



# Barn Owl Report -2017

## Ulster Wildlife

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## 1. Introduction

It has been another busy year of barn owl work at Ulster Wildlife. While the three-year HLF funded Be There for the Barn Owls project came to an end in October 2016, many aspects of the project continued throughout 2017, largely thanks to our dedicated volunteers. The aim of the annual barn owl survey is to identify and visit sites that are most likely to host barn owls, in order to locate active nest sites which can then be monitored and protected. In the long-run, by conducting such a species-specific survey, we hope to be able to paint a better picture of barn owl ecology in Northern Ireland: where do they live, their population numbers and what might be special about their ecology here (e.g. diet, physiology) compared to barn owls elsewhere. By conducting survey work according to our methodology (BOT), we are able to maintain a database of up-to-date records of known roost and nest sites across Northern Ireland, allowing a detailed distribution map of barn owl sightings to be produced, targeted conservation action to be taken if threats to site condition are identified, and evidence to be gathered on the usefulness of previous conservation action (BOT, 2012).

It was also decided that for the 2017 survey long-eared owls (*Asio otus*) would be incorporated as a subject of investigation. Whilst we are not aware of any other survey work that has been conducted on the species in Northern Ireland, long-eared owls are considered to be common and widespread across the whole of the island (NIRSG, Birdwatch Ireland, Bird Atlas 2007-11). Long-eared owls and barn owls however often seem to occupy the same landscape and to a large degree they also rely on the same food sources, *i.e.* small rodents (Khalafalla and Iudica, 2010), so we hope that this additional survey species may provide an indication of why barn owls are struggling so much compared to long-eared owls.

### 1.1. State of UK Barn Owl population - 2017 (Barn Owl Trust)

*‘Generally a good year, except on some isles and peninsulas’*

The data received from 38 monitoring schemes shows that the number of nesting pairs in the UK in 2017 was 17% above the average of all previous years and the average number of young in the nest was 6.6% above. With a few exceptions, 2017 was a good for Barn Owls although not a ‘bumper year’ (like 2014). Across most of England and into mid Wales Barn Owls had a *generally good to very good* year. However, Barn Owls had a *relatively poor year* in West Galloway, West Cornwall, and the Isle of Wight. Those on Jersey experienced a *very poor year* (Peters *et al*, *Jersey Barn Owl Conservation*).

## 2. Survey Sites and Methodology

Between mid-May and mid-June 2017, a total of seven survey training workshops were organised across Northern Ireland (Downpatrick, Enniskillen, Craigavon, Cookstown, Randalstown, Coleraine and Bangor). There was a turnout of 81 attendees in total. At these workshops training was provided

on barn owl and long-eared owl ecology and survey techniques and interested attendees were encouraged to sign up as volunteers for the survey.

## **2.1. Methodology**

Barn owls are a notoriously challenging species to survey and in the Northern Irish context even more so (BOT, 2012). They are not only low in numbers, most recent estimate being below 50 pairs (Northern Ireland Species Action Plan, 2006) but their elusive, and generally strictly nocturnal behaviour in Ireland makes them especially difficult to find. Thanks to the huge effort by our barn owl volunteers and the sightings reported to us by the members of the public in the last four years, we are now able to survey specific sites, where barn owl activity is most likely to occur. During the first two years (2014 and 2015) of the survey, the field work concentrated on 2x2 km survey tetrads in areas where barn owls had been sighted and reported to Ulster Wildlife. From talking to locals and landowners and conducting field based surveys, historic and potential nest/roost sites and locations where barn owl boxes have been erected within each tetrad were identified, surveyed and recorded into the mapping database. In 2017, for a second year in a row, Ulster Wildlife have carried out a national presence absence survey based on these identified sites and they are included in our adaptation of the Barn Owl Trusts “Three Step Survey Method” involving:

1) Desktop Survey

This stage identifies the most likely sites barn owls will be found through the use of reports from communities and individuals, habitat maps, aerial photos and precipitation records.

2) Interviewing Local People

This is carried out throughout the year at local events such as country fairs, agricultural shows and through submissions from the general public by phone and on our website. We also ask volunteers to undertake discuss barn owls with local landowners and erect posters calling for sightings in their local areas.

3) Intensive Surveying

Volunteers are asked to survey for activity at the most likely sites across Northern Ireland, such as historic nest sites, nest boxes, active nest sites and potential sites in appropriate habitats. We also ask volunteers to undertake surveys of areas of deciduous woodland and old buildings where we have had a number of confirmed sightings.

## **2.2. Protocol**

### **2.2.1. Day visit**

- Seek permission from the landowner to visit your allocated sites.
- Check site for feathers, pellets, whitewash, juvenile down caught in cobwebs/tree bark/ edges of nest box, etc. Keep eye out for flies around entrance to potential nest – can be attracted by food remains.

- Pay attention to the smell of ammonia from a barn owl nest
- Listen for barn owl chicks

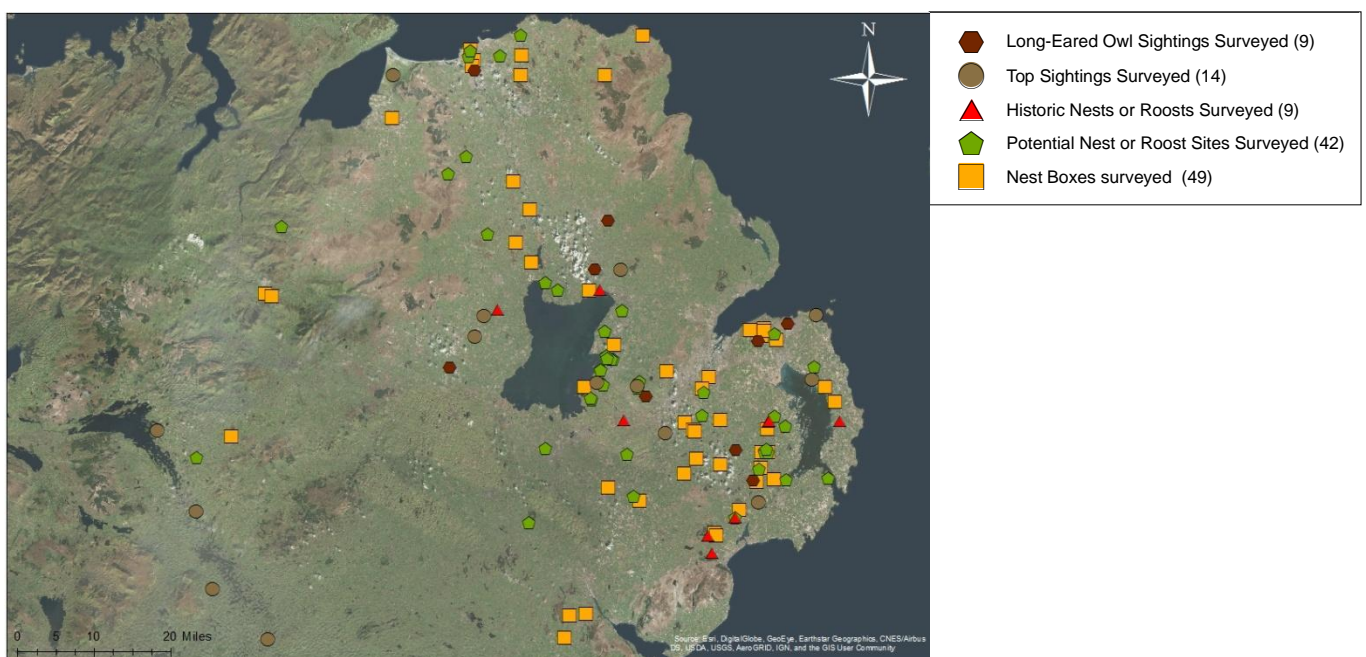
### 2.2.2. Night visit

- Choose a clear, moonlit night, from dusk 'til one hour (at least) after dark.
  - Choose vantage point to watch/listen from, discrete distance from site, with uninterrupted view.
  - Listen for begging calls (audible up to 100 meters)
- Any pellets found should be collected and posted to Ulster Wildlife for analysis
  - If activity at the site is suspected, inform Ulster Wildlife to enable a licensed surveyor to check the site for evidence of nesting.

## 3. Results

### 3.1 Survey sites

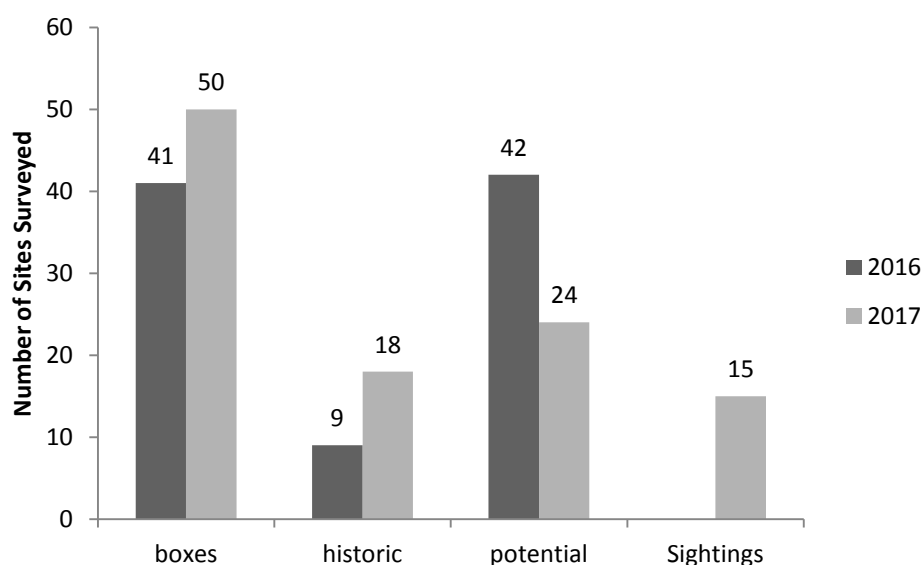
A total of 115 sites were checked for signs of barn owl activity during the survey and nine more sites were surveyed for signs of long-eared owls specifically, totalling at 123 survey sites altogether (see **Figure 1**, below). This represents c. 48% increase in survey effort from 2016 (n=83) if both barn owl and long-eared owl sites are included in the projection. From what was reported to us by the field workers, it was calculated that an average of 1.9 hours was spent at each survey site, which would account to over 230 hours (equalling to over 30 full workings days) spent in the field by the volunteers during the field season in total.



**Figure 1:** All Sites Surveyed in 2017 (n=123)

**Figure 2** (below) displays the number of different site types surveyed in 2016 and 2017. As boxes represented the highest number of potential sites in our database, they so on again represented the highest number amongst the site types surveyed, totalling at 50 (compared to 41 in 2016). That means that 91 boxes have been checked of the total 234 boxes currently in our database within the last two years. This is of great importance as it's vital to have all the boxes checked in order to have accurate records of their condition and exact location, so that our database can be kept up to date and appropriate action can be taken where necessary. The survey has demonstrated that while not occupied, 24 of the boxes surveyed in 2017 that have been erected are still in good condition and suitable for habitation. On the other hand a total of 26 boxes are in need of appraisal as a result of deterioration, destruction or poor placement. We have used a lot of different sources of records to collate a picture of where boxes have been erected by different individuals over the past 20 years. Many of these boxes have never had regular checks so it is likely that the number of boxes requiring replacement will be quite high for the next couple of surveys. Apart from the nest box survey, nine sites reported of having historically had either roosting or nesting activity (i.e. a historic nest or roost site) were checked during the 2017 survey. This totals to 27 out of 66 sites currently in our database surveyed in the last two years. One of these sites had signs of potential activity (white wash) and at one site barn owl activity was reported in the area by locals. Lastly, 42 sites that had been indicated of having potential for barn owl activity (such as derelict barn buildings) were surveyed. This totals at 66 (of the total of 125) potential sites having been surveyed under the current methodology (2016 and 2017).

It's worth pointing out that the total numbers of site types referenced to in this report are as of February 2018 and by no means claim to be representing a comprehensive picture of all suitable sites across Northern Ireland. The database includes likely sites for barn owl activity and is constantly added to when new information arrives from the field. As an example, from the fieldwork conducted in 2017, six new potential sites were identified for nesting or roosting, in addition two historic nest sites and two historic roost sites that were noted down for future surveys. Unfortunately no new nest sites were confirmed during the survey, but several investigations are underway following potential reports.



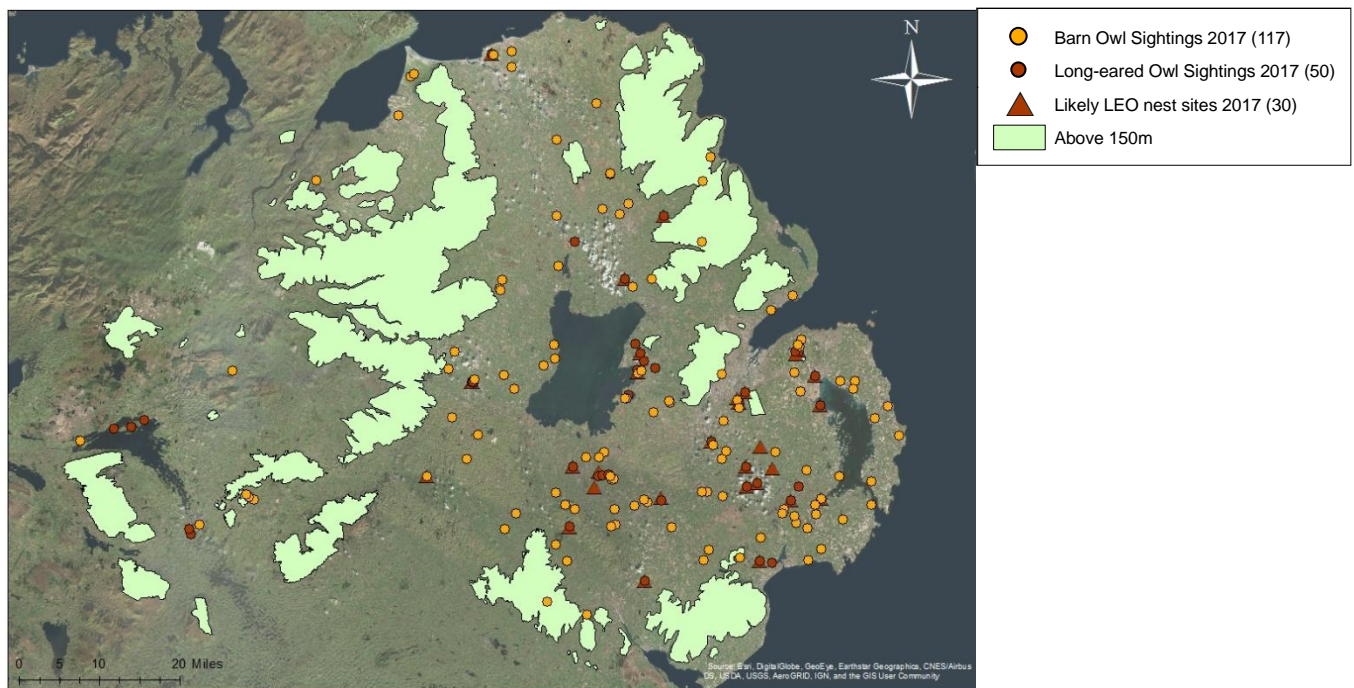
**Figure 2:** Types and number of barn owl sites surveyed in 2016 and 2017



### 3.2. Sightings

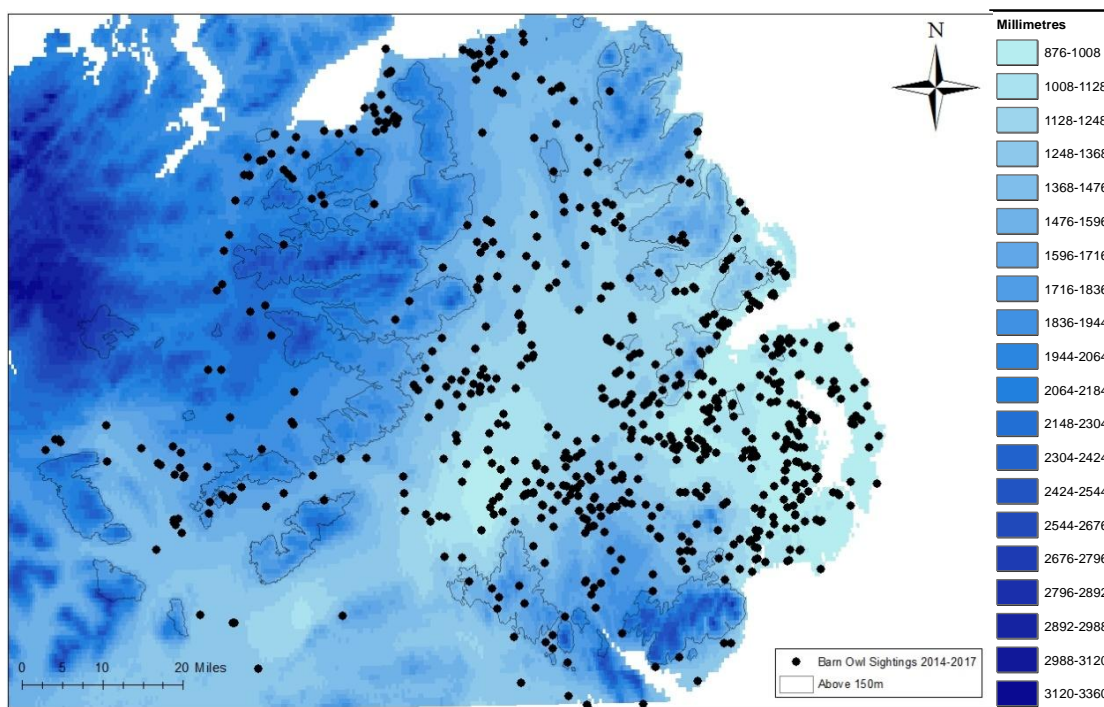
By the end of 2017, a grand total of 119 sightings had been reported and mapped (see **Figure 3**, below). This is a minimal increase from 2016, when we saw 111 sightings reported. 13 of the 2017 sightings were obtained through the survey, of which in two occasions barn owls were directly observed by a field worker during the survey season. Again, 150m elevation seems to act as a boundary for barn owl activity. Only four sightings were recorded above the 150m limit, three of which were only a short distance from the elevation boundary. 50 sightings (11 of which were through the survey) and 30 likely nest sites were also recorded for long-eared owls. Interestingly, the long-eared owl sightings and nest sites reported seem to follow very similar patterns to those of barn owls (see **Figure 3**).

Bunn, Warburton and Wilson (1982) concluded that 91 per cent of barn owl nest sites in Britain are in an altitude below 183 metres, yet nesting has been observed as high as 370 metres above sea level in Dartmoor and as 450 metres in the Lake District in the 1930s. The higher the altitude the less cover and/or food there is for small rodents to become abundant enough for barn owls to live out of. As concluded by Lusby, J. and O'Clery, M. (2014) nest sites Ireland are on average below 150 metres and the highest recorded nesting has been close to 300 metres in altitude. Of the data in our database, all (n=3) the current active nest sites are well below the average (<35m) and only one historic nest site in our database is above 150m. With the increased altitude, weather is also less favourable with increased precipitation and this be clearly seen with the comparison of annual precipitation averages when compared to barn owl sightings in **Figure 4** (below). **Figure 4** displays the average annual precipitation across Northern Ireland between 1970 and 2000 (Fick, S.E and Hijmans, R. J. H. 2017) relative to the sightings reported to Ulster Wildlife between 2015 and 2017. It is clearly visible here, that barn owls are more likely to be seen in areas of lower rainfall. This is to be expected, considering the fact that barn owls, due to their special feather adaptations for silent flight, lack water repellence (BOT, 2012). While this is not surprising, in the long-run information like this will allow us to focus our efforts to areas with the best conditions for barn owls (discussed in more detail below).



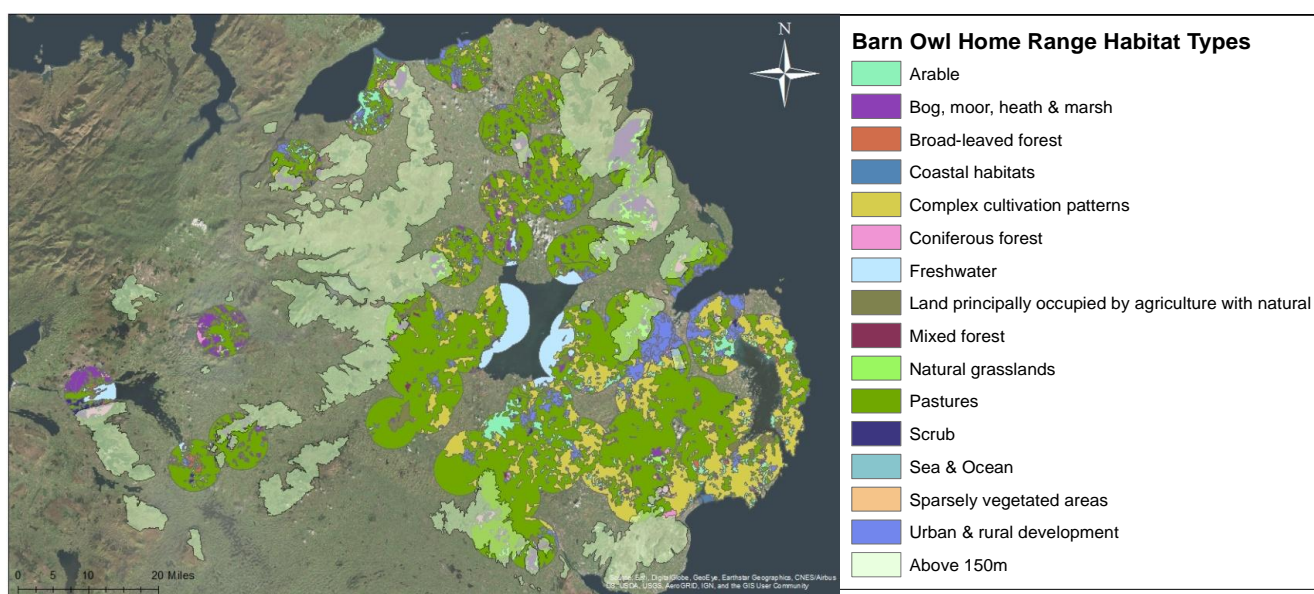
**Figure 3:** Sightings of barn owls (n=117) and long-eared owls (n=50) reported to UW in 2017 in comparison to 150m elevation





**Figure 4:** Barn Owl Sightings in relation to the average annual rainfall in millimetres between 1970 and 2000 (rainfall data provided by Fick, S.E and Hijmans, R. J. H. 2017)

**Figure 5** (below) displays the habitat types (CLC, 2006) present within a six kilometre range around each 2017 sighting. Furthermore, **Table 1** (below), provides the total areas of each habitat type within these ranges, compared to the Northern Ireland totals. What this table shows that pasture being the most common habitat type across Northern Ireland, it also represents the most common habitat type within barn owl ranges. Interestingly however, urban habitat seems to occupy a larger extent of barn owl habitat compared to the total area that it covers in Northern Ireland, indicating that they seem to occupy areas near human habitation. It could however be that these are areas where a barn owl is more likely to be spotted, due to higher human activity. Arable land also represents a larger extent of the barn owl habitat compared to the Northern Ireland totals, which is to be expected, considering that they are prime habitat for small rodents.

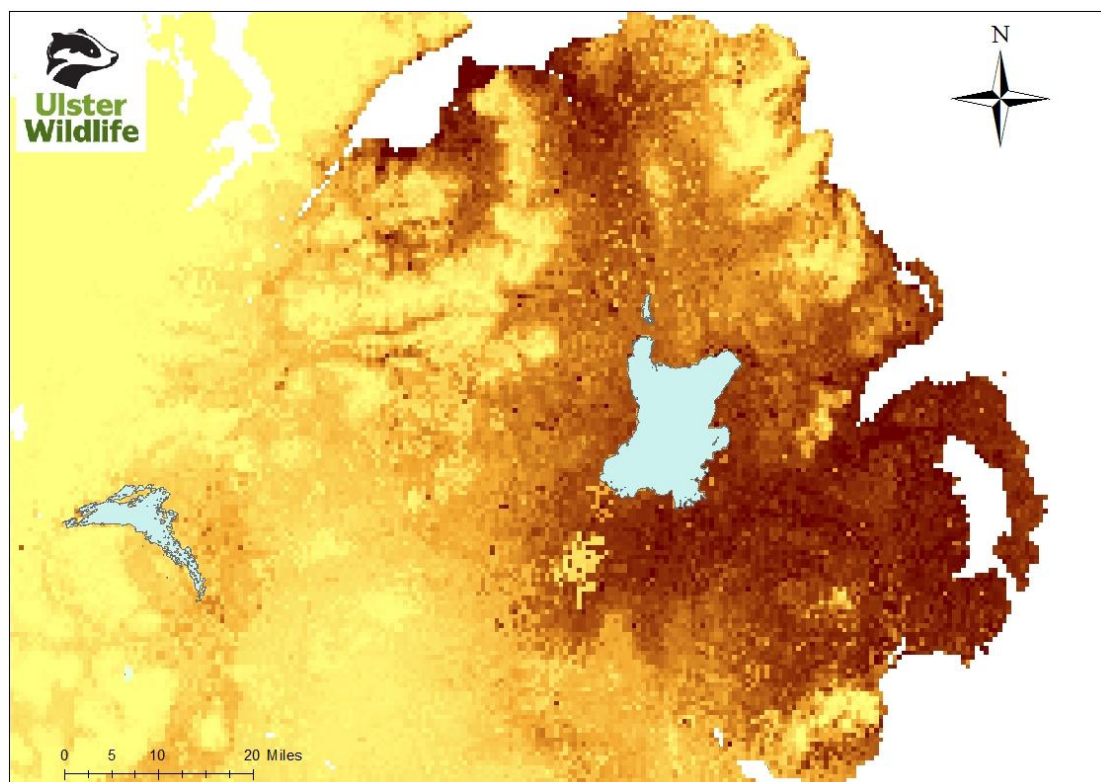


**Figure 5:** Habitat Types Within a Six Kilometre Range of 2017 Barn Owl Sightings (CLC, 2006)

| Fine Scale Habitat Type                                       | Northern Ireland<br>Total (%) | Barn Owl Range (%) |
|---|-------------------------------|--------------------|
| Pastures  | 56.34                         | 58.74              |
| Bog, moor, heath & marsh                                      | 12.28                         | 5.50               |
| Complex cultivation patterns                                  | 10.64                         | 16.81              |
| Land principally occupied by agriculture with natural aspects | 4.60                          | 3.63               |
| Natural grasslands  | 3.93                          | 2.05               |
| Coniferous forest   | 3.85                          | 1.48               |
| Urban & rural development                                     | 3.71                          | 5.73               |
| Arable  | 2.86                          | 4.23               |
| Scrub   | 0.95                          | 0.85               |
| Broad-leaved forest   | 0.63                          | 0.77               |
| Mixed forest  | 0.20                          | 0.19               |
| Sparsely vegetated areas                                      | 0.01                          | 0.01               |

**Table 1:** Percentages of Total Areas of Fine Scale Habitat Types of the Whole of Northern Ireland *versus* Within a Six Kilometre Zone around 2017 Barn Owl Sightings

### 3.3. Barn Owl Distribution in Northern Ireland



**Figure 6:** Barn Owl Heat Map Based on Sightings, Climate and Land Cover

Thanks to the volume (>700) of sightings reported to us in the past, combined with habitat type and climatic variables, a barn owl distribution model was produced as seen above in **Figure 6**. We are very pleased with this as it is another step towards getting a better grasp on where barn owls are most likely to be seen and also indicate where most of the future survey work should go into.

**Figure 6** (above) displays the areas where barn owls are most likely to be seen based on sightings, land cover, precipitation and temperature.

### 3.4. Known active nest sites

In addition to the regular survey work, we also kept an eye on three known active nest sites (**Table 2**), the Crumlin nest site especially providing us with interesting information on barn owl diet in Northern Ireland. We are delighted to report that the three previously known active nests sites all remained active in 2017. This would bring the total number of known fledglings to seven in 2017 (compared to four in 2016), with an average of 2.3 (compared to 1.3 in 2016) across all three nest sites. In addition to the active nest sites, our nest minder in Loughgall is reporting observing a barn owl hunting over the wild bird cover near the historic nest site. It does not however seem to be staying near the original nest site where a box was put up to replace the original nest site in a hollow of a tree that blew down in a storm in 2015.

| Nest site   | Number fledged 2016 | Number fledged 2017 |
|-------------|---------------------|---------------------|
| Ards        | 2                   | 2                   |
| S. Down     | 1                   | 3                   |
| Crumlin     | 1                   | 2                   |
| <i>Mean</i> | <i>1.3</i>          | <i>2.3</i>          |

**Table 2:** Number and variation of fledglings recorded at known active nest sites

The nest box site in the Ards Peninsula fledged two birds, which were ringed for the third year in the row having previously been ringed by BTO. Due to activity on the camera placed at the box early in the year and the late fledging (late September) of the birds, it was suggested that this may have been a second brood for the year. A tree cavity nest site in South Down fledged three birds (compared to just one in 2016) as can be seen in **Picture 2**, below. Worryingly however, the male bird was found injured on a road nearby in July and was deemed unable to be released back to the wild, making the future of this nest site unknown. The final nest site in a building in Crumlin fledged (at least) two birds in August. Our local nest minder, who's actively looking after the site, thinks there is a chance it may have been a second brood of the year. Both adult birds have been recorded here in early January 2018, so the mild winter might have caused them to pair up early. Dissected pellets from this nest site discovered bird bones in addition to the regular mice and rat bones and he also photographed a barn owl hunting for beetles (see **Picture 1** below) in the area.



**Picture 1:** A female barn owl photographed hunting beetles in Co. Antrim in September 2017  
©AntrimLens

**Picture 2:** Two of the three chicks fledged in Co. Down photographed in August 2017  
©E. Carson



### **3.5. Post Mortem Results**

As previously stated, there would be a lot of value in an in depth study on small mammal and pellet analysis studies in Northern Ireland. During 2017, we received the post mortem (conducted by the Predatory Bird Monitoring Scheme) results of three deceased barn owls. All of these were extremely emaciated (weighting between 190 and 217 grams) and one having beetle shells in its gizzard, which would indicate a struggle to find food (BOT, 2012). Whether this is a reflection of an especially low prey abundance in Northern Ireland or the normally low survival rate (25-35 per cent for the first year) of young barn owls in the UK, remains unknown (BOT, 2012). It's worth noting however, that the barn owl photographed hunting for beetles in Co. Antrim, had access to an abundance of rodents. Two of the deceased barn owls also showed signs of trauma (likely from a collision with a vehicle).

### **4. Limitation**

Limitations to this kind of survey work needs to be taken into account. Whereas we try our best to ask questions to validate the accuracy of species identification, in a certain number of sightings the species still remains unclear. Therefore this means that the observation of barn owls and long-eared owls living in very close proximity for example, may in fact to some degree be explained by the possibility of mix up between species. Whereas citizen science has been shown to have the capacity of being reliable (e.g. Joyce, S. Seneviratne, F. and Green, E., 2013), it is vital that this is kept in mind when making any kind of predictions. It's also worth noting, that most of Ulster Wildlife members (who are aware that we seek to record sightings) are based in these areas, which might cause a disproportionate picture of the reality of barn owl distribution in Northern Ireland.

### **5. Conclusion**

Figures in this report provide a good idea of just how challenging it is to survey for barn owls in Northern Ireland. After another year of surveying, we now have a much better idea of the condition and suitability of the sites we have in our database. During the last two years, about a half of these sites have been surveyed, and future efforts will focus on surveying the remaining erected nest boxes, historic sites and potential sites identified by survey volunteers and members of the public. The fact that in two separate occasions our fieldworkers directly observed barn owls during the survey is also an incredibly encouraging. This suggests that we are directing our survey efforts into the right areas, thanks to all the sightings reported to us by the members of the public and the work conducted in the past, allowing the improved survey methodology.

While a challenging species to work with, and rarely seen, once you have been fortunate enough to see a barn owl in the wild, you will never be able to shake it. Even though barn owls are hard to find, as the case study from one of our volunteers below portrays, being able to be involved in the conservation work for this unique species can be rewarding in so many ways. Thanks to the level of interest from the public and the dedication of our volunteers, we are reassured about the continued gathering of information on this elusive bird in Northern Ireland into the future.

## BEING A BARN OWL CONSERVATION VOLUNTEER - a Case Study

*"Helping to conserve the elusive barn owl is not without its frustrations but the work undertaken is satisfying, in that it brings out numerous skills, knowledge and disciplines, that help you look for this elusive raptor.*

*Skills such as, fieldcraft, tracking, detective work, navigation and map reading, interpreting the landscape, habitat knowledge and getting to know the lay of the land and gathering local knowledge; all helps put the jigsaw pieces together in barn owl conservation.*

*Visiting old ruins and derelict buildings of a bygone era, seeing ghost like shapes at twilight and eerie tree silhouettes to listen for that elusive haunting barn owl screech all helps build up a wider picture of this iconic creature and the challenges that it presents.*

*You get to know and visit places of beauty like the Montiaghs Conservation area on the South end of Lough Neagh where ideal rough tussocky grassland is essential foraging ground for these majestic birds of prey.*

*It becomes a healthy outdoor pursuit, with meaning and purpose in honing all those conservation skills needed in contributing to protect the elusive barn owl."*

-Paul Larmor, August 2017



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