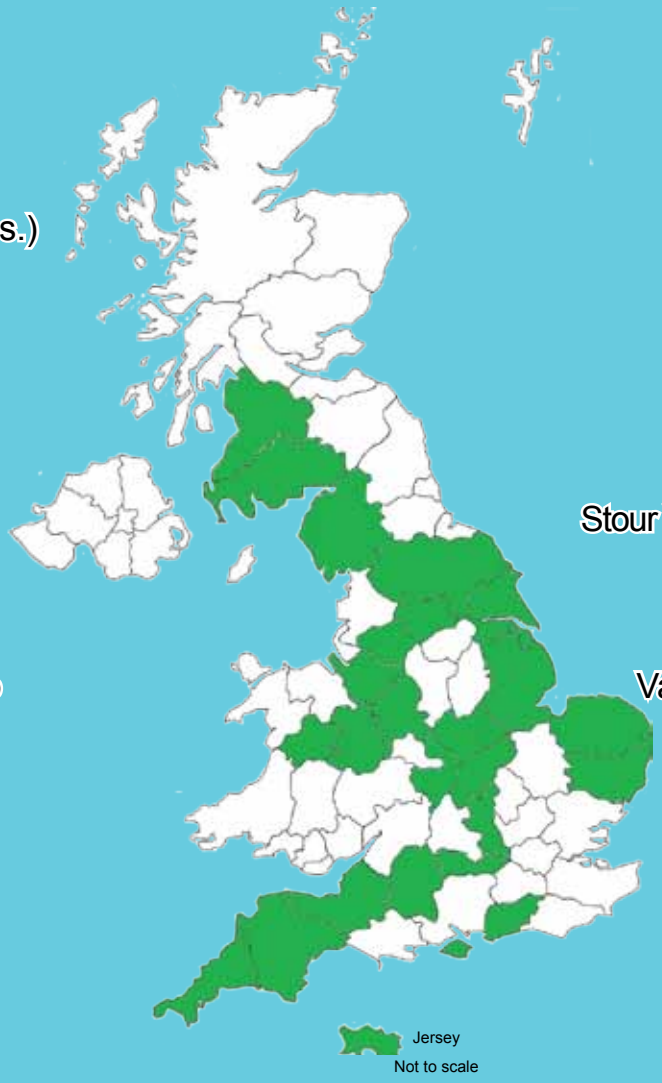
State of the UK Barn Owl population – 2013

'The worst year since records began'

Results from 26 independent groups in Britain, collated by the Barn Owl Trust

Updated September 2014

Alan Ball, Bob Sheppard, G Steele (south Lincs.)
Barn Owl Trust
Barrie Watson (West Sussex)
Buckinghamshire Owl Raptor Group
Cam Valley Wildlife Group
Cheshire Barn Owl Groups
Hawk and Owl Trust - Chris Sperring
East Riding Barn Owl Conservation Group
Imber Conservation Group
James Gloyn & Gil Gaylor (Isle of Wight)
Jersey Barn Owl Conservation Network
Lower Derwent Valley NNR Barn Owl Group
Manchester Raptor Group
Montgomeryshire Barn Owl Group



NW Norfolk Ringing Group
Northamptonshire Barn Owl Project
North Cumbria Barn Owl Study Group
Pang Valley Barn Owl Group
Scottish Raptor Study Group
Shropshire Barn Owl Group
Staffordshire Barn Owl Action Group
Stour Valley Wildlife Action Group / South Warwickshire Barn Owl Survey
Suffolk Community Barn Owl Project
Suffolk Owl Sanctuary -Thornham Owl Project
Vale of Belvoir Barn Owl Conservation (VBOC)
West Cornwall Ringing Group
Wolds Barn Owl Group

Conserving the Barn Owl and its Environment

State of the UK Barn Owl population - 2013

Introduction

Voted the most popular farmland bird in Britain, this flagship for nature conservation is without doubt the most extensively monitored bird species in the UK. At least 7,000 potential nest sites are checked each year by a wide range of enthusiasts, volunteer groups, and dedicated Barn Owl projects. As a result, huge amounts of data are gathered each year. Around 2,500 broods were recorded in 2012 alone (calculation based on BTO ringing data).

The purpose of this document is to provide an early indication of monitoring results collected in 2013 from a sample of independent monitoring projects across the UK. Collectively, the amount of effort that has gone into gathering these raw data is immense and the authors are keen to acknowledge all those whose names and logos appear. Links to contributors' own webpages (where available) are provided on the last page.

As well as being a flagship for the conservation of farmland wildlife, Barn Owls are well known as an indicator species. High-levels of nest site occupancy and above average brood sizes indicate favourable conditions for a range of small-mammal predators and the presence of habitats that benefit a wide range of fauna. Conversely, low Barn Owl numbers indicate unfavourable conditions. The idea of producing this report was stimulated by the shockingly poor results collected in 2013 described, for example, by Major Nigel Lewis as "the worst year in the 30 years I have been owling in Wiltshire".

When considering the results, the reader should bear in mind that Barn Owls are affected by a wide range of environmental factors. Although the relative importance of these is usually unclear, cause and effect are sometimes obvious. For example, in 2012 the early laying of extra-large clutches in March and high levels of nestling mortality in June were clearly related to extreme weather events. However, most of the environmental variables that affect Barn Owls are far more insidious. Small mammal abundance fluctuates even where habitat quality is constant. Farmland habitat features develop gradually and are then rapidly destroyed in repeated agricultural cycles. Rodenticide use fluctuates as does Barn Owl contamination, whereas (as a proportion of all mortality) flying into wires, drowning, and road deaths are relatively constant year-on-year.

Although some possible reasons for population change are discussed, definitive answers to questions beginning with 'Why' are well beyond the scope of this document. However, answers to simple questions like 'how did Barn Owls do last year?' or 'how do my results compare to others?' may be found herein.

Definitions

NO. OF SITES CHECKED means visits to potential nest sites.
NESTING OCCUPANCY is where nesting actually occurred (one or more eggs laid).
MEAN BROOD SIZE is the number of live young counted at any time between hatching and fledging.
The calculation of MEAN BROOD SIZE normally excludes failed nests.
c. means 'in the region of'.
E means estimated.

Caveats

1. The figures provided in the table are accurate (unless marked 'E' or 'c.'). However, methodological variation between groups means that they can only provide indications of what happened to the population as a whole (in terms of nesting occupancy and brood sizes).

2. Reduced nesting occupancy often means that one or both of the resident pair has died and there was a shortage of unpaired (usually younger) birds to replace them. However, in some cases non-breeding pairs or single birds were present. In other cases, survivors may have been roosting elsewhere in their home range.

3. The proportion of nest sites that were monitored varies between counties.

4. Most monitored sites are nestboxes. The placement of these (i.e. on tree/in building/or pole-mounted) varies between counties/groups as does the design of the boxes themselves.

5. The vast majority of sites were checked by inspection to confirm/discount breeding, and determine brood size. However, some groups accepted reports from trusted/knowledgeable site owners, particularly where nest cavities were inaccessible.

6. At most sites, only one nest inspection was carried out. Chicks may have died 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 have been derived from either one of these visits.

7. The calculation of all-years average varies between contributors according to how many years the project in question has been running.

8. One or two individual years may be omitted from data sets due to restrictions on farm visits such as in 1996 due to BSE and 2001 due to Foot and Mouth Disease.

Please note:

- In calculating the TOTALS; for data ranges (e.g. 30-40) the mid-point is used.
- NESTING OCCUPANCY totals include zeroes and MEAN BROOD SIZE totals exclude zeroes.
- Figures given for NESTING OCCUPANCY and **% change from normal** take account of the number of sites checked (except *)

Results County / group	NO. OF SITES CHECKED		NESTING OCCUPANCY			MEAN BROOD SIZE			Notes - see appendix
	Typical (<2012)	Actual in 2013	Typical (<2012)	Actual in 2013	% change from norm	Typical (<2012)	Actual in 2013	% change from norm	
Ayrshire & Galloway - Scottish Raptor Study Group – Geoff Sheppard	75	74	70	26	**-62%**	3.5	2.7	**-23%**	19, 20
Berkshire – WBCS - Pang Valley BOG, John Dellow	111	119	14	0	**-100%**	2.8	0	**-100%**	13
Buckinghamshire Owl Raptor Group – Dave Short	186	339	22	3	**-93%**	2.7	4	**+48%**	22
Cheshire – Andrew Duncalf on behalf of the Cheshire Barn Owl Groups	c. 750	c. 750	115	19	**-83% E**	2.85	2.6	**-9%**	25
Cornwall – West Cornwall Ringing Group	33	32	21	13	**-36%**	3.1	2.4	**-23%**	5, 6
Cumbria - North Cumbria Barn Owl Study Group	125	113	70	44	**-30%**	3.04	2.92	**-4%**	
Devon & Cornwall (east)- Barn Owl Trust	81	77	37	8	**-77%**	2.9	1.4	**-52%**	1,2
Jersey Barn Owl Conservation Network	108	50	53	1	**-96%**	3	1	**-67%**	21
Linc. (south) – Alan Ball, Bob Sheppard, G Steele	1,200 **E**	1,200 **E**	200-250 **E**	120-150 **E**	**-40% E**	3.1	3 **E**	**-3% E**	
Manchester Raptor Group -Judith Smith	50 - 60 **E**	46	17	6	**-58% E**	1.75	2.25	**+29%**	29
Montgomeryshire Barn Owl Group	330 **E**	330 **E**	48	14	**-71% E**	3.1	3.5	**+13%**	9
NW Norfolk Ringing Group - John Middleton	519	519	200	53	**-74%**	2.4	1.7	**-29%**	27
Northamptonshire BO Project – Paddy Jackson	-	-	52	13	**-75% E***	-	3.2	-	24
Shropshire Barn Owl Group	174	148	17	4	**-72%**	3	2	**-33%**	1,2,3

	NO. OF SITES CHECKED		NESTING OCCUPANCY			MEAN BROOD SIZE			Notes - see appendix
County / group	Typical (<2012)	Actual in 2013	Typical (<2012)	Actual in 2013	% change from norm	Typical (<2012)	Actual in 2013	% change from norm	
Somerset - Hawk and Owl Trust – Chris Sperring	46	46	46	7	-85%	2.7	2.12	-22%	4
Somerset NE (Cam Valley WG) – Andre Fournier	71	133	11	3	-85%	2.5	1.3	-48%	12
Staffordshire Barn Owl Action Group	218	236	30	15	-54%	3	2	-33%	
Suffolk Community Barn Owl Project (inc. Suffolk Owl Sanctuary data & others)	972	1192	203	93	-63%	2.4	2.3	-4%	23,
Sussex (west) - Barrie Watson	c. 90	c. 90	64	6	-91% **E**	2.9	c. 3	+3%	1,2, 7, 8
Isle of Wight – James Gloyn & Gil Gaylor	50	47	32 **E**	23	-24% **E**	2.5	2.4	-4%	26
Warwickshire - Stour Valley Wildlife Action Group / South Warcs. Barn Owl Survey	62 **E**	163	17	18	-60% **E**	2.4	1.7	-29%	30
Wiltshire - Imber Conservation Group Major Nigel Lewis MBE (with volunteers)	488	307	137	30	-65%	1.98	1.14	-42%	14, 15, 16, 17
Vale of Belvoir Barn Owl Conservation (VBOC)	135	135	22	7	-68%	2.13	2	-6%	28
Yorkshire – East Riding BO Cons. Group – Rob Salter Dave Dickinson, Karen and Tony Chelsey	500	450 **E**	275-300 **E**	31	-88% **E**	3	3.5	+17%	18
Yorkshire – Lower Derwent Valley NNR Barn Owl Group - Craig Ralston	35	40	28	0	-100%	3-6	0	-100%	11
Yorkshire – Wolds Barn Owl Group	40	30	15	4	-64%	3	2.75	-8%	10
TOTALS (zeroes are excluded)	6,454 **E**	6,666 **E**	1,853 **E**	576 **E**	-70% **E**	3.51 **E**	2.99 **E**	-12% **E**	

Discussion

1995-2009
The only reliable estimate of Barn Owl numbers in the UK was c.4,000 pairs in 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 Altas 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 – by far 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). Most years, the February mortality peak reduces in March as temperature increase stimulates small mammal activity. Unfortunately March 2013 was the coldest since 1962 and during the month the number of dead Barn Owls reported to BTO was 280% above normal. By the time temperatures finally rose in mid-April, there were quite possibly fewer Barn Owls alive in the UK than at any time since records began.

Without exception, every monitoring scheme that contributed data reported a high proportion of nest sites with no signs of occupation and it is quite safe to assume that many of the absent birds were dead. In Berkshire, the Pang Valley BOG that normally finds 14 nests and Craig Ralston in Yorkshire who normally finds 25-30 found none at all. Nesting occupancy in Buckinghamshire (Dave Short) and Sussex (Barrie Watson) was 91-93% down and even the Jersey Barn Owl Conservation Network recorded a 96% drop and commented "2013 has been the worst on record". The Results Table above shows that, overall, nesting occupancy in 2013 was an estimated 70% below the all-years average.

Schemes in Devon (BOT), Sussex (Barrie Watson), and Shropshire (John Lightfoot) reported finding little evidence of non-breeding pairs and that most nestboxes were empty. Conversely, some contributors did comment on the presence of single birds and non-breeding pairs. The Lower Derwent Valley NNR Group (Craig Ralston) reported "Most sites had pairs present but none bred" and in West Berkshire, the Pang Valley BOG (John Dellow) reported "even though there was no breeding there were a good number of adult birds found". On Salisbury Plain, the Imber Conservation Group (Major Nigel Lewis) reported "Out of the 307 sites we checked, 50 contained pairs that did not breed, there were 45 nest sites with a single roosting bird (a mixture of males and females) and only 30 nests. 2013 was the worst year in the 30 years I have been owling in Wiltshire".

Many of the survivors either; didn't lay eggs, abandoned their eggs, and/or bred much later than usual. Even in the relatively mild climate of West Cornwall, the WC Ringing Group (Mark Grantham) reported birds nesting "five to six weeks later" and that "half of all nests failed at egg stage". Some data contributors commented on increased nesting success later in the year. After "following three harsh winters, 2013 turned out to be the worst year we have known", the East Riding Barn Owl Conservation Group (Rob Salter) commented "a glimmer of hope towards August-September with healthy broods of 4-5 young".

Ian Armstrong in Cumbria reported that 2013 was no worse than 2012 "although the successful nests were mostly the later ones". Similarly, Geoff Sheppard in Ayrshire & Galloway reported "The percentage of sites producing eggs in 2013 was similar to 2012. However, the average brood size and the number of chicks ringed were significantly higher than in 2012, thus increasing the available breeding population for future years".

However, with the exception of Cumbria, Ayrshire & Galloway, 2013 was reported as a disastrous year for Barn Owls across the UK.

"Our birds have had a hammering" Chris Griffiths, Montgomeryshire Barn Owl Group
"The worst year in the 30 years I have been owling in Wiltshire" Major Nigel Lewis, Imber Conservation Group
"The worst year we have known" Rob Salter, East Riding Barn Owl Conservation Group
"2013 was the worst on record" Tony Beaumont, Jersey Barn Owl Conservation Network
"Worst year since I started 18 years ago" Paddy Jackson, Northamptonshire Barn Owl Project
"A very bad year" Steve Piotrowski, Suffolk Community Barn Owl Project
"Many traditional sites where occupancy could be more or less guaranteed were totally deserted" John Middleton, NW Norfolk Ringing Group

PROSPECTS FOR 2014

Although an extremely stormy and wet winter, 13/14 was generally mild, Field Voles were breeding on the edge of Dartmoor in December, and first reports of egg-laying were received in March. Provided that we have two or three years without too much cold weather, Barn Owls should be able to recover to their 2009 population level (which unfortunately cannot be quantified). However, if the current frequency of extreme weather events continues (particularly low temperatures) we may soon look back on 1995-2009 as the golden years.

Remarkably, parts of the Somerset Levels have remained flooded from December-March. Although this is locally devastating, most of the UK is hilly and at UK-scale flooding is a relatively minor issue.

In the final eight months of 2013 the Barn Owl Trust recorded 1,147 records on the new UK Barn Owl Survey website: http://www.barnowlsurvey.org.uk 04/09/14 UPDATE: Following promotion by BBC Springwatch over 2,600 Barn Owl records were reported in May - June '14. Recent updates to the website include the addition of BTO Atlas data and new functionality. Users can now view their own records against a backdrop of the latest BTO distribution map. Future functionality will enable users to view other people's records at tetrad level and produce maps which will be useful for groups wanting to display their own data.

04/09/14 UPDATE: Weather conditions have remained favourable so far and prey abundance seems to be above average. Most pairs laid early and typical brood sizes are 4-6 rather than the usual 2-4. Many breeding females appear not to be moulting yet which suggests that more second broods are likely.

THE ISSUES

Barn Owl numbers have always gone up and down a lot naturally. But what makes 2013 different is the scale of the mortality and the fact that so few birds bred. Whilst it is easy to assume that their misfortune was entirely due to the weather, it is important to remember that this was only one of many factors working against them.

The vast majority of farmland is intensively managed and lacking prey-rich habitat features (such as rough tussocky grassland with a >7cm litter-layer). There is little doubt that general lack of prey is the principal cause of low productivity and low population density across most of the UK. This reduces the chance of single birds finding a mate particularly when numbers are low.

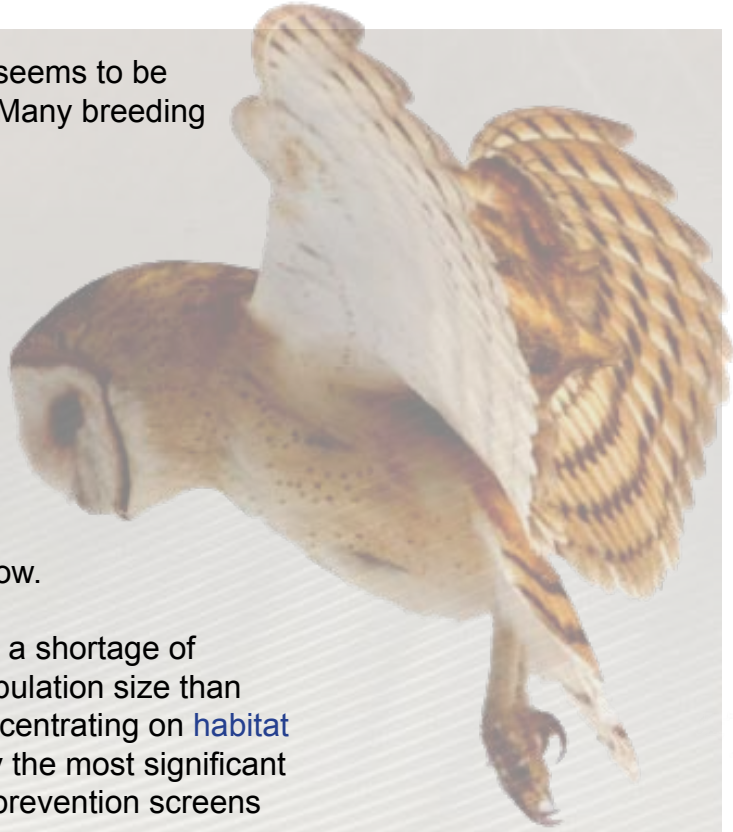


Photo: Ed MacKerrow

Barn Owl sites become unoccupied, not so much because older birds die, but because there is a shortage of younger birds to replace them. Indeed, juvenile survival excerpts a bigger influence on total population size than any other life-cycle parameter (Population trends in British Barn Owls, BTO). So as well as concentrating on habitat improvement to benefit all Barn Owls, it is important to consider the causes of juvenile mortality the most significant of which is trunk-road deaths (BOT). Roads need to be made safe by the planting of low-flight prevention screens more information.

According to latest government figures, 87% of Barn Owls contain rat poison. The proportion that dies as a direct result is probably low but the possible effects of sub-lethal doses are a cause for concern. It is possible that low-level contamination reduces the birds' ability to cope during hard times and may be a contributory factor in their demise. Regulations concerning the use of Second Generation Anticoagulant Rodenticides are currently being reviewed with the aim of reducing unwanted poisoning more information.

In many ways, nestbox provision is the most deliverable element of Barn Owl conservation and the fantastic success of box schemes in areas where food availability was not the limiting factor demonstrates their value. The possibility of free nestboxes can also be used as an incentive for habitat creation as demonstrated by the two community Barn Owl projects. As the UK gets closer to Barn Owl nestbox saturation, and a box-dependent owl population, the emphasis needs to change towards box replacement. Replacement provides opportunities to improve nestbox designs to help reduce nestling mortality that results from boxes that are less than 460mm deep and boxes that are difficult for climbing owlets to get back into more information.

There is a lot more information on all these topics in the Barn Owl Conservation Handbook.

Further information

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

Barn Owls and Major Roads: results and recommendations from a 15 year research project. Ramsden, D.J., (2003). Barn Owl Trust, Ashburton.

BTO Bird Atlas 2007-11: the breeding and wintering of birds in Britain and Ireland. Balmer, D.E., Gillings, S., Caffrey, B.J., Swann, R.L., Downie, I.S., & Fuller, R.J. (2013) BTO Books. British Trust for Ornithology, Thetford.

Population Trends in British barn owls (Tyto alba) and tawny owls (Strix aluco) in relation to environmental change. Percival, S.M. (1990) BTO Research Report, 57. British Trust for Ornithology, Thetford.

Project Barn Owl Final Report. Toms, M.P., Crick, H.P.Q. & Shawyer, C.R. (2000) BTO Research Report, 157. HOT Research Report 98/1. British Trust for Ornithology, Thetford.

Ringing and nest recording in Britain and Ireland 2012. Dadam et al. in Ringing & Migration Volume 28, Part 2, (December 2013). British Trust for Ornithology, Thetford.

Appendix

Contributors notes to be read in conjunction with the results table

1. Most boxes empty (little evidence of non-breeders).
2. Breeding 2-4 weeks late.
3. 44% of sites occupied by Stock Doves (unusual).
4. Chris has 46 reliable nest sites, of which he usually checks around 20 each year (not the same ones every year, but a selection of the 46), and which all produce chicks most years. Most of these sites have people watching them who report back, so even in years when Chris doesn't get to check the nest he knows they've bred (although not always the brood size). In 2013 he checked all 46 sites, most more than once, and only 7 bred at all, and 2 didn't lay until the very end of summer. In 2013 new Somerset Community Barn Owl Project boxes were also checked. Out of a total of 123, 55 showed at least some sign of occupancy although 26 lost their Barn Owls in spring 2013 leaving just 29 sites currently occupied by at least one bird (data produced in November 2013).
5. Probably 5-6 weeks later than previous years.
6. Half of all nests failed at egg stage.
7. "Only six broods found in 2013 so I think an average is going to be meaningless".
8. "The number of boxes has grown steadily and progressively over the years, and we haven't checked all of them or the same sub-set in each year".
9. Most sites are 300-504 metres ASL. "Our birds have had a hammering". In 2013 best breeding success was at lower altitude sites to the west; nearer the coast.
10. Many dead Barn Owls reported in March-April. One pair found dead were both 100g underweight.
11. Most sites had pairs present but none bred.
12. A small minority of sites were inaccessible and brood size was estimated from external observations and/or calls.
13. "Even though there was no breeding there were a good number of adult birds found".
14. (Out of the 488) - "In the last 10 years 445 sites have been used 3 or more times".
15. (Out of the 307) – 50 contained pairs that did not breed.
16. The 'typical mean brood size' figure (1.98) is Salisbury Plain only.
17. (In addition to the 30 nests and 50 non-breeding pairs) "there were 45 nest sites with a singleton roosting bird, a mixture of males and females. 2013 was the worst year in the 30 years I have been owling in Wiltshire".
18. "On top of three harsh winters, 2013 turned out to be the worst year we have known. A glimmer of hope towards August-September with healthy broods of 4-5 young".
19. "There was evidence that vole numbers were again increasing but the very cold spring deterred the birds from breeding early and both site occupation and egg production commenced later than normal".
20. "The percentage of sites producing eggs was similar to 2012" but the "average brood size and the number of chicks ringed were significantly higher than in 2012".

Contributors notes continued

21. “In the 50 boxes we found only 15 birds (9 singles and 3 pairs) with just one owlet. 2013 has been the worst on record” [note: brood size based on only one nest].
22. “With only 3 successful nests in 2013, the mean brood size of 4.0 is not statistically meaningful”.
23. “We had a very bad year with only a third of our boxes being occupied”. Breeding attempts dropped from 319 in 2012 to 93 in 2013.
24. “2013 was the worst year since I started 18 years ago”. “2007 was a bumper year but the last four years have been poor”.
25. “The first egg date for mid-Cheshire was 24th April compared to 3 March in 2012, 8 April in 2011, 2 April in 2010 and 11 March in 2009. The cold snap in March meant that many birds were unable to attain breeding condition and this, along with poor prey availability, resulted in many birds electing not to breed at all in 2013”.
26. “The “boxes checked” is not highly rigorous from year to year with some boxes not checked because of weather or no outward signs of activity earlier in year, difficulty of access etc, so figures of active nests are not necessarily indicative of the actual position”.
27. “Between 1January and 30April, 47 Barn Owls were reported to us as dead or dying, the majority of these had starved, the oldest was 11 years old! There then followed the worst year I have known with many traditional sites where occupancy could be more or less guaranteed were totally deserted. By 6th August “The Group which I coordinate has so far checked over 300 potential barn owl nest sites. Only 42 pairs were found to be breeding, 202 had no owls present, 19 pairs were present at a site but were not breeding and 35 sites had just a single bird present.”
28. “Breeding pairs down 66% total pairs down 55% from 36 to 16 of which 7 successfully bred. Number of young are the young rung which could be less than the number fledging”.
29. “Disastrous. However we did find several sites where pairs were present but did not bother to breed. There must have been quite a lot of these given the impressive results we are getting in 2014”.
30. “Out of 163 sites checked in 2013, as well as the 18 active nests, 11 non-breeding pairs and 9 singles were also recorded at boxes. Our project is rapidly increasing in size and although the ‘typical’ (all years) figures are low, they include 107 sites checked in 2012 of which 30 had an active nest and 6 had second broods”.

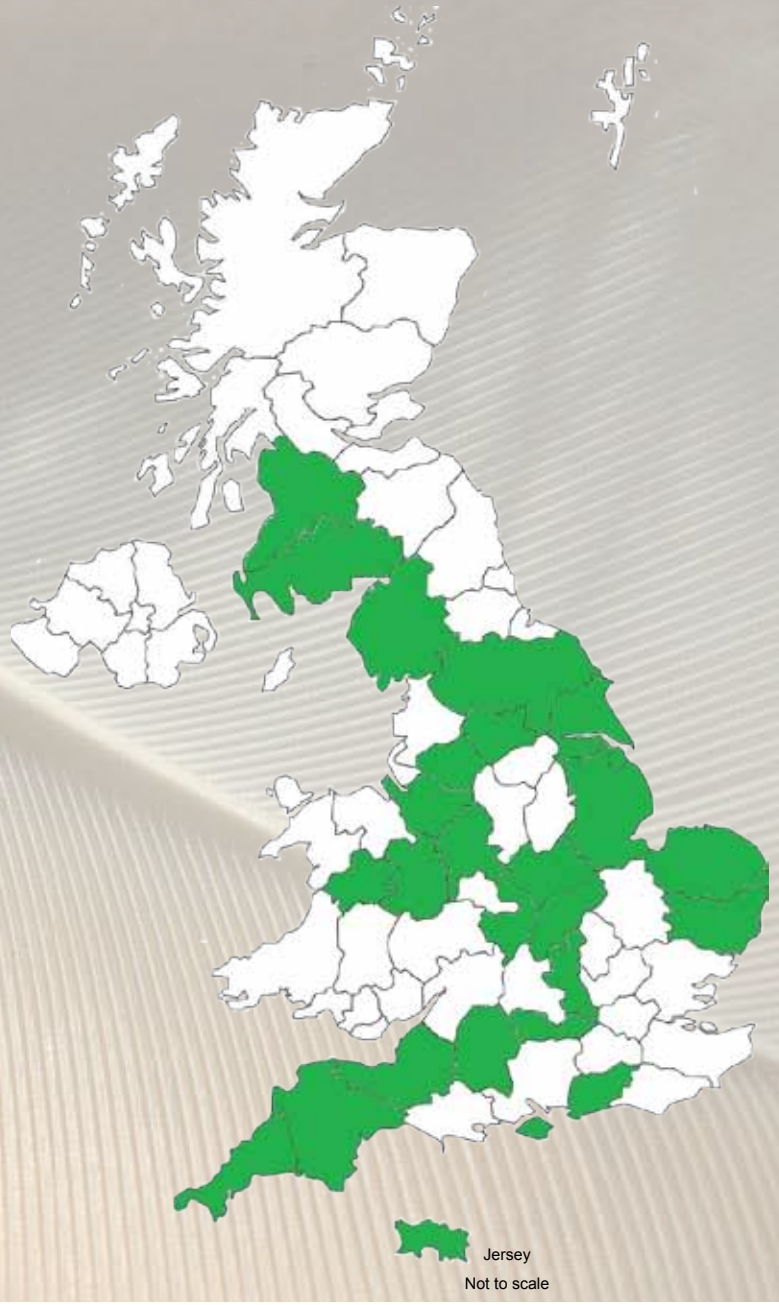
Links to contributors own web pages:

Barn Owl Trust
Buckinghamshire Owl Raptor Group
Cam Valley Wildlife Group
Cheshire Barn Owl Groups
Hawk and Owl Trust - Chris Sperring
Imber Conservation Group
Jersey Barn Owl Conservation Network
Lower Derwent Valley NNR Barn Owl Group & Lower Derwent Valley NNR
Manchester Raptor Group - Judith Smith
Montgomeryshire Barn Owl Group
NW Norfolk Ringing Group
Scottish Raptor Study Group
Shropshire Barn Owl Group
Staffordshire Barn Owl Action Group
Stour Valley Wildlife Action Group
Suffolk Community Barn Owl Project
Suffolk Owl Sanctuary
West Cornwall Ringing Group
Wolds Barn Owl Group

Photo: Kevin Keatley

Members of the Shropshire Barn Owl Group
Photo: David Ramsden

Counties from which data was contributed, many thanks to all contributors



Produced by the Barn Owl Trust April 2014
Revised July 2014
Revised September 2014