

# Breeding Nightjar Survey – 2011 – Humberhead Peatlands NNR, SAC, SSSI, SPA (Thorne, Goole and Crowle Moors)

## 1. Introduction

- 1.1 This report presents part of the findings of an annual survey of breeding nightjar *Caprimulgus europaeus* on the Humberhead Peatlands National Nature Reserve (NNR) between 10<sup>th</sup> and 4<sup>th</sup> July 2011. The aim of the survey was to determine the number of churring male nightjars holding territories on the Thorne, Goole and Crowle Moors and Hatfield Moors. This report details the results from the Thorne, Goole and Crowle Moors, and Hatfield Moors is covered in a separate report.
- 1.2 Whilst conducting the survey other species of interest were also recorded, in particular, long-eared (*Asio otus*), tawny owl (*Strix aluco*), grasshopper warbler (*Locustella naevia*) and woodcock (*Scolopax rusticola*).

## 2. Methodology

- 2.1 The Thorne, Goole and Crowle Moors is too large an area to survey in one night therefore Crowle Moors was surveyed on a different night to Thorne and Goole. Two visits were made to the two areas between 19<sup>th</sup> June and the 2<sup>nd</sup> July, with a third part visit to Crowle on the 3<sup>rd</sup> July.
- 2.2 The survey method applied followed the standard design of Cadbury (1981), as summarised in Gilbert et al (1998), with modifications by Conway et al (2007) for a breeding season survey to establish population size.
- 2.3 Surveying began each night at 22.00 hrs (BST) and ended not later than 2.30hrs (BST).
- 2.4 Four surveyors (two teams of two) survey each site and a pre-determined route is walked with frequent stops (approx every 200m) to check for churring males or any direct observations (e.g., wing clapping, feeding flights etc). Located nightjars are marked on a suitable map of the site with a red dot; this is preferred to using the standard British Trust for Ornithology codes in order to register the locations more accurately. Other species are marked using the BTO codes. All surveyors use hand-held Global Positioning Systems and compasses to

facilitate accurate bird registrations. For example, when a churring male is detected the surveyors first locate the position of themselves using a GPS and then determine the direction of the churring male nightjar from the surveyor location by taking a bearing with a compass (i.e. south west of surveyor position). They then plot the location on the map by estimating the distance by the loudness of the churring. Wherever possible this can be repeated for the same churring male from a different location to cross-reference the location, this is what's known as a re-section. Where the lines meet is the correct location of the churring nightjar. When this is done the initial registrations are mostly surprisingly accurate, however, occasionally the registration needs to be slightly adjusted. Often it is not possible to do a re-section because the birds sometimes only churr for a short time, this situation therefore could result in some error.

- 2.5 On Thorne Moors, one team surveyed the northern section whilst the other team surveyed the southern section. To counteract observer bias the teams would exchange survey areas on the second visit. Furthermore, wherever possible the routes would be walked or surveyed in reverse on the second visit, because male birds churr most frequently just after dusk, and this ensured that most areas were covered at the optimum churring time. For Crowle Moors only one pair of observers surveyed the site for both visits but again the route was done in reverse for the second visit.
- 2.6 The total number of churring males was achieved by evaluating both first and second visit maps. Only when churring males registered on separate visits were well in excess of 200m (approx 350m) apart were they considered different birds. This is the most difficult aspect of the evaluation because it is often subjective; Cadbury (1981) does not detail evaluation, and Gilbert et al (1998) state that the distance should be more than 400m. Experience of the site proves that simultaneous churring males are often less than 200m apart and therefore the 400m criteria summarised by Gilbert (1998) would eliminate many territories. Conway et al (2007) used a 350m criteria therefore this method has been adopted. The total number of churring males has been combined on a master map included in this report.

### **3. Accuracy of survey methods**

3.1 The accuracy of any survey depends upon a number of factors.

- Methodology adopted
- Consistency of the methodology
- Knowledge and experience of the fieldworkers
- Consistency of recording
- Critical summary and evaluation

3.2 Perhaps the most difficult aspect of any survey is the assessment of the survey methods for a) how accurately the presence or absence of a species in a particular area is determined, and b) how accurately or consistently the number of breeding birds is calculated. The method for determining breeding nightjars is defined in section 2 of this report.

3.3 There is often scope for error as the accurate determination of the breeding distribution of some species is made more difficult by non breeding individuals that are feeding, roosting or loafing. However, in the case of nightjar surveys, this element of error is eliminated by the fact that only churring (territorial males) are recorded for the purpose of determining numbers. Nevertheless, some error is inevitable; in particular, determining distance is sometimes problematic and, whilst the methodology used here reduces much error, there are still limitations. Furthermore, two visits are perhaps not sufficient to determine precise territories and indeed record all churring males.

3.4 The amount of effort expended in detecting and recording nightjars in all parts of the study area for the main two visits was equal; however additional effort is occasionally required in small areas. Over recording has been kept to a minimum through careful analysis of first and second visit maps and eliminating birds closer than approximately 350m on separate visits. However, under-recording is also perhaps a possibility. Male nightjars often churr for only a very short time and therefore the possibility of territories remaining undetected is also likely. Many factors contribute to the possibility of under-recording including time of visit to area and weather.

3.5 Registrations of churring nightjars entered on the maps that are relatively close were proven by simultaneous churring or quick successive churring (less than 30 seconds apart). When simultaneous churring does occur it proves that territories can be very close together, therefore the methodology used for evaluation may often result in lower overall numbers than may be the case. That is perhaps why it is sensible to employ a little subjectivity sometimes when evaluating maps.

#### 4. Weather

4.1 Churring males favour calm, dry nights. Therefore the survey began on the 10<sup>th</sup> June at Crowle during a short period of suitable weather, albeit cold. However, this initial visit was considered void because of the extreme cold 6.5c – 3.6c; only one churring male was recorded at 22.00 hrs for approximately 5 seconds. The first visit to Thorne was done on the 18<sup>th</sup> which was also completed in less than an ideal temperature and the first visit proper to Crowle was conducted on the 22<sup>nd</sup>. Thankfully, there were very warm conditions for the second visit to Thorne on the 26<sup>th</sup>. Cold weather at night returned and the second visit to Crowle was not done until the 2<sup>nd</sup> July, again the temperature plummeted that night and it was therefore deemed necessary to return the following evening to the north-eastern section.

4.2 Temperature and wind speed were checked on each visit at the beginning of the surveys (22.00 hrs) and at the end of the survey using an anemometer and thermometer. The data is as follows:

#### 4.3 First visit

4.3.1 **Thorne Moors** 19<sup>th</sup>/20<sup>th</sup> June. Cloud (5/10%),  
At 22.00 hrs; cloud 5%, temperature 10c, wind 0 mph.  
At 02.00 hrs; cloud 10%, temp 7.7c, wind NW, 2 mph.

4.3.2 **Crowle Moors** 22<sup>nd</sup>/23<sup>rd</sup> June. Cloud (70/90%).  
At 22.00 hrs; cloud 70%, temp 13.9c, wind NW, 2 mph  
At 00.30 hrs; cloud 90%, temp 12.6c, wind 0 mph

#### 4.4 Second visit

##### 4.4.1 Thorne Moors 26<sup>th</sup>/27<sup>th</sup> June. Cloud (0/30%).

At 22.00 hrs; cloud 0%, temp 22.5c, wind ESE, 6 mph

At 01.30 hrs; cloud 0%, temp 19.8c, wind ESE, 7 mph

##### 4.4.2 Crowle Moors 2<sup>nd</sup>/3<sup>rd</sup> July. Cloud (80/0%).

At 22.00 hrs; cloud 80%, temp 15.2c, wind SE, 5 mph

At 01.00 hrs; cloud 0%, temp 8.7c, wind SE, 1 mph

#### 4.5 Third (part visit to north east section)

##### 4.5.1 Crowle Moors 3<sup>rd</sup> July. Cloud (5/5%)

At 22.00 hrs; cloud 5%, temp 15.3c, wind SE, 4 mph

At 11.15 hrs; cloud 5%, temp 12.4c, wind SE, 2 mph

### 5. Results

**Table 1 (Thorne Moors)**

<b>Nightjar Number</b>	<b>Grid ref</b>	<b>Visit</b>	<b>Weather * conditions</b>	<b>Temperature scale</b>
NJ 1	SE 7158 1822	1/2	vg	cold/warm
NJ 2	SE 7271 1829	2	vg	warm
NJ 3	SE 7237 1817	1	vg	cold
NJ 4	SE 7231 1790	2	vg	warm
NJ 5	SE 7291 1789	2	vg	warm
NJ 6	SE 7428 1691	2	vg	warm
NJ 7	SE 7456 1648	2	vg	warm
NJ 8	SE 7360 1695	2	vg	warm
NJ 9	SE 7264 1743	1	vg	cold
NJ 10	SE 7211 1763	1/2	vg	cold/warm
NJ 11	SE 7122 1790	1	vg	cold
NJ 12	SE 7104 1773	1	vg	cold
NJ 13	SE 7091 1711	1/2	vg	cold/warm
NJ 14	SE 7129 1648	1/2	vg	cold/warm
NJ 15	SE 7167 1626	1/2	vg	cold/warm
NJ 16	SE 7208 1620	1/2	vg	cold/warm
NJ 17	SE 7245 1598	1/2	vg	cold/warm
NJ 18	SE 7285 1599	2	vg	warm
NJ 19	SE 7315 1576	1	vg	cold
NJ 20	SE 7260 1570	1	vg	cold
NJ 21	SE 7161 1570	1	vg	cold

NJ 22	SE 7202 1551	1	vg	cold
NJ 23	SE 7247 1529	1	vg	cold
NJ 24	SE 7309 1524	1	vg	cold
NJ 25	SE 7370 1479	2	vg	warm
NJ 26	SE 7422 1467	1/2	vg	cold/warm
NJ 27	SE 7214 1510	1/2	vg	cold/warm
NJ 28	SE 7287 1466	1	vg	cold
NJ 29	SE 7315 1440	2	vg	warm
NJ 30	SE 7219 1430	2	vg	warm
NJ 31	SE 7344 1412	2	vg	warm
NJ 32	SE 7292 1396	1	vg	cold
NJ 33	SE 7256 1390	2	vg	warm
NJ 34	SE 7215 1416	2	vg	warm

**Table 2 (Crowle Moors)**

<b>Nightjar Number</b>	<b>Grid Ref</b>	<b>Visit</b>	<b>Weather * Conditions</b>	<b>Temperature Scale</b>
NJ 1	SE 7520 1602	2	vg	acc
NJ 2	SE 7568 1579	1/2	vg	acc/acc
NJ 3	SE 7530 1549	2/3	vg	acc/warm
NJ 4	SE 7572 1530	3	vg	warm
NJ 5	SE 7543 1508	1/2/3	vg	acc/acc/warm
NJ 6	SE 7518 1520	1/2	vg	acc/acc
NJ 7	SE 7490 1539	1/2	vg	acc/acc
NJ 8	SE 7466 1500	1/2	vg	acc/acc
NJ 9	SE 7474 1470	1/2	vg	acc/acc
NJ 10	SE 7510 1450	1	vg	acc
NJ 11	SE 7508 1419	1/2	vg	acc/acc
NJ 12	SE 7495 1391	2	vg	acc
NJ 13	SE 7513 1388	1/2	vg	acc/acc

\* Standard methodology (Note that the temperature scale is an addition resulting from the realisation that cold weather has an adverse effect on nightjar behaviour)

As is evident in table 1, there are many more records obtained during warm conditions.

## 5.1 Survey weather conditions

- Very Good (wind 0/4mph, dry)
- Good (wind 5/10 mph, dry)
- Poor (wind 11/16 and dry or wind 0/7 mph with drizzle)

## 5.2 Temperature scale

- Cold 0c – 10c
- Acceptable 11c – 14c
- Warm 15c and above

## 5.3 Surveyors and assistants

- Peter Middleton (all visits)
- Dave Pearce (first & second visit to Thorne)
- Alan Cawthrow (first & second visit to Thorne)
- Dave Little (first & second visit to Thorne and Crowle)
- Billy Middleton (first and second visits to Crowle)

## 6. Summary

6.1 A total of 47 nightjar territories were located during the survey of Thorne, Goole and Crowle Moors this year compared to 48 in 2010. 34 nightjars were recorded on Thorne Moors which is two more than the previous year, and 13 territories were located at Crowle which is three less than the previous year.

6.2 Unlike the previous year the surveying especially at Crowle was very problematic. Because of the extreme cold conditions four visits were made to Crowle, one of which was deemed to be void. For the second year walking around the site was facilitated by the extremely dry conditions underfoot, and like the previous year the temperature during the first survey was extremely cold for the time of year, consequently, churring males at Thorne were few, However perfect conditions on the second visit made up for the short fall on the first visit. Again, the birds at Thorne were somewhat widely spaced making evaluation relatively easy; the territories that are less than 350m apart were confirmed by simultaneous churring.

6.3 The experiences this year with the cold conditions confirmed earlier suspicions that nightjars churr less in low temperatures. On the first visit to Crowle on the 10<sup>th</sup> June the temperature was

- only 6.8 at 22.00 hours dropping to 3.6c by midnight. Only one churring male was recorded for a few seconds at 22.00 but many birds were either seen or heard foraging. Considering the above, the methodology has been revised by the author to preclude surveys in temperatures less than 10c.
- 6.4 The nightjars were somewhat evenly distributed in suitable habitat at Thorne and Goole Moors. For the first time in three years a territory was located in compartment 42, which is incidentally adjacent to the black-headed gull colony. The colony failed this year probably resulting from low water levels and therefore the earlier suspicion that nightjars had been displaced by the noisy black-headed gull colony was indeed confirmed. At Crowle nightjars this year were evenly distributed, however, it took a third visit to locate a territory in the north-eastern section.
- 6.4 The average density in whole 1 km<sup>2</sup> at Thorne, Goole and Crowle Moors this year was 4.4 churring males per 1 km<sup>2</sup>, with the highest density of 6 churring males per 1 km<sup>2</sup> in single squares at Thorne, Crowle and Goole Moors. The average density here this year is therefore within the range of 4 – 17 per 1 km<sup>2</sup> given by Berry (1979) for three sites in East Anglia. Crowle has previously always had higher densities, but this year areas on both Thorne and Goole Moors were equal to it. Observations made at Crowle on the habitat there and the grazing regime currently in use, clearly indicate that it is not working as well as it could be.
- 6.5 Interestingly, Thorne has areas where no nightjars were recorded in spite of these areas being perhaps prime habitat. It is worth noting that when third visits have been made to areas where no birds have been recorded on first and second visits, additional territories have always been located. Therefore, the number of territories recorded is almost certainly conservative.
- 6.6 Other species of note recorded during the survey included three pairs of long eared owl *Asio otus* proven by located juveniles, five pairs of tawny owl *Strix aluco* (three of which had young) 36 singing grasshopper warblers *Locustella naevia*, two woodcocks *Scopolax rusticola* and two quail *Coturnix coturnix* (one just off site). The grasshopper warbler population is no doubt much greater because the ones recorded are located from tracks and

there are many areas with suitable habitat for this species that are not covered during the nightjar survey.

## References

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