

Breeding Nightjar Survey – 2010 – 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 12th and 27th June 2010. 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 14th June and the 26th June, with a third part visit to Thorne on the 2nd 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 1:10,000 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 prove 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 is perhaps not sufficient to determine precise territories and indeed record all churring males. Considering these limitations it is generally sensible to build in a 10% error.

3.4 The amount of effort expended in detecting and recording nightjars in all parts of the study area was equal. Furthermore, 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 14th June at Crowle during a settled period of suitable weather, albeit cold; the first visit to Thorne was surveyed on the 18th. The weather remained settled throughout but the cold nights continued until the 21st, therefore the second visit was delayed a little until the nights got warmer and the second visit to both sites was completed on the 25th and 26th June in very good and warm conditions. A small part of Thorne Moors was visited a third time on the 2nd July also in good conditions.

- 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 **Crowle Moors** 14th/15th June. Cloud (60/0%).
At 22.00 hrs, cloud 60%, temperature 10.4c, average wind speed; north westerly 3 mph
At 01.00 hrs, cloud 0%, temperature 7.9c, average wind speed; north westerly 2 mph
- 4.3.2 **Thorne Moors** 18th/19th June. Cloud (50/100%),
At 22.00 hrs, cloud 50%, temperature 8.5c, average wind speed; north westerly 5 mph.
At 01.45 hrs, cloud 10%, temperature 8c, average wind speed; westerly 10 mph. (wind increased at 01.10 hrs)

4.4 Second visit

4.4.1 Thorne Moors 25th/26th June. Cloud (100/30%).

At 22.00 hrs, cloud 100%, temperature 18c, wind speed; south 2 mph

At 02.00 hrs, cloud 30%, temperature 11.3c, wind; none

4.4.2 Crowle Moors 26th/27th June. Cloud (10/30%).

At 22.00 hrs, cloud 10%, temperature 18.3c, average wind speed; south easterly 8 mph

At 01.15 hrs, cloud 30%, temperature 15.6c, average wind speed; south easterly 3 mph

4.5 Third (part visit)

4.5.1 Thorne Moors 2nd July. Cloud (90/30%)

At 22.00 hrs, cloud 90%, temperature 18c, average wind speed; south west 5mph

At 11.30 hrs, cloud 30%, temperature 17c, wind; none

5. Results

Table 1 (Thorne Moors)

| Nightjar Number | Grid Ref | Date | Visit | Weather Conditions |
|------------------------|-----------------|------------------------------------|--------------|---------------------------|
| NJ 1 | SE 7272 1825 | 25 th | 2 | very good |
| NJ 2 | SE 7150 1818 | 2 nd July | 3 | very good |
| NJ 3 | SE 7135 1802 | 2 nd July | 3 | very good |
| NJ 4 | SE 7112 1778 | 18 th | 1 | good |
| NJ 5 | SE 7092 1740 | 18 th | 1 | good |
| NJ 6 | SE 7070 1719 | 18 th | 1 | good |
| NJ 7 | SE 7080 1685 | 18 th | 1 | good |
| NJ 8 | SE 7236 1805 | 18 th /25 th | 1/2 | very good |
| NJ 9 | SE 7236 1771 | 25 th | 2 | very good |
| NJ 10 | SE 7291 1793 | 18 th /25 th | 1/2 | very good |
| NJ 11 | SE 7280 1761 | 18 th | 1 | good |
| NJ 12 | SE 7335 1800 | 25 th | 2 | very good |
| NJ 13 | SE 7445 1713 | 2 nd July | 3 | very good |
| NJ 14 | SE 7454 1643 | 2 nd July | 3 | very good |
| NJ 15 | SE 7452 595 | 25 th | 2 | very good |
| NJ 16 | SE 7155 1633 | 18 th /25 th | 1/2 | very good |

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|-------|--------------|------------------------------------|-----|-----------|
| NJ 17 | SE 7183 1617 | 18 th | 1 | good |
| NJ 18 | SE 7230 1613 | 18 th /25 th | 1/2 | very good |
| NJ 19 | SE 7165 1560 | 18 th | 1 | good |
| NJ 20 | SE 7155 1531 | 25 th | 2 | very good |
| NJ 21 | SE 7210 1548 | 18 th /25 th | 1/2 | very good |
| NJ 22 | SE 7256 1541 | 25 th | 2 | very good |
| NJ 23 | SE 7238 1515 | 25 th | 2 | very good |
| NJ 24 | SE 7360 1498 | 25 th | 2 | very good |
| NJ 25 | SE 7418 1490 | 25 th | 2 | very good |
| NJ 26 | SE 7282 1469 | 25 th | 2 | very good |
| NJ 27 | SE 7310 1440 | 18 th /25 th | 1/2 | very good |
| NJ 28 | SE 7233 1423 | 25 th | 2 | very good |
| NJ 29 | SE 7270 1390 | 25 th | 2 | very good |
| NJ 30 | SE 7310 1406 | 25 th | 2 | very good |
| NJ 31 | SE 7317 1376 | 25 th | 2 | very good |
| NJ 32 | SE 7299 1345 | 25 th | 2 | very good |

Table 2 (Crowle Moors)

| Nightjar Number | Grid Ref | Date | Visit | Weather Conditions |
|------------------------|-----------------|-------------|------------------------------------|---------------------------|
| NJ 1 | SE 7540 1613 | 2 | 26 th | very good |
| NJ 2 | SE 7570 1590 | 1/2 | 14 th /26 th | very good |
| NJ 3 | SE 7529 1587 | 2 | 26 th | very good |
| NJ 4 | SE 7517 1559 | 1/2 | 14 th /26 th | very good |
| NJ 5 | SE 7552 1551 | 2 | 26 th | very good |
| NJ 6 | SE 7495 1542 | 1/2 | 14 th /26 th | very good |
| NJ 7 | SE 7530 1519 | 1 | 14 th | very good |
| NJ 8 | SE 7568 1477 | 1 | 14 th | very good |
| NJ 9 | SE 7485 1520 | 1/2 | 14 th /26 th | very good |
| NJ 10 | SE 7465 1486 | 1/2 | 14 th /26 th | very good |
| NJ 11 | SE 7495 1477 | 1 | 14 th | very good |
| NJ 12 | SE 7512 1448 | 1 | 14 th | very good |
| NJ 13 | SE 7506 1414 | 1/2 | 14 th /26 th | very good |
| NJ 14 | SE 7540 1422 | 1/2 | 14 th /26 th | very good |
| NJ 15 | SE 7522 1398 | 1 | 14 th | very good |
| NJ 16 | SE7515 1377 | 1 | 14 th | very good |

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 Surveyors and assistants

- Peter Middleton (all visits)
- Dave Pearce (first & second visit to Thorne)
- Alan Cawthrow (first & second visit to Thorne)
- Carl Dixon (first & second visit to Thorne and Crowle)
- Rosario Rios-Brown (part visit to Thorne)

6. Summary

6.1 A total of 48 nightjar territories were located during the survey of Thorne, Goole and Crowle Moors this year compared to 52 in 2009. 32 nightjars were recorded on Thorne Moors which is five less than the previous year, which incidentally was the highest count since surveys began in 1994. At Crowle Moors 16 territories were located, just one more than the previous year.

6.2 No problems were encountered this year and walking around the site was facilitated by the unusually dry conditions underfoot. However, the temperature during the first survey was extremely cold for the time of year, consequently, churring males at Thorne were few, and this was the reason why a third visit to a small section of Thorne was considered necessary. This year at Thorne the birds were relatively widely spaced making evaluation somewhat easier. Overall, the figures are conservative, however, it remains sensible to be cautious and include a + or – 10% error when estimating the breeding population, this would then equate to a total this year of between 29 and 35 breeding pairs at Thorne and between 14 and 18 pairs at Crowle.

6.3 The nightjars were somewhat evenly distributed in suitable habitat at Thorne and Goole Moors. For the third year, no birds were found in the area around the viewing platform at Thorne (compartment 42), which is incidentally adjacent to the black-headed gull colony. The maps illustrate the dearth of records in this area. Whilst the reason cannot easily be proven, the

dryness of the site this year certainly rules out increased wetness. Therefore the proximity and resulting noise from the black headed gull colony appears to be the more likely explanation. At Crowle nightjars this year were absent from a section in the east for the second year in succession.

- 6.4 The average density in whole 1 km² at Thorne, Goole and Crowle Moors this year was 3.4 churring males per 1 km², with the highest density of 8 churring males per 1 km² at Crowle. The average density here this year is therefore lower than the range of 4 – 17 per 1 km² given by Berry (1979) for three sites in East Anglia. This is a considerable decrease from the previous year, perhaps resulting from intensive tree felling in some parts of the southern section of Thorne Moors.
- 6.5 Both sites have areas where no nightjars were recorded in spite of these areas being perhaps prime habitat. It is therefore 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 been located. Therefore, the population may be greater than has been recorded.
- 6.6 Other species of note recorded during the survey included one spotted crake *Porzana porzana*, at least four pairs of long eared owl *Asio otus* proven by located juveniles, three pairs of tawny owl *Strix aluco*, 24 singing grasshopper warblers *Locustella naevia*, one water rail *Rallus aquaticus*, two woodcocks *Scopolax rusticola* and two hobby's *Falco subbuteo*.

References

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