared to the average of all previous years.

Particularly terrible nesting occupancy was observed in Gloucester (-78%), Leicester (-75%) and Warwickshire (-87%), with poor rates seen in Berkwshire and Buckinghamshire (-43%), Galloway (-36%), Suffolk (-30%) and Yorkshire (-54%). There were some positive changes in Northumberland (89%), Shropshire (80%), Staffordshire (61%) and Ulster (70%). However, with restraints on field work imposed by the Covid-19 pandemic, it is probable that nesting occupancy was actually overestimated as efforts to check nests were likely concentrated on sites where Barn Owls were more likely to be present.

Mean brood size was unlikely to be affected by a bias stemming from selective monitoring and showed an alarming reduction in the average number of owlets reared. A total of 16 out of 22 regions reported a decrease in brood size, with W Berkshire (-38.4%), N Berkshire and Buckinghamshire (-50%), Leicestershire (-59.5%), Norfolk (-35.2%), Sussex (-30.2), Wiltshire (-38.7%) and Yorkshire (-44.4%) reporting the biggest declines. Worryingly, this means that overall, 2020 contributed considerably fewer new recruits than a normal breeding period should.

The weather in 2020 was a year of extremes and likely led to this unproductive year. A generally mild winter was followed by the wettest February on record since 1862, which will have negatively affected females trying to get into breeding condition. In contrast, the spring months were incredibly dry and hotter than normal, which consequently will have inhibited the emerging vegetation and thereby likely reduced field vole numbers during the critical period of nestling feeding. June through to September then provided very wet conditions just as young were growing and juveniles were fledging and starting to become independent.

Further Information

<u>Barn Owl Conservation Handbook</u>, a comprehensive guide for ecologists, surveyors, land managers and ornithologists. Barn Owl Trust (2012) Pelagic Publishing, Exeter.

Juvenile Barn Owl Tyto alba dispersal: a radio-tracking study of roost site selection in relation to landscape features, Ruiz, M.D.M., Ramsden, D., Roper, S., Cresswell, B. & Skuse, J. (2021). Bird Study 68(2), 245 – 257.

Met Office Climate Summaries (2022). Accessed on 07/04/2022 from:

https://www.metoffice.gov.uk/research/climate/maps-and-data/summaries/index

Post fledging dispersal in Barn Owls Tyto alba in Shropshire and its implications for the sustainability of a breeding population. Bishton, G., Lightfoot, J. & Lightfoot, W. (2020). Shropshire Barn Owl Group.

Project Barn Owl Final Report BTO Research Report 197. HOT Research Report 98/1. Toms, M.P., Crick, H.Q.P. & Shawyer, C.R. (2000). BTO/Hawk & Owl Trust, Thetford, Norfolk.

<u>Second generation anticoagulant rodenticide residues in barn owls 2019.</u> Walker, L.A., Potter, E.D., Chaplow, J.S., Pereira, M.G., Sleep, D., Hunt, A.G., Shore, R.F. (2020). UKCEH contract report to the Campaign for Responsible Rodenticide Use (CRRU) UK.

State of the UK Barn Owl Population 2013. Barn Owl Trust (2014). Ashburton, Devon.

State of the UK Barn Owl Population 2014. Barn Owl Trust (2015). Ashburton, Devon.

State of the UK Barn Owl Population 2015. Barn Owl Trust (2016). Ashburton, Devon.

State of the UK Barn Owl Population 2016. Barn Owl Trust (2017). Ashburton, Devon.

State of the UK Barn Owl Population 2017. Barn Owl Trust (2018). Ashburton, Devon.

State of the UK Barn Owl Population 2018. Barn Owl Trust (2019). Ashburton, Devon.

Sate of the UK Barn Owl Population 2019. Barn Owl Trust (2020). Ashburton, Devon.

State of the UK Barn Owl Population 2020. Barn Owl Trust (2021). Ashburton, Devon.

2013 Devon Barn Owl Survey Report. Barn Owl Trust. Barn Owl Trust (2014), Ashburton, Devon.

Links to contributor's own web pages:

Berkshire Middle Thames Ringing Group

Buckinghamshire Bucks Owl & Raptor Group

Cheshire Broxton Barn Owl Group

Cheshire Mid Cheshire Barn Owl Conservation Group

Cheshire Wirral Barn Owl Trust

Cornwall Ringing Group

Devon Barn Owl Trust

Derbyshire Ornithological Society

Galloway Scottish Raptor Study Group

Glamorgan Barn Owl Group

Gloucestershire Gloucestershire Raptor Monitoring Group

<u>Lincolnshire – Garry Steele</u>

Manchester Raptor Group

Norfolk Norfolk Ringing Group - John Middleton

Northern Ireland <u>Ulster Wildlife</u>

Northumberland Nat. Hist. Soc. of Northumbria Hancock Mus. R.G.

Powys Species Habitat Protection Group

Shropshire Shropshire Barn Owl Group

Somerset <u>Cam Valley Wildlife Group</u>

Staffordshire Staffordshire Barn Owl Action Group

Suffolk Suffolk Bird Group

Sussex Ornithological Society

Tees Valley <u>East Cleveland Nest Box Network Project</u>



Indoor nestbox provision. Photo: Glenn Bishton