Barn Owl *Bulletin*

Winter 2003 Newsletter No. 2

BOMP Funding Continues

Introduction

Welcome to the second 'Barn Owl *Bulletin*' produced for participants of the BTO Barn Owl Monitoring Programme (BOMP). The Programme, originally piloted in 2000, continues to go from strength to strength.

It is clear that we have tapped into the interest and enthusiasm of Barn Owl workers in the UK. 98% of the fieldwork forms were returned for 2002, an almost unique situation when it comes to bird surveys. The quality and quantity of the data also continues to increase.

At the time of writing, just under half of the 2003 fieldwork forms have been returned to the BOMP Office. If you still need to send yours in, please could you do so now so that your data can be included in the analyses that we are about to run.

We are delighted to be able to report that the Sheepdrove Trust are sponsoring BOMP for another three years, enabling the BTO to develop the Programme still further and to gather a good run of data.

The 2004 fieldwork forms will be sent out to BOMP participants shortly.

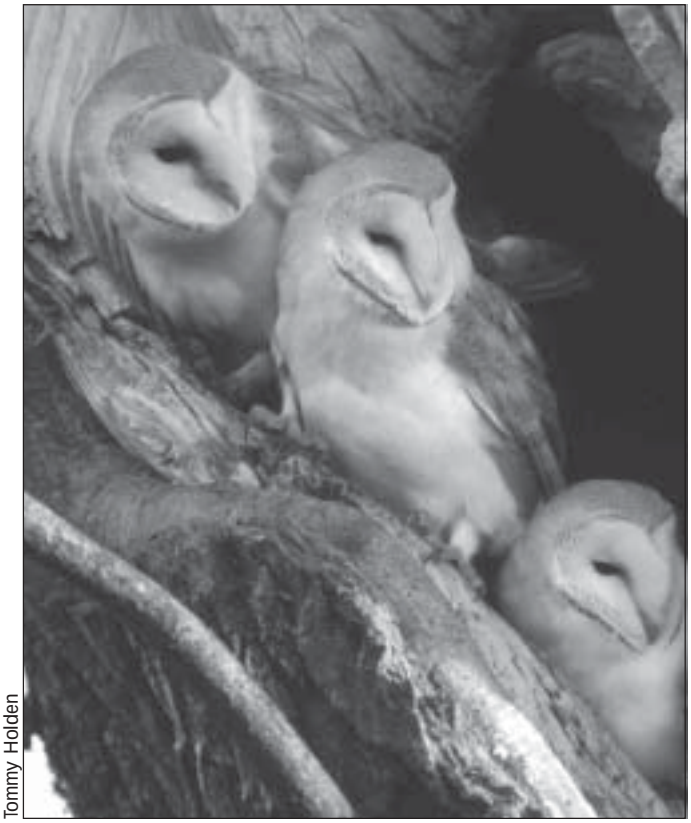
Thanks

Once again the BTO would like to thank the network of BOMP observers who are monitoring Barn Owl sites throughout the UK each year. The BOMP data are proving to be a vital tool for monitoring the status of the UK Barn Owl population and investigating the influence of habitat on occupancy of nest sites and productivity.

We would also like to express our thanks to Colin and Val Shawyer (Wildlife Conservation Partnership) and Nigel Lewis for their work monitoring the set of core sites for the Programme. Thanks are also due to the Barn Owl Trust who continue to provide a great deal of encouragement.

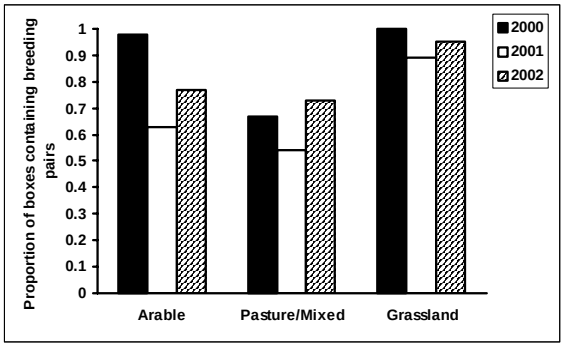
Finally, but by no means least, we are extremely grateful for the very generous financial support we receive from the Sheepdrove Trust. Without them, the Barn Owl Monitoring Programme would not be possible.

Peter Beaven
Barn Owl Monitoring Programme Coordinator



Tommy Holden

For the latest BOMP results see page 3!



BARN OWL CONSERVATION NETWORK SYMPOSIUM 2004

Everyone involved in practical Barn Owl conservation and research of Barn Owls (including BOMP recorders) is invited to **The Barn Owl Conservation Network Symposium** at The Kindersley Centre, Berkshire, on Saturday 20th March 2004. Presentations include "Latest Results from BOMP" (Peter Beaven & Dave Leech, BTO), "Studies in the Derwent Valley" (Nick Askew, University of York), together with talks by World Owl Trust and BOCN Network Advisors.
After an organic lunch, there will be an outdoor workshop on practical conservation, monitoring and Countryside Stewardship. The day will conclude with an open forum discussion.
For bookings and further details contact Jason Ball (UK Coordinator of the BOCN)
01488 674727 (note new number) email: info@bocn.org website: www.bocn.org

Registering for BOMP

Anyone is welcome to participate in BOMP. Those with no previous nest recording or ringing experience can still collect valuable information concerning nest site occupancy by making at least two visits to the nest per season, although a series of brief monthly visits would be preferred.

Because we are monitoring occupancy rates, recording that Barn Owls are absent from a BOMP site is just as important as knowing that they have nested there. Please return your forms each year even if there is no evidence of breeding at the site.

Licensed nest recorders and ringers will be able to record additional information, such as clutch and brood size, fledging success and the number of prey items in the box. Ringers can collect data concerning the age, size and condition of both nestlings and adults. The ringing of adults and young will provide information concerning dispersal patterns and survival rates. Please request a registration form if you wish to take part.

BOMP provides an exciting and rewarding opportunity for you to help in the research and conservation of one of Britain's most distinctive and well-loved bird species.

Applying for Schedule 1 licences

Barn Owls are specially protected at the nest under the Wildlife & Countryside Act (1981) and it is an offence to intentionally disturb them without a Licence. To ensure that you get a licence in time for the start of the Barn Owl season, please apply by the end of February.

When applying for a licence you will need to provide details of the county and 10km square for all the sites that you intend to visit. It is not possible for other ringers, nest recorders, BTO members or members of the public to access these details.

To ensure that licences are only issued to *bona fide* recorders, non-ringers will need to provide two written references with their Schedule 1 application. These should be from a recognised authority such as a BTO Regional Representative, bird ringer, Chairman of a Bird Club, a County Recorder or an existing Schedule 1 holder.

Licences have to be renewed each year, and a condition for renewal is that observers supply information on the previous season.

For further information or a Schedule 1 Application Form, please contact the BTO Licensing Officer, Jez Blackburn (jez.blackburn@bto.org) or the BOMP office.

Ring Rebates for BOMP Barn Owls

As you will know, adult Barn Owls ringed as part of the Programme qualify for a ring refund, currently 11p a ring. This is in addition to the subsidy ringers get for Barn Owls as part of the *Ring Pricing for Conservation and Science* scheme. Please note that this only applies to ADULT birds for which BOMP forms are returned.

Of course trapping adult Barn Owls is a delicate operation and we strongly advise new ringers to seek advice from those with more experience. Guidelines were also published in the last issue of 'Barn Owl *Bulletin'* (page 8). If you would like a copy of this, please get in touch with the BOMP Office.

The BTO Barn Owl Monitoring Programme is generously sponsored by the Sheepdrove Trust

'Barn Owl *Bulletin'* edited by Peter Beaven
Typeset by Angela Rickard.

Articles for inclusion in future issues of 'Barn Owl *Bulletin*' should be sent by email to barnowls@bto.org or by post to:
Barn Owl Monitoring Programme, British Trust for Ornithology, The Nunnery, Thetford, Norfolk IP24 2PU

Contents

BOMP Results 2002 – Developing the BOMP network

Here Dave Leech reports on the results from the 2002 season, with the first full analysis of data from 'BOMP network sites', of which nearly 350 were covered. Even more Network sites were registered for the 2003 season and the results from this will be published in the next edition of 'Barn Owl Bulletin'.

After the problems caused by the Foot and Mouth outbreak during the previous breeding season, 2002 witnessed the first full coverage of BOMP network sites, supplementing the information collected by the Wildlife Conservation Partnership (WCP). In total, over 540 Barn Owl sites were covered for BOMP in 2002, of which almost 350 (64%) were BOMP network sites. The number of sites registered continues to increase. Many thanks to everyone involved in the Programme for their efforts thus far.

Data from the majority of BOMP network sites were available only for 2002, whereas information for WCP sites was available for the period 2000-2002. The two datasets were therefore analysed separately and the results compared. Trends in both nesting rates and productivity can now be investigated over the three years of WCP data. In addition, both WCP and BOMP network data can be used to explore regional variations in these breeding parameters, and also to compare reproductive success at sites located in different habitats.

Nesting rates up again in 2002

A site was classed as 'Used for nesting' if a breeding attempt had been made, as signified by the presence of at least one egg or chick at any visit made during the season. If an adult Barn Owl(s) was encountered during the season but no eggs or chicks were recorded, the site was classed as 'Roosting'. The nesting rate of WCP sites fell from 83% in 2000 to 65% in 2001 (Figure 1).

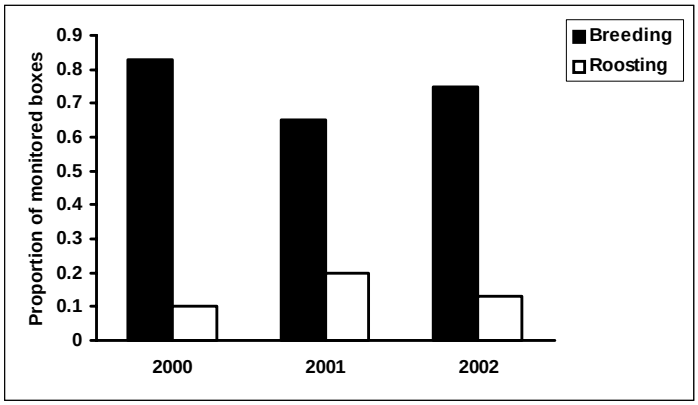


Figure 1 Nesting and roosting rates for WCP sites

This decline may have been caused by heavy rains and subsequent flooding during the autumn of 2000, leading to a shortage of small mammal prey during the winter period and therefore to increased Barn Owl mortality rates. Alternatively, individuals could have survived the winter but may not have been in good enough condition at the beginning of the spring to start breeding. This hypothesis is supported by the significant increase in the number of roosting, ie non-breeding, individuals observed at WCP sites in 2001 (Figure 1).

It could be argued that, if nesting rates were artificially high in the first year of BOMP due to biases in site selection, they would, by chance be more likely to drop in subsequent years until a more 'natural' level was reached. However, the fact that nesting rates increased again to 75% in 2002, a level approaching that of the first year of the survey (Figure 1), suggests that this was not the case. Anecdotal evidence implied that 2002 was a very successful year for small mammals, which may help to explain the increase in nesting rates in this year relative to 2001. The increase in non-breeding individuals in 2001 also suggests that the fall in nesting rates in this year was due to some individuals suspending breeding rather than birds moving away.

Nesting rates high in areas of natural grassland

In order to investigate regional variation in nesting rates, the UK was divided into six different regions, based on the boundaries of UK countries and the nine English Government Office Regions (Figure 2). In addition, each site was assigned to a habitat category on the basis of the dominant habitat type, as indicated by the forms returned. There were three habitat categories for WCP data – Natural/Semi-natural Grassland, Arable Farmland and Pastoral/Mixed Farmland – and three for BOMP network data – Woodland, Arable Farmland and Pastoral Farmland.

Figure 2 Regions used in BOMP analysis (1 = Scotland, 2 = Northern England, 3 = Wales & Western England, 4 = Eastern England, 5 = South-western England, 6 = South-eastern England).

The influence of region and habitat on nesting rates is hard to determine as the two factors are so closely correlated. The general pattern revealed by the WCP core site dataset is that nesting rates are highest in the natural grassland areas of south-western England, intermediate in the arable areas of northern and eastern Britain and lowest in pastoral/mixed farming areas in the south-eastern region (Figure 3). This pattern of nesting rates is as predicted if prey availability is the driving factor determining Barn Owl distribution. The extensive areas of rough grassland in south-western England provide ideal breeding habitat for small mammals and good hunting habitat for Barn Owls. Such habitat can also be found to a limited extent in the margins of

arable fields but it is almost totally absent from areas of stock farming, the closely-cropped sward providing little food or cover for rodents.

It should be noted that, while the protocol for data collection and the habitat categories recorded differ somewhat, the results from BOMP network sites suggest that there is little difference in nesting rates of arable and pastoral areas, although a significantly smaller proportion of sites in woodland areas were occupied. These data were, however, all collected in 2002, a year in which the difference between nesting rates at WCP sites in arable and pastoral habitats was also reduced (Figure 3).

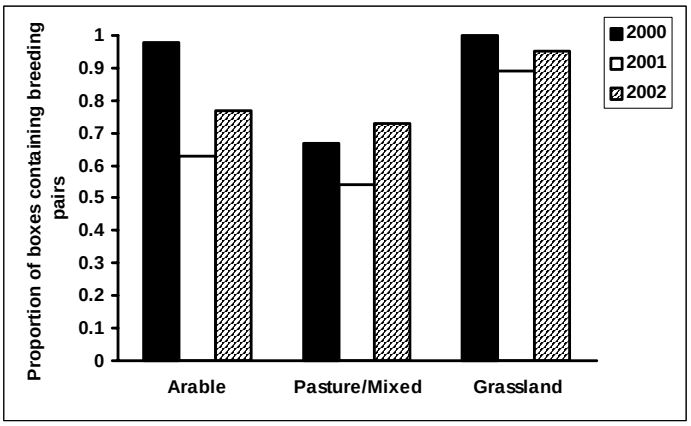


Figure 3 Nesting rates in grassland areas were higher than those in areas of arable or pastoral/mixed farming in all three years of the survey.

Little variation in productivity of breeding attempts

Variation in clutch size and brood size at ringing were both investigated in relation to year, region and habitat, as were a series of measures of nesting success including hatching success (proportion of eggs hatched), fledging success (proportion of hatched chicks fledged) and overall success (proportion of eggs that produced fledged offspring).

There was little evidence to suggest that any of the breeding parameters measured varied significantly between years at WCP or at BOMP network sites suggesting that Barn Owls in poor condition at the start of the season due to food shortages may have suspended breeding altogether rather than attempting to raise at least some offspring. These results may also imply that any decline in the size of the small mammal population during the winter of 2000/01 had been reversed by the start of the 2001 breeding season.

Region was found to influence overall breeding success at both WCP core sites and BOMP network sites, with Barn Owl pairs in the south of England tending to raise a greater proportion of the clutch to fledging. These results could reflect more favourable climatic conditions for breeding in this region, although Barn Owls can and do breed in a vast range of habitats and climates around the world. There was also some evidence to suggest that Barn Owls breeding in areas of natural grassland were liable to be more successful, possibly because this habitat supports a higher density of small mammal prey.

Larders at BOMP sites

While the female Barn Owl is incubating or brooding young chicks (up to 12 days after hatching), the male does all of the hunting. The prey that he delivers accumulates at the nest site during the night and is eaten by the female and the nestlings the following day. If a large amount of food has been collected there may be a surplus, which some researchers have suggested could be stored deliberately as an insurance against poor feeding conditions in the future (Taylor 1994); see page 12. Prey 'larders' were found at 99 (20.1%) breeding attempts at WCP sites over the period 2000-2002 and at 54 (18.6%) volunteer sites during 2002.

Analysis of data from WCP sites indicated that larders were no less prevalent nor were they smaller in 2001 relative to the other two study years. This adds further weight to the suggestion that, if small mammal numbers had declined during the winter of 2000/01, they had recovered by the time adults were provisioning their young. However, the same result might be expected if only those individuals of high quality were able to ovecome the food shortages to breed in 2001. As these individuals might be expected to collect a larger number of prey items. Although the sample size was small, the abundance of Field Voles, the most nutritionally important species in the Barn Owl diet in mainland Britain (Glue 1974), in larders was significantly lower in 2001.

Other species breeding at BOMP sites

Barn Owls are not the only species that use nest sites registered for BOMP. Seven other bird species were found breeding at WCP and BOMP network sites, of which Stock Dove, Jackdaw and the amber-listed Kestrel were observed most frequently.

Kestrel breeding attempts were recorded at 48 (14.1%) WCP sites over the period 2001-02. Nesting rates varied significantly between years, with Kestrels occupying a greater proportion of sites in 2002, suggesting that the provision of artificial nesting sites for Barn Owls also has the potential to help this declining raptor species. Jackdaws, recorded breeding at 60 (17.6%) WCP sites over the period 2001-02, were also significantly more abundant in 2002. An even greater proportion of WCP sites were occupied by breeding Stock Doves however, with this species recorded at 70 (20.6%) sites over the same period, although numbers of this species did not vary significantly between years.

Dave Leech

Rod Powley

BOMP may be going global!

You may be interested to hear that David H Johnson, International Director of the Global Owl Project *contacted us in the autumn of 2003. He requested a set of the BOMP forms with a view to adapting them for other* Tyto *work elsewhere in the world (in countries as far apart as Cuba and Pakistan). If we hear any more about this, we'll let you know!!*

Observations during the 2003 season

Overall, 2003 seems to have been the worst breeding season that Colin Shawyer has known during 20 years of Barn Owl monitoring. The following is based on his diary notes recording his experiences at BOMP and other sites he monitored during the 2003 season.

May 2003

From the initial monitoring I have undertaken this month, it looks it is going to be a poor breeding season. I suppose this was to be expected, since 2002 was one of the best years I have ever known. In one of my study areas where c.90% of potential nest sites are known, over 60% of the pairs double brooded. Many pairs also experienced higher than average breeding success in 2002, with one in particular producing 14 young to fledging in two adjacent 'A' frame nest boxes, five in the first brood and nine in the second.

This year (2003) however, the absence of eggs at most nest sites indicates that nesting rates may be down this year, but perhaps not too severely as adults or fresh pellets are being found in most boxes. Normally we would expect full clutches by mid May, but I have found only 10 sites with viable clutches out of the 185 sites checked so far.

What is particularly noticeable is the very low body weight in females (and some males) at those sites where breeding has not started. For the first time that I can remember, female weights are as low as 300g, and in some cases they weigh less than their male partners. Males usually average 320g at this time of the year, but some now weigh as little as 265g. Although I did not begin weighing adults at the nest until 1997, it is very unusual for females to weigh less than 350g prior to egg laying. From my experience, I consider that females are rarely capable of laying eggs and producing young until they attain a body weight of about 365g or more. I do need to carry out more work to refine this figure however. It will be interesting to see on the next visit in a few weeks time if these females have been able to attain the extra weight they will need in order to breed, but somehow I do not think they will have enough time to do this. Perhaps these low weights will also inhibit their wing/tail moult?

It appears that there is very little small mammal prey around so far this year. Although we were expecting a lower vole year than last, I suspect that the early spring drought we experienced (which prevented farmers putting their cattle out to grass until later in the year) has also prevented the already depleted vole population from breeding. This seems to be borne out by several small mammal researchers in eastern England who have mentioned how concerned they are about failing to live-trap any rodents.

June 2003

The first visits to Barn Owl sites have now been completed. Sites that have rarely failed in recent years are now either empty or still contain very low weight females without brood patches. It seems they have been unable to attain weight. In some cases, the lighter adults found during the May visits have now vacated their nest sites to roost elsewhere.

Strangely, notable exceptions seem to be occurring in small parts of one East Midlands county. Two adjacent schemes here, each covering about 20 miles, are showing entirely different success rates: 14 of the 15 regularly used sites in one area are absent of any eggs or young, but in the other, eight of the 15 sites had good early broods! Perhaps this could be explained by the difference in habitat type? The former is mixed farmland and the latter in an area of extensive gravel workings where rough grassland is much more abundant. However this might be too simplistic an explanation.

Colin Shawyer

Occupancy rates in East and mid-Yorkshire are generally low, but not quite as bad as the other eastern counties south to Cambridgeshire. In contrast, the very few breeding pairs in Hertfordshire are all doing well, producing reasonable brood sizes. Barn Owls in Wiltshire, along with some counties in north-west England, such as Cheshire, appear (from conversations I have had and personal notes) to be experiencing an average to good year. The successful recovery of Barn Owls is also continuing in East Sussex, following the floods which occurred there two years ago: one pair produced a brood of seven. In Kent, few pairs are occupying previously used nest sites.

As we might expect, the very low successes in the eastern half of England appear to be related to very low prey numbers, as hardly any small mammals items are being found at nest sites, in direct contrast to the findings in 2002. Although Starling and Skylark feathers are not uncommon in boxes this year, these prey species are mainly being found at non-breeding sites (except at nest sites close to sewage treatment works).

July / August 2003

Now that my late visits to nest sites have started, I think some answers are being revealed. Although not part of the BOMP programme, our visits to many newly installed Barn Owl nest boxes are revealing high occupancy levels and average clutch sizes, albeit with very late laying dates. Yet these are in the areas where the BOMP sites (generally containing mature adults between three and nine years of age) have completely failed. We do know that when nest boxes are used for the first time, at least one (and often both) of the breeding pair is a first year bird. Ageing of the females present in these new boxes from their wing patterns revealed that they are indeed in their first year. The females not only have good body weights (above 365g) but they are also in the process of wing moult, which I would normally expect at sites during May.

My belief is that these late laying birds are those produced from the numerous second broods that occurred in Eastern England in 2002. Given that most of these birds would not have fledged until October or November they may have needed to wait until now to reach sexual maturity. These late breeding attempts seem to be coupled with a noticeable increase in the prey items I have found at sites during August. Wood Mice are particularly common at the moment (during harvest). Although Field Voles are also present, they are poor specimens of low weight, on average 10g lighter than in 2002.

September to November 2003

We are still ringing Barn Owls into November following the late laying in first-year females. In spite of the very poor nesting season we are still able to ring good numbers, although our ringing totals are made up of a greater proportion of adults than usual. The totals have also been boosted because we have inspected many newly installed nest boxes that contained adults and young during the latter months of the year.

Colin Shawyer

At one site, the two young had a complete contrast in plumage, with an entirely unspotted male and a heavily spotted female with a darkly feathered upper half to the facial disk. The latter was not sufficiently dark to be a pure form of *Tyto alba guttata* but resembled the intermediate form I have seen occasionally when ringing in eastern France (the result from the mating of *T.a. alba* and *T. a guttata*).

Colin Shawyer

Many thanks to Colin for his report. We eagerly await receipt of the remainder of the BOMP network data for 2003. Once this is input and analysed we will be able to reveal what happened to the UK Barn Owl population during the last breeding season.

Northumberland Barn Owls 2003

In Northumberland this year we managed to increase the number of breeding pairs of Barn Owls in our conservation scheme from four to eight. This may not seem to be any great progress but the latest figure for Northumberland as a whole gives the known number of breeding pairs as fifteen [*British Birds* ***95****: 571 (November 2002)*. The actual number of breeding pairs is likely to be much higher, and the quoted figure might only be an indication of the lack of interest in Barn Owl conservation within the North East!

Eighteen young fledged successfully from our sites in 2003. The previous year the same total were fledged from only four sites, but two of the pairs double-brooded successfully.

None of our Barn Owl pairs have double-brooded this year, despite the comparatively dry weather we had in 2003. However, the year has been notable for us in that three of our breeding pairs were within an area of Countryside Stewardship land only ¼ mile square. This is a striking demonstration of the effectiveness of this scheme.

Another facet of the year's monitoring has been replacement clutches and late nesting. One of our pairs of Barn Owls nested comparatively late in the season. Eggs were laid in late June but the brood of three young were not discovered by us until early August.

Two of our breeding pairs laid replacement clutches, the female of one pair incubating a clutch of two infertile eggs the whole term before laying another clutch of two (in the same nestbox) from which both young were successfully reared.

Another pair laid a first clutch of six eggs from which four young hatched. Unfortunately all four young were subsequently found dead within the nestbox - the oldest being around three weeks old at the time of death. No predation had occurred and starvation seemed to be the cause of death. The exact circumstances of the failure of this nest are a mystery to us, and a result we are keen to start a discussion on the subject on the BOCN Forum under the discussion topic "Desertion Of Young Caused By Thunderclaps?" (see www.bocn.co.uk/forum to take part).

This Barn Owl pair then laid a replacement clutch of seven eggs in a nestbox some 400m away from their first site. A brood of four young was hatched and successfully raised to near fledging stage. Unfortunately within the space of one week at the end of September, three of the 8-9 week old owlets were found dead, probably due to a drastic reduction in vole numbers as the weather changed for the worse. We assume that the other owlet fledged successfully.

Nick Atkinson & Alan Levitt

Bishop Burton Symposium report

A Barn Owl Conservation Symposium was held on 1 November 2003, using the excellent facilities at Bishop Burton College, Beverley, East Yorkshire. This conference enabled many Barn Owl workers in the northeast of England to meet and discuss their work. Jim James, a member of the East Yorks Barn Owl Survey and Conservation Group who had organised the event together with David Braithwaite of Bishop Burton College, introduced the Symposium. Dave Leech and myself started the sessions with an account of the history of Barn Owl surveys and the latest BOMP results. Colin Shawyer then followed with slides illustrating his work, including details of the techniques he has developed for ageing and sexing Barn Owls. Having read several of Colin's publications, it was good to see more about this, including how he is able to age absent birds!

After lunch, Jean Thorpe spoke about her experiences in rehabilitating injured owls and other birds, providing some graphic images of how not to do it. As she mentioned, the standard of care at wildlife hospitals can vary quite considerably, largely due to the fact that they are not regulated. Jean recommended the Raptor Rescue National Help & Advice line (0870-241-0609) www.raptorrescue.org.uk who are seeking to improve standards and can provide local contacts for recommended wildlife hospitals.

Jason Ball then spoke about the development of the BOCN and also mentioned some of the work being carried out for Barn Owls at the Sheepdrove Organic Farm. Trevor Ball, a farmer, talked about making the most of Countryside Stewardship grants and other conservation incentives, particularly those that help to improve the quality of grass swards for small mammals and hence provide more food for Barn Owls. Nick Askew also spoke on his Barn Owl work in the Lower Derwent NNR, investigating the influence of habitat characteristics on occupancy rates and productivity (see Nick's article about this on page 8).

The day finished with an open forum, and for me, this was one of the highlights of the Symposium. A fair bit of discussion was generated, with a variety of different groups (small mammal specialists, owl pellet analysers and farmers, as well as Barn Owl recorders) making some very valuable contributions. This showed the importance of an integrated approach to Barn Owl conservation, gaining from the experience and expertise of those in related fields. This was a really well organised Barn Owl Symposium and the organisers should be congratulated for holding such a superb event.

Peter Beaven

Contamination of Barn Owls with Rodenticides

Heath M Malcolm, Richard F Shore, Tony Turk, Claire L Wienburg, Lee A Walker, Centre for Ecology and Hydrology, Monks Wood, Abbots Ripton, Huntingdon, Cambridgeshire PE28 2LS, and Alistair Burn, English Nature, Northminster House, Northminster Road, Peterborough, Cambridgeshire PE1 1UA

Abstract

As part of an ongoing UK-wide monitoring scheme, 100 Barn Owl (*Tyto alba*) carcases found in Scotland since 1983 have been analysed for second-generation anticoagulant rodenticides. These compounds have greater toxicity and persistence than the warfarin-like compounds they replaced. This enhances their potential for secondary poisoning of non-target organisms. Second-generation rodenticides were first detected in Scottish Barn Owls in 1990, and the proportion of birds containing at least one compound has varied between 15% and 45% in subsequent years. In total, 21% of birds have contained detectable amounts of rodenticide, a slightly (but not significantly) lower proportion than in England (30.1%) or Wales (24.5%).

Introduction

CEH Monks Wood, in collaboration with the Joint Nature Conservation Committee and the Environment Agency, has been running a Predatory Bird Monitoring Scheme (PBMS) since the mid-1960s. Raptor carcases sent in by members of the public are analysed for pesticides and industrial chemicals. As part of this scheme, Barn Owls have been analysed for the 'second generation' rodenticides which were introduced into Britain from the mid-1970s onwards to combat the resistance of rats to first generation compounds such as warfarin. Second generation rodenticides include:

Brodifacoum, (Havoc®, Klerat®, Talon®)
Difenacoum, (Neosorexa®, Ratak®, Ridak®)
Bromadialone (Maki®, Super Caid®, Lanirat®, Ratoban®)
Flocoumafen (Storm®)

Compared to warfarin-type compounds, second generation compounds are more toxic and residues are more persistent in the body. This enhances the potential for secondary exposure of non-target predators which are exposed either when they capture poisoned rodents that have not yet succumbed, or when they scavenge rodent carcases.

Results & Discussion

A total of 1,009 Barn Owl carcases received between 1982 and 2001 have been analysed for second generation rodenticides. These include 100 birds from Scotland, 753 from England and 94 from Wales; with no location details available for the others. The dataset comprised 25% adults, 67% juveniles, 50% males, 45% females; the age and sex could not be determined for all carcases. These owls had died from various causes, with road traffic accidents and starvation the main causes (Table 1). Twelve owls (1.2%) were diagnosed as having died as a result of secondary poisoning by second generation rodenticides. Typically, these birds had high rodenticide concentrations in the liver and characteristic signs of haemorrhaging, especially around the heart and lung.

Table 1 The Cause of Death of Barn Owls

Cause of Death	Scotland %	England %	Wales %
Accident	0	0	1
Disease	0	2	0
Drowned	0	1	0
Electrocution	0	0	0
Shot	0	1	0
Injury	0	1	0
Poisoned	1	1	1
Predated	1	3	0
Collision (including traffic accidents)	66	51	54
Starvation	26	34	39
Trapped	1	0	1
Unknown	5	6	4

Second generation rodenticides were first detected in Scottish Barn Owls in 1990 and the proportion of birds contaminated with at least one rodenticide has varied between 13% and 33% in subsequent years, with an overall average of 21% (Figure 1). A similar pattern was found in owls from Wales, while those from England showed a more consistent temporal increase. This increase reflects the rise in use of second generation rodenticides that has occurred throughout the UK, particularly during the 1980s.

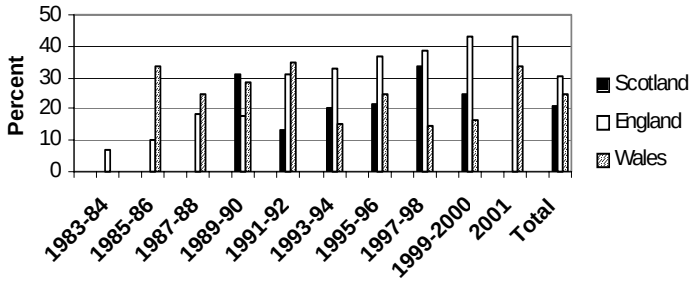


Figure 1 Proportion of Barn Owls which contained at least one rodenticide residue

Liver residues greater than 0.1 to 0.2 mg/kg wet weight are considered to be in the potentially lethal range for Barn Owls, although not all owls with such residues were killed by rodenticides. The proportion of owls from Scotland with liver residues in this potentially lethal range was 6%, compared with 9.5% for England and 4% for Wales. Current research efforts are focussed on continuing the monitoring of exposure, determining how and why this varies temporally and spatially, and evaluating the potential consequences for Barn Owl populations.

How you can help

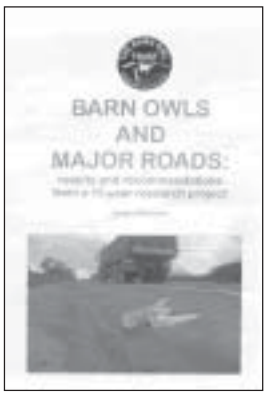
If you find a dead Barn Owl, or any other bird of prey, please send it to CEH Monks Wood for analysis.
For further details please contact Heath Malcolm (Tel: 01487 772498; Email: hmm@ceh.ac.uk)
or visit our website at http://www.ceh.ac.uk/aboutceh/sections/mt_pbms.htm
The success of our work depends upon the contribution of volunteers sending in carcasses

News Items

Barn Owls and Major Roads: results and recommendations from a 15-year research project

David J Ramsden (Barn Owl Trust, November 2003)
(*The following is taken from a letter received from the BOT*):

"…The research was written up over a seven year period using data gathered annually between 1985 and 2000. The total amount of effort that has gone into the data gathering and writing-up represents an amazing achievement by the BOT and could not have been done without the help of numerous volunteers (as well as BOT staff).



In producing the report we hope to influence local and national government policy, especially in the design and management of major road verges. We may at least succeed in steering the Highways Agency away from changes to verges that would almost certainly increase Barn Owl road mortality (such as increasing their suitability for Kestrels).

This is not only the biggest research project ever carried out by the Trust, it is also (as far as we know) the first report on Barn Owls and roads to be published anywhere in the world. Given the international nature of Barn Owls, road mortality, and biodiversity conservation, it is likely that our research will bear fruit far and wide.

Environmental organisations play an important role as development watchdogs. Next time your area is threatened by a new trunk road, this new report will provide you with additional 'ammunition' as well as the appropriate recommendations to campaign for…"

The research was carried out (and funded) entirely by the Barn Owl Trust. Given the size and resources of the Trust, this is a momentous achievement and all those involved should be congratulated.

A copy of this 109-page report has been deposited in the BTO Library (and is available for members to borrow). The report can purchased from the Barn Owl Trust (£10 + £2 p&p), and it can also be obtained from the BOT website www.barnowltrust.org.uk (it takes between 10 and 20 minutes to download).

Rat Poison and the Threat of Bird of Prey

This RSPB/English Nature leaflet appeared last year and is aimed at farmers and other people that use rodenticides. It provides valuable information on using rat poisons safely and minimising the risks to birds of prey (including Barn Owls). From talking to BOMP observers, we know that many of you get asked by landowners about this subject, so we thought that we would mention this leaflet.

English Nature have very kindly let us have a small supply (a copy is enclosed with this 'Barn Owl *Bulletin*'). Further copies can be requested through the EN website, www.english-nature.org.uk

Are Agri-Environmental Schemes Set to Help Barn Owls?

Work at the University of York, in association with CSL and English Nature, is studying the impact of the many new agri-environmental schemes that are rapidly changing some parts of our countryside.

Throughout history Barn Owls have been a popular and emotive species, and as a consequence their lifestyle and habits have been well studied. Today, we have an in-depth understanding about their diet, hunting techniques, breeding ecology and their adaptive nature which allows them to exploit more environments around the world than many other bird species.

However, the agricultural landscape is one which has been dominated by change, often relatively rapid, and this is the case once again. The effects of recent government agri-environment schemes are clear to see in many areas, with Set-aside, Countryside Stewardship, Farm Woodland Premium and the new Entry Level scheme all providing vast hectares of potentially vole-rich, Barn Owl friendly habitat throughout the country. After years of depletion, disappearing under the plough and through intensification, rough grassland may be on the way back and Barn Owls are one species that could benefit enormously.

However, despite their potential and as a consequence of their relatively recent arrival, we know very little about these schemes and their impact upon wildlife. Which one, if any, provides the best conditions for voles to thrive? How much area should we put down to these schemes to become suitably ample for Barn Owls to breed sustainably? Where in the landscape should we place them to have the greatest impact?

In answering these simple questions, work at the University of York, in partnership with CSL and English Nature, is focusing upon a large and expanding population in the southern vale of York. Based around the Lower Derwent Valley NNR, a complex of unimproved hay meadows and pastures adjacent to the River Derwent and surrounded by a mixed farming landscape, the local Barn Owl population has benefited from habitat initiatives and local box schemes to number 92 pairs in 2003. Work has involved building close links with the local farming community and the production of an agri-environment pack explaining the wide variety of schemes available to land managers.

Presently, research involves using radio-tracking techniques during the breeding season to follow the birds around their landscape as they hunt to feed their chicks and in doing so, collecting data upon prey densities, vegetation structure, grassland management, and foraging dynamics. From this information, the aim is to put numbers to some of the detail we already know. When does grass become rough? How much rough grass over what sort of area do Barn Owls require to breed successfully?

At present there are more questions than firm answers, but with two more years left of the project, it is still a work in progress. In the future we hope to be able to use the results to influence policy decisions. By allowing the money to be used in the right way, and using the Barn Owl as the agri-environment scheme flagship species, we hope many of our threatened farmland birds will also have a brighter future.

For further information please contact Nick Askew at the University of York at npa105@york.ac.uk. The Lower Derwent Valley agri-environment pack (which has been used as a template for other areas) discusses Barn Owl habitat management, nest box construction and erection and is available free of charge by contacting craig.ralston@english-nature.gov.uk

Nick Askew

Not every Barn Owl is a White Owl!

As you know British Barn Owls are of the 'nominate race' Tyto alba alba. *If you want to see a dark-breasted Barn Owl* Tyto a. guttata, *you normally have to go to eastern Europe. Very occasionally these birds turn up in Britain, but its unusual to see them in nests in south-west England! Sandra Reardon of the Barn Owl Trust reports:*

"…Each summer Barn Owl Trust staff visit a selection of nest sites as part of its annual monitoring programme. Over the years we've seen around 1,500 nestlings, each one with a lovely white chest.

Barn Owl Trust

The birds pictured (above) were discovered in a north Devon nest in 2002. We wondered whether one of the parents might have been a 'foreigner'? Amazingly, its nestling brother looked perfectly British!

This summer (2003) we discovered a brood of two five-week-old owlets at another site in north Devon (14 miles from the first), which we believe to be unique. Both had completely brown chests! All the under-wing coverts, the flanks, legs and chest were brown-coloured and most of the facial disk was dark brown.

Amazingly both of the adults were white! Having got over the initial excitement we realised that here was a rare opportunity for one of our volunteers, a keen photographer, to capture a unique picture: a normal white adult feeding a dark-breasted owlet…"

Kevin Keatley

Another guttata*-type chick was found by Colin Shawyer this year. See his report on page 6. If any other BOMP participants find any of these please let us know.*

International Barn Owl Movements

Most long-distance movements of Barn Owls relate to first-year birds. Juvenile dispersal explains the movements of the birds listed in the last three BTO ringing reports.

The sixth ringed Barn Owl from the Netherlands was found freshly dead in Cornwall in March 1998 (a distance of 825 km WSW). In February 2000, a Sussex-ringed nestling (from July 1999) was found in Kassell, Germany (647 km E). However some doubt was expressed about the movement of this bird as it could have been unintentionally transported (it was reported as "entangled outside a lorry").

The second from Belgium (ringed as a nestling in August 2000 in West-Vlaanderen) was found dead at the end of October 2000 in Wiltshire (341km W)

A German-ringed bird (a 2000 chick from Luneburg) was found freshly dead or dying in late April 2001 at Dunbeith, Highland (731km NE).

Mike Toms who wrote the Barn Owl section for the '*Migration Atlas*' says "*In mainland Europe, young Barn Owls (including those of the race* guttata*) tend to show a greater degree of dispersal than is seen in the UK. In some years, termed '*Wanderjahren*', pronounced dispersal may take place in late summer, something that is probably the result of a particularly good breeding season being followed by a crash in the vole population. This may lead to an increased number of young* guttata *birds arriving in the UK.*"

STOP PRESS

Extract from an email from Darrin Madgin (West Sussex):
"…We have not had any second broods for Barn Owls [in 2003], even though we looked at very hopeful sites. Interestingly after speaking with the Mammal Society and RSPB in our area it would appear that trappings in the latter part of the summer/early Autumn have been very poor for small mammals, even in areas that earlier in the year were very good. Comment has been made that this may well be down to the 'drought' period in our area…"
At the other end of the UK, Geoff Sheppard of Dumfries & Galloway wrote:
"A fairly good year [2003] apart from a few desertions early on, probably due to the wet weather, although not as bad as last year. Overall in my study area I ringed about 200 chicks from 82 occupied sites [25 of these are being monitored for BOMP].
The big surprise was the number of unringed adults, 19 from the 87 I caught. In an area where most chicks have been ringed for the past 20 years, you wonder where they are all coming from. If it's from sites I don't know about, it means the population here must be double what I think it is!"

To date, we haven't had any reports of birds moving between BOMP sites and observers. Judging by the recent increase in Barn Owls ringed* (due in no small part to BOMP), we feel sure that this could reveal some good movements. It might also help to explain the origins of birds in study areas like Geoff's. We would welcome articles about this (or any Barn Owl related subjects) for the next issue of 'Barn Owl *Bulletin*'!

**** Barn Owl ringing totals for UK & Ireland:***
2000 - 258 adults, 3,141 pulli (total 3,399)
2001 - 211 adults, 1,896 pulli (total 2,107)
2002 - 302 adults, 4,336 pulli (total 4,638)

The Pellet Pages

"The Analysis of Owl Pellets" by D W Yalden (The Mammal Society, October 2003).

The Mammal Society published a new edition of Derek Yalden's guide in the autumn. Here it is reviewed by Mike Toms (Former Project Officer for Project Barn Owl *and now the Organiser for the* BTO-CJ Garden BirdWatch)

First published in 1975, the Mammal Society's guide to the identification of remains in owl pellets has become the standard reference work for those studying the diet of owls. Originally just eight pages in length, the guide has grown in size, matching our increased understanding of the value of owl pellet analysis, and it now stands at 28 pages. The newly published third edition contains little additional information to that presented in the second edition of 1990. However, in one important respect the third edition is far superior and that is in the quality of the illustrations used within the keys. Those used in the second edition were low resolution, highly pixelated scans of the original line art showing skulls, jaws and dentition. In the new edition, these same images are crisp and clear, and also benefit from a more user-friendly layout.

The keys themselves are easy to use, although they diverge from the dichotomous approach that is now the standard for identification guides of this type. The part of the key which deals with bird remains has been expanded somewhat. It would have been excellent if the guide could have included the unpublished, but very useful, bird identification matrix (covering 17 spp.) produced by Paul Johnson. The author should seriously consider including this in the next edition. The guide does include the work of Morris and Burgis, allowing the likely size of bird prey to be estimated from a simple measure of humerus length. There are also short sections on determining the age and sex of small mammal prey species through their dentition and structure of the pelvic bones. These sections rather gloss over what is quite a challenging part of pellet analysis, making the determination of age and sex appear more straightforward than it actually is. Those wishing to study the subject in more detail should refer to the work of Brown & Twigg (1969, 1970) and Saint Girons (1973).

Part of the guide is given over to ideas for projects using owl pellets, highlighting the very clear value of their collection and examination. This particular part of the guide will be of value to student researchers and school groups wishing to undertake practical projects. Whilst I would recommend this guide to amateur naturalists, undergraduate researchers and professional ecologists alike, a couple of additions might improve its value still further. Those wishing to undertake more detailed pellet analysis would benefit from inclusion of a greater number of references covering the wider literature on the subject. Information concerning changes in pellet appearance over time (and thus how the age of pellets can be determined), work on which has been published by the Barn Owl Trust, might also be useful to researchers in the field. However, these are only minor grumbles about what is in reality an excellent publication and one that anybody interested in pellet analysis should own.

The Analysis of Owl Pellets by D W Yalden (ISBN 0 906282 454) costs £3.50 (incl. p&p) and is available from the Mammal Society, 2B Inworth Street, London SW11 3EP. Telephone 020-7350-2200 or email sales@mammal.org.uk

References:
Brown, J.C. & Twigg G.I. (1969). "Studies on the pelvis in British *Muridae* and *Cricetidae* (*Rodentia*)." *Journal of Zoology, London* **158**: 81-132.
Brown, J.C. & Twigg G.I. (1970). "Sexual dimorphism in the pelvis of the common shrew." *Mammal Review* **1**: 78-79.
Saint Girons, M.-C. (1973). "L'age des micromammiferes dans le regime de deux rapaces nocturnes, *Tyto alba* and *Asio otus*." *Mammalia* **37**: 439-456.

Other owl pellet leaflets available

I remember (and still sometimes use) this four page article by David Glue (which has a simple key) from a YOC 'Bird Life' magazine in 1973. It was then subsequently issued as a separate leaflet and has proved to be extremely useful to photocopy when introducing newcomers to pellet analysis (particularly children). Recently the RSPB have produced some new (downloadable .pdf) information sheets on owl pellets as part of their teaching resources: http://www.rspb.org.uk/teaching/owlpellets/index.asp

Mike Toms has developed his own four-sided key (A4 size, laminated). He has very kindly agreed to let us reproduce this for BOMP observers. If you would like a copy please contact the BOMP Coordinator (please send three first-class stamps to cover costs).

Last, but by no means least, the Barn Owl Trust have also produced a leaflet on "Pellet Analysis" (leaflet No. 20) which can be downloaded (along with their other excellent publications) from their website www.barnowltrust.org.uk

Devon Barn Owl survey 2003

The Barn Owl Trust and the Devon Birdwatching and Preservation Society conducted a census of Barn Owls in Devon during 2003. Over 1,000 known Barn Owls sites (used for nesting or roosting since the last survey was carried out in 1993) were rechecked, a massive undertaking.

Prior to the latest survey, the number of breeding Barn Owls in Devon was thought to be no more than 250-350 pairs. We look forward to seeing how the latest results will reveal the impact of the extensive (and very impressive) targeted Barn Owl conservation work that has been carried out in Devon over the past 10 years.

The Mammal Society National Owl Pellet Survey

The National Owl Pellet Survey started in 1993. It aims to establish changes in owl diet over time and variations in prey species consumed based on locality and habitat. The information can also be used to study the distribution of the small mammal prey species, comparing seasonal and annual variations in availability.

To date, batches of pellets have been received from 237 locations throughout the UK. Over 31,500 pellets have been analysed, from which over 111,600 prey items have been recovered. These include 20 species of small mammal, together with bird, reptile and amphibian prey items.

The survey would welcome more pellets from the under-represented regions of the south-west and the north of England, Wales and Scotland.

Ideally pellets should be collected monthly and the site cleared of all pellets to ensure the period covered by a pellet batch is known. This method enables the seasonal variation in the availability of the prey species to be investigated, together with the impact of this on the owl diet. If monthly collections are not possible, then other collection periods would be very welcome, but the larger the sample size the better.

Pellet batches should be placed in a polythene bag inside a jiffy pack or suitable box for posting. A note placed outside the polythene bag should be sent with each pellet batch identifying the location including grid reference and collection date (the site details can be kept confidential if required). A report detailing the contents of each pellet batch, together with brief comments on the results will be sent to the contributor.

For further information about the survey, please contact the address below (batches of pellets can also be sent to this address):

Mr R. A. Love, 4 Laurel Way, Totteridge, London N20 8HP.
Email: ralove@freeuk.com

Testing the Methodology

BOMP has identified two ways that will help to determine whether second broods are about to be started…

Chewed pellets...

The first of these is the presence of shredded pellets in otherwise empty nest boxes. Although we were aware that nestlings chewed pellets, we now know that many females do so this prior to laying in order to create a 'cushion' for the eggs. Freshly shredded pellets look like mounds of 'fluffy cotton wool'.

We are not really sure how widespread this is and would like to investigate this further. Many recorders already place wood chippings etc in their boxes to help prevent the eggs from rolling around. *(Medium grade forest bark, shredded paper, coconut husks, wood chippings or wood shavings, but not sawdust).*

Pellet shredding has been noticed just before both first and second clutches, so if you come across an empty site, but there are newly shredded pellets, it may indicate that the female is about to lay.

Would all BOMP observers please indicate any shredded pellets on their 2004 fieldwork forms (and, if possible, recheck again for late clutches if they are found after a successful first brood).

...and Moulted Feathers

The second method that has been investigated is the presence of moulted feathers in the box. Females normally begin their wing/tail moult whilst egg laying and incubating in April/May. They tend to lose one or two primaries and three or four secondaries in their first year.

If there are no shed feathers in your boxes in the spring, it may be worth looking for second broods here (or at a neighbouring nest site) later on in the season. Please note that nestlings often shred these shed feathers or may trample them into the nest 'lining'.

Males moult much later in the year, usually August-October but these feathers tend to be lost away from the nest at favoured roost sites.

Colin Shawyer

Rehab Barn Owl makes a difference

As well as running an intensive Barn Owl project in the southern Vale of York, the local ringing group also carries out ringing activities on the Lower Derwent Valley NNR, generally concentrating on wildfowl and waders which contribute to its Ramsar and SPA status. We also work closely with a local rehabilitation centre, ringing rehabilitated birds upon release as part of a special BTO registered project.

During August 2000, a first winter male Barn Owl which had been shot was picked up and taken into care. Assessment at the vets showed the air rifle pellet had broken the wing bone in two. The outlook wasn't good, but all involved agreed to have a go and hope for the best. Remarkably the wound and bone healed well and on 8 October 2000 the bird was ringed and released at the location where it had been found. It flew strongly and low across a field prior to dusk before settling in a large oak. And that is where the story may well have ended.

However, following the 2003 season when sorting out the records for IPMR and BOMP, it came to light that this individual had been re-trapped as a breeding male in a box 2 km from its release site. In fact, the bird in question had played an important part of an intensive survey looking at habitat use by the Barn Owl with regard to agri-environment schemes (see Nick Askew's article, page 8), and had been monitored by both nest photography and radio-tracking during the breeding season. He successfully fledged five young during 2003, and also bred in 2001 and 2002, raising a total of 13 chicks since his release. Not only that, he has now been involved in a project that will hopefully benefit further generations of Barn Owls.

Several key issues come out of this short story. Firstly, rehabilitation (by those experts in the field) can and does work, and in this case, can make a real impact on the local population. Ringing of such birds is clearly important and useful in order to allow the success of such releases to be monitored, while local ringers working together with Rehab centres allows the useful exchange of expertise and knowledge in both directions.

Craig Ralston (English Nature) and Nick Askew (University of York)

Recent developments

The Barn Owl Monitoring Programme was the subject of a talk at the Hertfordshire Bird Club half-day conference in Hoddesdon, one snowy Saturday in February 2003. Peter Beaven's presentation seemed to fit in well with the other talks at this very popular conference [*The other talks were on Red Kite in England (Ian Carter, English Nature), Population Trends in Raptors in Herts & the UK (Rob Clements) and the work of the RSPB Investigations Unit (Duncan McNiven)*].

For the write-up of the Barn Owl Conservation Symposium at Bishop Burton College in November 2003, see page 6.

Peter attended the North of England Raptor Conference at Newton Rigg College, Penrith in late November 2003. He was able to meet a number of BOMP participants and also find some new recorders for the BTO *Nest Record Scheme.*

Future developments

Peter has also been booked to speak about the Programme at the Scottish Raptor Study Group conference in early March 2004.

There will be a presentation about BOMP at the BOCN Symposium at Sheepdrove Farm in late March 2004 (for further details see front page). All BOMP participants would be very welcome to attend.

If you know of any bird clubs or other interested groups that would like to have a talk about BOMP, please contact Peter Beaven at the Nunnery.

Useful addresses

British Trust for Ornithology, The Nunnery, Thetford, Norfolk IP24 2PU
Tel. 01842-750050 *Fax.* 01842 750030 *Email* barnowls@bto.org
Website www.bto.org

Sheepdrove Organic Farm, Lambourn, Berkshire RG17 7UU
Website www.sheepdrove.com

Barn Owl Conservation Network, Sheepdrove Organic Farm, Lambourn, Berkshire RG17 7UU *Tel.* 01488 674727
Email enquiries@bocn.org *Website* www.bocn.org

Hawk & Owl Trust, c/o Zoological Society of London, Regent's Park, London NW1 4RY
Email hawkandowltrust@aol.com *Website* www.hawkandowl.org

Hawk & Owl Trust (Publications), PO Box 530, Windlesham GU20 6XZ
Details of their publications are available on request.
Email hawkowlpub@tiscali.co.uk
Website www.hawkandowl.org

Barn Owl Trust, Waterleat, Ashburton, Devon TQ13 7HU
Tel. 01364-653026 *Email* info@barnowltrust.org.uk
Website www.barnowltrust.org.uk

Useful bibliography

Brazil, M. & Shawyer, C. (1989) *The Barn Owl: The Farmer's Friend Needs a Helping Hand.* The Hawk Trust. **Available from the Hawk & Owl Trust.**

Dewar, S. & Shawyer, C. (2002) *Boxes, Baskets and Platform: Artificial Nest Sites for Owls and Other Birds of Prey.* Chelmsford. Arlequin Press. **Available from the Hawk & Owl Trust.**

du Feu, C. (2004) *The BTO Nestbox Guide.* Released during National Nest Box Week 2004, this all-new, full-colour book is suitable for beginners to the more experienced. Although concentrating on the commoner nestbox species it does include three Barn Owl pages (with an illustration of a simple box design). Price: £8.99 (incl. p&p). Please makes cheques payable to 'BTO Services', and send to 'BTO (Nest Box Guide)', The Nunnery, Thetford, Norfolk IP24 2PU.

Mead, C. (1990) *Owls.* London. Whittet Books.

Ramsden, D.J. (2003) *Barn Owls and Major Roads.* Barn Owl Trust, Waterleat. Price: £12 (incl. p&p) from the Barn Owl Trust (for further details see page 8).

Shawyer, C. (1987) *The Barn Owl in the British Isles: Its Past, Present and Future.* London. Hawk Trust. ***Out of print.***

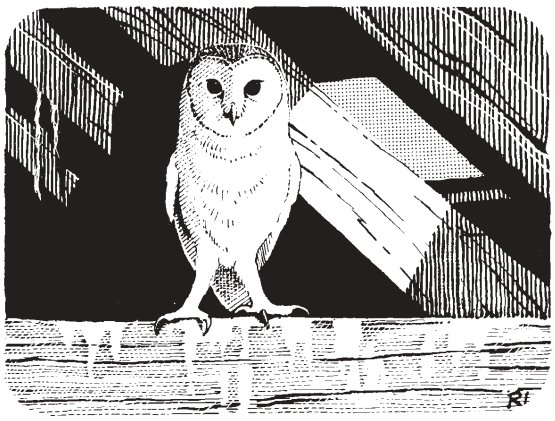
Shawyer, C. (1998) *The Barn Owl.* Chelmsford. Arlequin Press.

Taylor, I. (1994) *Barn Owls: Predator-Prey Relationships and Conservation.* Cambridge. Cambridge University Press.

Yalden, D. (2003) *The Analysis of Owl Pellets.* Mammal Society, London. (*See our review on page 10*). Available from the Mammal Society, 2B Inworth Street, London SW11 3EP. Telephone 020-7350-2200 or email sales@mammal.org.uk Price: £3.50 (incl. p&p)

'The Barn Owl and its Habitat', 'Building for Barn Owls' and *'Planning for Barn Owls'* leaflets are still available from Hawk & Owl Trust (Publications)

The *'Barn Owls on Site – a Guide for Developers and Planners'* (English Nature/Barn Owl Trust) booklet still available free from www.english-nature.org.uk



Rodney Ingram

For further information about the Barn Owl Monitoring Programme, please contact barnowls@bto.org or telephone the Coordinator, Peter Beaven on 01842-750050

British Trust for Ornithology, The Nunnery, Thetford, Norfolk IP24 2PU

www.bto.org

Registered charity number 216652

The BTO Barn Owl Monitoring Programme is generously sponsored by the Sheepdrove Trust.