

Short paper

The distribution of Barn Owl nest-sites in relation to altitude in southwest England

In Britain, Barn Owls *Tyto alba* are often described as lowland birds with an upper altitudinal limit to their breeding distribution (Bunn *et al.* 1982; Shawyer 1987, 1998; Taylor 1994); this understanding influences both conservation recommendations (e.g. Askew 2006, Ramsden & Twigg 2009) and survey methodologies (e.g. Ramsden 1998, Toms *et al.* 2001, Shawyer 2011, Barn Owl Trust 2012). Previous authors have stated either that an upper limit to distribution in the UK occurs at 250–300 m above sea level (Taylor 1994) or that 150 m is close to the upper limit of habitat suitability, rising to 200 m in the southwest (Shawyer 1998).

Barn Owls may breed at slightly higher altitudes in southwest England than elsewhere in the UK owing to the relatively mild climate; factors such as increased snow cover may be more restrictive elsewhere (for example, through the effect of increased winter mortality of adults; Taylor 1992, 1994; Dadam *et al.* 2011). This short paper aims to show the altitudinal distribution of Barn Owls in Devon and Cornwall, and to discover whether Barn Owl nest-sites are distributed randomly across the available landscape in the region, in terms of altitude.

Methods

Some 1,549 Barn Owl nest-sites were recorded in Devon and Cornwall between 1980 and 2011, mainly via reports from the public and in the course of fieldwork undertaken by Barn Owl Trust staff and volunteers. Nests recorded within 200 m of one another were regarded as the same nest-site.

The altitude in metres above sea level of 84% of nest-sites was measured by entering a six-figure grid reference into MapMate, which provided an aerial image of the 100 m² containing the nest-site and allowed measurement of AMSL for any point within the square. If the exact position of the nest-site was easily identifiable, the precise altitude was recorded; if not, the altitude was measured from the bottom left corner of the

square. Nest-site altitude for the remaining 16% of sites was estimated using contour lines on Ordnance Survey maps.

The nest-sites used in this study were grouped into 50-m altitude bands. The number of hectares within each 50-m altitude band was measured using GIS software (MapInfo in Devon and ArcGIS in Cornwall). Tidal areas and the largest urban areas (Exeter, Plymouth and Torbay) were excluded, being largely unsuitable habitat for Barn Owls.

The relationship between the altitudinal distribution of nest-sites and land available was assessed by testing (using chi-square) for a difference between the observed and expected (given the amount of land available) number of nest-sites in these altitude bands. The expected values represent nest-sites distributed randomly across the landscape in terms of altitude.

Results

Six nest-sites were recorded above 300 m, the highest at 384 m on Dartmoor. The median altitude of nest-sites was 107 m and while 23.8% of nest-sites were above 150 m, the vast majority (98.2%) were below 250 m.

Fig. 1 shows the observed and expected altitudinal distribution of nest-sites in Devon and Cornwall. There was a significant difference between the observed and the expected altitudinal distribution ($\chi^2=265.4$, $P < 0.001$), which confirms that Barn Owl nest-sites are not distributed randomly and that more sites were found at lower altitudes (below 150 m) than would be expected by chance.

Discussion

Despite the finding that the altitudinal distribution of Barn Owl nest-sites in the southwest is lower than that expected by chance, there is some evidence that birds are nesting at comparatively higher altitudes now than 50 years ago. The percentage of birds breeding above 150 m in Devon was estimated at 12% during 1959–64 (Goodfellow

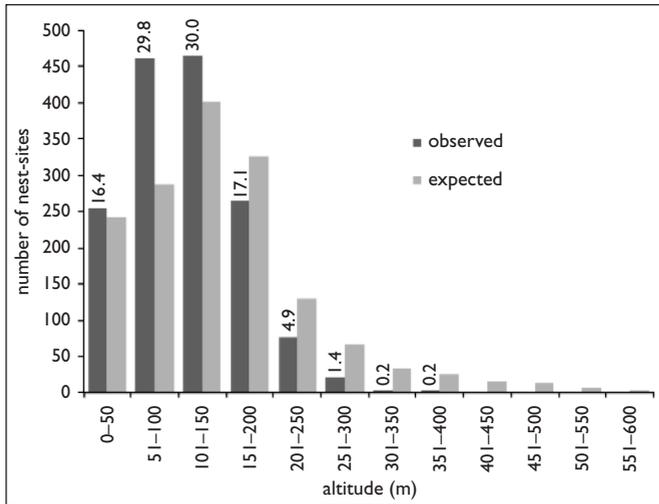


Fig. 1. Number of observed and expected Barn Owl *Tyto alba* nest-sites in Devon and Cornwall in 50-m altitude bands ($n=1,549$). The expected distribution of nest-sites reflects the proportion of land available in each altitude band. The percentage of nest-sites observed in altitude bands are indicated by bar labels.

1966) but had increased to 30.4% in this study. Such range expansion could well be a result of climate change and thus may be expected to continue.

Based on the records analysed here, a current upper altitudinal limit for the region may be estimated at almost 400 m. To date in southwest England, the siting of Barn Owl nestboxes above 300 m has been encouraged only where there is evidence that the species already occurs. Since, in this region there are few suitable tree sites for nesting (Shawyer 1987; Toms *et al.* 2000), and there is evidence that traditional farm buildings have been lost at a significant rate and that many modern buildings are unsuitable for Barn Owls unless a nestbox is provided (Ramsden 1995, 1998), a shortage of suitable nest-sites may be a limiting factor for Barn Owls at higher altitudes. This requires further investigation and should be borne in mind when designing regional conservation measures.

Acknowledgments

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Barn Owl distribution within the UK is limited by altitude, climatic conditions and the availability of suitable breeding habitat (Shawyer, 1987, Dadam et al. 2011).

2.2. BARN OWL BREEDING ECOLOGY

In addition to suitable hunting habitat, Barn Owls also require access to a nesting cavity, often a hollow cavity in a mature deciduous tree, a ledge within a farm building or, increasingly, a nest box erected specifically for the species. Barn Owls do not defend breeding territories in the strict sense but do defend the area immediately around the nest site and do have home ranges within which activity is concentrated.

Conversely, the distribution of birds recaptured alive will be influenced by the distribution of trapping effort and the methods used by ringers. The smaller barn owl has a length ranging from 1 to 1½ feet, a wingspan of 4 to 5 feet, and a weight of 1 to 1½ pounds. As well as being raptors and owls, both of these incredible creatures can also be found throughout Florida and the United States and are vital to the ecosystem of the area. The Conservancy's newest resident ambassador Barred owl! You can see this owl on exhibit at our von Arx Wildlife Viewing Pavilion at our Nature Center! The Conservancy is lucky to have an ambassador Barred owl on exhibit at our von Arx Wildlife Viewing Pavilion! To meet our new resident ambassador and learn more about native raptors here in Southwest Florida, come visit our Nature Center! Environmental Education. See what's going on with the Conservancy Environmental!

SNCO Natural England Natural Resources Wales. A licence to disturb a wild barn owl is required: at sites where there is a realistic expectation that the habitat might support this species (Shawyer 2010) and where there is a specific intention to approach or inspect occupied or potential nest sites of this bird (i.e. nestboxes, buildings, hollow trees or rock crevices).

To undertake a barn owl survey, independently and competently, an individual would be expected to possess all of the following knowledge, skills and experience. A surveyor needs to recognise their level of attainment along a continuum.

a licensed barn owl worker. For those seeking a "licence to disturb" for the purpose of nest observation only, individuals are expected to have gained practical experience of The Barn Owl is not covered under the federal Migratory Birds Convention Act. COSEWIC previously assessed the Western population of Barn Owl in April 1999 as Special Concern; it is currently listed as Special Concern on the federal Species at Risk Act (SARA) Schedule 1. SARA prohibitions do not apply to Special Concern taxa. The Barn Owl, its eggs and active nests are protected in British Columbia under the British Columbia Wildlife Act.

Inferred and projected based upon a 15-year period ending in 2008 that documented 53% loss of grassland foraging habitat and about 30% loss of suitable nest sites in barns, though the latter is likely offset to some extent by provision of nest boxes (see Habitat Trends).

Yes. To collect baseline information of Barn Swallow nests and their nest distribution in your region. The vicinity of the primary school. During the breeding season of the Barn Swallows (Between April and July).

- 2 When you find an active nest, observe the nesting site and record the specifics and note the observation details on the following form (Sheet 2), write down the location of nest on the map (Sheet 3).
- 3 Interview the local residents about their views regarding Barn Swallows. For example, if they like having the swallows around or if they feel it's a nuisance, and the reasons.

Share the distribution of the nests, environmental information, any other observations about swallows. Consider the surrounding environment and its relationship to the birds.