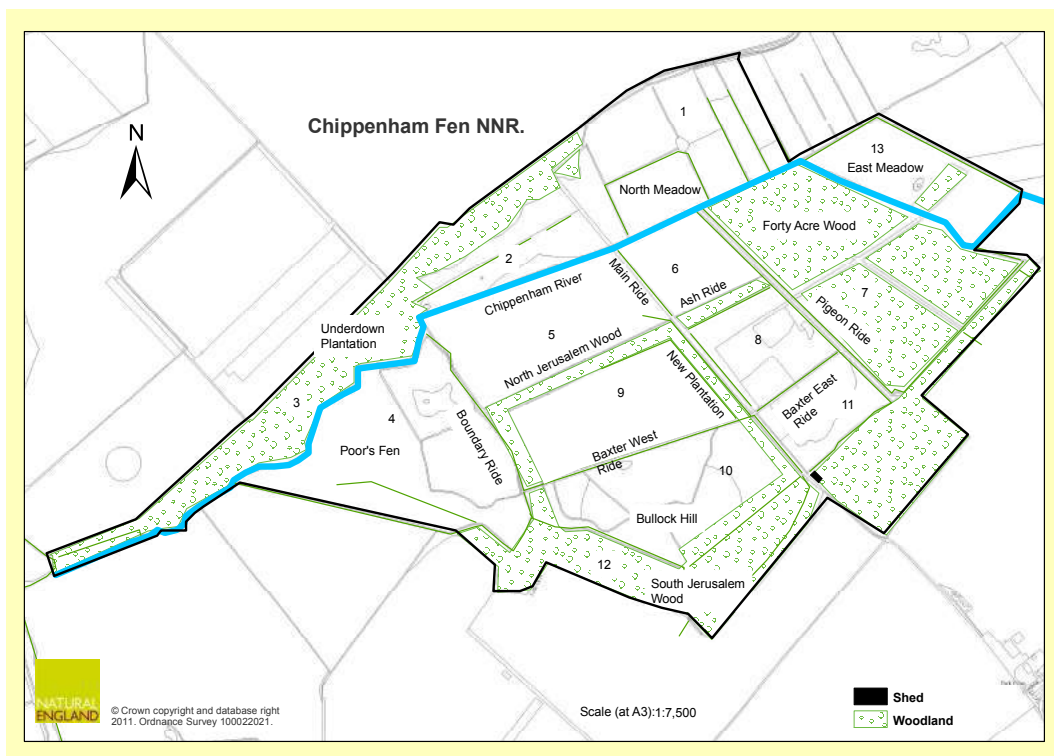




# Chippenham Fen NNR

## Woodland Breeding Bird Survey

### Results and analysis 2015-16



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## Contents

|   | <u>Page</u> |
|---|-------------|
| <b>I. Abstract</b>                            | 1           |
| <b>II Executive Summary</b>                   | 2           |
| 1. Background                                 | 2           |
| 2. Results                                    | 2           |
| i. Birds recorded                             | 2           |
| ii. Species recorded                          | 4           |
| iii. Estimate of territories held             | 5           |
| iv. Additional factors                        | 5           |
| 3. Discussion                                 | 6           |
| 4. Conclusion                                 | 6           |
| <b>III. 2015 - 16 Report</b>                  | 7           |
| 1. Background                                 | 7           |
| 2. Research objectives                        | 7           |
| 3. Methodology                                | 8           |
| 4. Results                                    | 8           |
| i. Bird numbers recorded                      | 8           |
| a. 2015                                       | 8           |
| b. 2016                                       | 10          |
| ii. Species recorded in 2016                  | 14          |
| iii. Estimate of territories held in 2016     | 14          |
| iv. Additional factors                        | 17          |
| a. Timing                                     | 17          |
| b. Temperature                                | 17          |
| c. Woodland assessment                        | 17          |
| d. Deer impact                                | 18          |
| e. Entomological variation                    | 19          |
| f. Differential impact of corvids and raptors | 20          |
| 5. Discussion                                 | 20          |
| 6. Conclusions                                | 21          |
| <b>IV Annexe</b>                              |             |
| Technical notes                               | 23          |
| Appendix 1 Territory locations 2016           |             |
| Unit 3  | 25          |
| Unit 12                                       | 26          |

## I. ABSTRACT

1. This five-year study sets out to gain base-line data on bird populations in order to be able to assess the future impact of threatened woodland management interventions in Unit 12 of Chippenham Fen (Jerusalem Wood). To achieve this one other section of the NNR, to act as a control, was needed and accordingly the same methodology was applied to Unit 3 of the reserve (Underdown Plantation) where no such work was planned.
2. When the survey's initial results were analysed (in 2012 and 2013) an anomaly was noted between these two units' bird populations – namely that Unit 12 appeared to support almost twice the number of territories that Unit 3 sustained. Given that the compartments were of a similar size, shape and condition and that the same surveying methodology had been employed, this was a surprising result. Accordingly in 2014, 2015 and 2016 when the same two areas were studied using an identical methodology, this anomaly persisted (although there was some slight variation).
3. Given this consistency in the data it was thus considered reasonable to consider the base line was reliable and could be employed to judge the impact of future woodland works on bird life in Unit 12.
4. During the last two years of fieldwork a number of potential reasons for the anomaly were also investigated.

## II. EXECUTIVE SUMMARY

### 1. BACKGROUND

1.1 This report summarise the results obtained from the 2015 and 2016 surveys of Chippenham Fen's bird populations in units 3 and 12.

1.2 In 2015, owing to the surveyor being injured midway through the programme, only three survey sessions (instead of five) were completed. Consequently the resulting data set was deemed insufficient to permit firm conclusions to be derived from it and thus that year's survey is not reported on in detail.

1.3 In both 2015 and 2016, as well as estimating the two unit's bird populations, the surveyor attempted to account for the anomaly previously noted between the relative populations of Unit 3 and Unit 12 (the latter consistently out-performed the former both in terms of birds recorded and possible territories held).

1.4 The methodology adopted for the 2013 and 2014 surveys was repeated, although two sightings of a species in the same environs was no longer deemed a possible territory, except in the case of Blackcap and Chiffchaff as, at best, these latter two species would likely only achieve a maximum of three sightings during the survey period. Thus just two occurrences of these species in 2015 and 2016 were still counted as possibly holding a territory. Also note that, where the results for 2015 and 2016 were compared with those of 2013 and 2014 concerning territory-holding, the latters' results were re-calculated as per the revised 2015 and 2016 methodology.

1.5 The results obtained for 2016 were as follows:

### 2. RESULTS

#### *i. Birds recorded*

2.i.1 This table has been modified so that each unit's results are grouped next to each other, although they continue to appear in chronological order (viz. visit #1 to #5):

*Table 1A<sup>1</sup>: 2016 Total birds recorded x visit x Unit*

| Visit #:                   | #1 | #2 | #3 | #4 | #5 | #1 | #2 | #3 | #4 | #5 | Total |   |    |
|----------------------------|----|----|----|----|----|----|----|----|----|----|-------|---|----|
| Unit: <sup>2</sup>         | 3  | 3  | 3  | 3  | 3  | 12 | 12 | 12 | 12 | 12 | All   | 3 | 12 |
| <b>Total Species noted</b> |    |    |    |    |    |    |    |    |    |    |       |   |    |
| <i>a. Field species</i>    |    |    |    |    |    |    |    |    |    |    |       |   |    |
| Barn Owl                   |    |    |    |    |    |    |    |    |    |    |       |   |    |
| Cuckoo                     |    |    |    |    |    |    |    |    |    |    |       |   |    |
| Lapwing                    |    |    |    |    |    |    |    |    |    |    |       |   |    |

<sup>1</sup> This is an adjusted version of Table 1 in the main report's findings.

<sup>2</sup> As before this year the visits' direction alternated, commencing with Unit 12 on the first, third and final visits.

|                      |           |           |           |           |           |           |           |           |           |           |            |            |            |
|----------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|------------|------------|
| Meadow Pipit         |           |           |           |           |           |           |           |           |           |           |            |            |            |
| Skylark              |           |           |           |           |           |           |           |           |           |           |            |            |            |
| Starling             |           | 1         |           |           |           |           |           |           |           |           | 1          | 1          | -          |
| Swift                |           |           |           |           |           |           |           |           |           |           |            |            |            |
| <i>b. Wetland</i>    |           |           |           |           |           |           |           |           |           |           |            |            |            |
| Canada Goose         |           |           | 2         |           |           |           |           |           |           |           | 2          | -          | 2          |
| Greylag Goose        |           |           |           |           |           |           |           |           |           |           |            |            |            |
| Mallard              |           | 1         | 2         | 2         |           |           | 1         | 1         |           |           | 8          | 6          | 2          |
| Marsh Harrier        |           |           |           |           |           |           |           |           |           |           |            |            |            |
| Snipe                |           |           |           |           |           |           |           |           |           |           |            |            |            |
| Water Rail           |           |           |           |           |           |           |           |           |           |           |            |            |            |
| Woodcock             |           |           |           |           |           |           |           | 1         |           |           | 1          | -          | 1          |
| <i>c. Woodland</i>   |           |           |           |           |           |           |           |           |           |           |            |            |            |
| Blackbird            | 2         | 1         | 3         | 1         | 2         | 2         |           | 2         | 1         |           | 14         | 7          | 7          |
| Blackcap             |           |           | 1         | 4         | 2         |           |           | 2         | 1         |           | 10         | 7          | 3          |
| Blue Tit             | 3         | 9         | 5         | 6         | 4         | 12        | 13        | 8         | 6         | 1         | 66         | 26         | 40         |
| Buzzard              | 2         | 1         |           | 1         |           |           |           |           |           |           | 4          | 4          | -          |
| Chaffinch            |           |           |           |           | 1         |           |           |           |           | 3         | 4          | 1          | 3          |
| Chiffchaff           |           | 2         | 5         | 4         | 1         |           | 1         | 10        | 3         | 1         | 27         | 12         | 15         |
| Coal Tit             | 2         |           | 1         | 2         |           | 1         |           | 2         | 3         | 1         | 12         | 5          | 7          |
| Crow                 |           | 2         |           |           |           | 1         | 4         |           |           |           | 7          | 5          | 2          |
| Dunnock              |           |           |           |           |           |           |           |           |           | 1         | 1          | -          | 1          |
| Fieldfare            |           |           |           |           |           |           |           |           |           |           |            |            |            |
| Goldcrest            | 1         | 2         | 1         | 1         | 1         |           | 2         | 2         | 2         | 1         | 12         | 7          | 5          |
| Great Spot Wd.       |           |           | 1         |           | 1         |           |           |           | 4         |           | 6          | 2          | 4          |
| Great Tit            | 10        | 3         | 8         | 4         | 2         | 5         | 7         | 5         | 1         | 2         | 47         | 27         | 20         |
| Greenfinch           |           |           |           | 1         |           |           | 1         |           |           |           | 2          | 1          | 1          |
| Green Wood.          |           |           |           |           |           |           |           |           |           |           |            |            |            |
| Jackdaw              |           | 5         | 2         |           | 1         | 1         |           | 2         |           | 1         | 12         | 8          | 4          |
| Jay                  | 1         | 2         | 2         |           | 1         | 1         |           |           |           |           | 7          | 6          | 1          |
| Kestrel              |           |           |           |           |           |           |           |           | 1         |           | 1          |            | 1          |
| Long-tailed Tit      | 9         | 3         | 1         | 1         | 1         | 6         | 7         | 9         | 4         | 1         | 42         | 15         | 27         |
| Magpie               |           |           |           |           | 1         |           | 1         |           | 1         |           | 3          | 2          | 1          |
| Marsh Tit            |           |           |           |           |           |           |           |           | 1         |           | 1          | 1          | -          |
| Mistle Thrush        | 2         |           |           |           |           |           |           | 1         |           |           | 3          | 2          | 1          |
| Nuthatch             |           | 3         | 1         |           |           |           | 1         | 4         | 2         | 2         | 13         | 4          | 9          |
| Redpoll              | 30        |           |           |           |           | 20        |           | 1         |           |           | 51         | 30         | 21         |
| Redwing              |           |           |           |           |           |           |           |           |           |           |            |            |            |
| Reed Bunting         |           |           |           |           |           |           |           |           |           |           |            |            |            |
| Robin                | 5         | 7         | 4         | 5         | 2         | 3         | 4         | 1         |           | 1         | 32         | 23         | 9          |
| Siskin               | 1         |           |           |           |           | 10        |           |           |           |           | 10         | -          | 10         |
| Song Thrush          |           |           | 2         | 1         | 1         | 2         | 1         | 1         |           | 2         | 10         | 4          | 6          |
| Sparrowhawk          |           | 1         |           |           |           |           |           |           |           |           | 1          | 1          | -          |
| Stock Dove           |           |           | 1         |           |           |           | 1         | 1         | 1         |           | 4          | 1          | 3          |
| Tawny Owl            |           |           |           |           |           |           |           |           |           |           |            |            |            |
| Treecreeper          |           |           | 2         | 4         |           |           | 4         | 1         | 1         |           | 12         | 6          | 6          |
| Woodpigeon           | 10        | 1         | 2         | 2         | 1         | 10        | 4         | 1         | 3         |           | 34         | 18         | 16         |
| Wren                 | 3         | 6         | 7         | 7         | 6         | 14        | 8         | 10        | 12        | 11        | 84         | 29         | 55         |
| <i>d. Game birds</i> |           |           |           |           |           |           |           |           |           |           |            |            |            |
| Pheasant             |           |           |           |           | 1         |           | 1         |           | 1         |           | 3          | 2          | 1          |
| Red-legged Partridge |           |           |           |           |           |           |           |           |           |           |            |            |            |
| <b>Total numbers</b> | <b>78</b> | <b>49</b> | <b>50</b> | <b>46</b> | <b>30</b> | <b>89</b> | <b>58</b> | <b>75</b> | <b>47</b> | <b>29</b> | <b>552</b> | <b>255</b> | <b>297</b> |

i.2 Although there were fluctuations, the disparity between the two units was maintained, albeit at a slightly lower level than in the past.

*ii. Species recorded*

ii.1 This table is also a revised version of Table 6 in the main report, with each unit's total number of species recorded appearing alongside each other and with survey sessions (#1 - #5) in chronological order:

*Table 6: Total species recorded per visit x Unit*

| Visit #   | #1 | #2 | #3 | #4 | #5 | I | #1 | #2 | #3 | #4 | #5 | I | Totals |    |    |
|-----------|----|----|----|----|----|---|----|----|----|----|----|---|--------|----|----|
| Unit #    | 3  | 3  | 3  | 3  | 3  |   | 12 | 12 | 12 | 12 | 12 |   | All    | 3  | 12 |
| Species # | 12 | 17 | 18 | 18 | 18 |   | 15 | 17 | 22 | 17 | 14 |   | 35     | 31 | 30 |

ii.2 Here, although there is some fluctuation from one survey session to the next, the total number of species seen is broadly similar – which given the similarity of the two unit's habitats, should be the case.

ii. 3 When only the woodland species are considered the dissimilarity is increased (Unit 3 had 19 species, Unit 12 had 15 species), but the incidence of recordings is not unexpectedly significantly greater in Unit 12 (2.4: 3.63 – i.e. +51%) due to more birds being recorded in it:

*Table 8: 2016 Woodland birds<sup>3</sup> species recorded within each Unit*

| Total Species noted        | Unit 3   |                   | Unit 12  |                   |
|----------------------------|----------|-------------------|----------|-------------------|
|                            | #/visits | average per visit | #/visits | average per visit |
| <i>c. Woodland species</i> |          |                   |          |                   |
| Blackbird                  | 7/5      | 1.4               | 7/3      | 2.3               |
| Blackcap                   | 7/3      | 2.3               |          |                   |
| Blue Tit                   | 26/5     | 5.2               | 40/5     | 8                 |
| Chaffinch                  | 1/1      | 1                 | 8/2      | 4                 |
| Chiffchaff                 | 12/4     | 3                 | 15/4     | 3.75              |
| Coal Tit                   | 5/3      | 1.6               | 7/4      | 1.75              |
| Goldcrest                  | 7/5      | 1.4               | 5/4      | 1.25              |
| Great Spotted Wood.        | 2/2      | 1                 | 4/1      | 4                 |
| Great Tit                  | 27/5     | 5.4               | 20/5     | 4                 |
| Greenfinch                 | 1/1      | 1                 |          |                   |
| Jay                        | 6/4      | 1.5               |          |                   |
| Long-tailed Tit            | 15/5     | 3                 | 27/5     | 5.4               |
| Marsh Tit                  | 1/1      | 1                 |          |                   |
| Mistle Thrush              | 2/1      | 2                 | 1/1      | 1                 |
| Nuthatch                   | 4/2      | 2                 | 9/4      | 2.25              |
| Robin                      | 23/5     | 4.6               | 9/4      | 2.25              |
| Song Thrush                | 4/3      | 1.3               | 6/4      | 1.5               |
| Treecreeper                | 6/2      | 3                 | 6/3      | 2                 |
| Wren                       | 29/5     | 4                 | 55/5     | 11                |
| Total species (19)         | (19)     | 2.4               | (15)     | 3.63              |

<sup>3</sup> Note the list does not include Green Woodpecker, Mallard, Pheasant, Red-legged Partridge or Woodcock that were also recorded in small numbers.

*iii. Estimate of territories held*

iii.1 Table 12 below appears as is in the main body of the report:

*Table 12: 2016 Comparison between 2013, 2014 & 2016 estimated woodland bird species' territories held x Unit*

| <b>Species noted</b>       | <b>Unit</b> | 3                                 | 3                    | 3                    | 12                   | 12                   | 12                   |
|----------------------------|-------------|-----------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
|                            |             | Territory total 2013 <sup>4</sup> | Territory total 2014 | Territory Total 2016 | Territory total 2013 | Territory total 2014 | Territory Total 2016 |
| <i>c. Woodland species</i> |             |                                   |                      |                      |                      |                      |                      |
| Blackbird                  |             | 1                                 |                      | 2                    | 1                    |                      | 1                    |
| Blackcap                   |             | 1                                 | 1                    | 1                    | 1                    | 1                    |                      |
| Blue Tit                   |             | 4                                 | 2                    | 3                    | 5                    | 6                    | 4                    |
| Chaffinch                  |             | 2                                 |                      |                      | 2                    | 1                    |                      |
| Chiffchaff                 |             | 1                                 |                      | 3                    | 1                    | 1                    | 5                    |
| Coal Tit                   |             |                                   |                      |                      | 2                    | 2                    | 1                    |
| Goldcrest                  |             |                                   |                      | 1                    | 1                    |                      |                      |
| Goldfinch                  |             | 1                                 |                      |                      |                      |                      |                      |
| Great Spotted Wood.        |             | 1                                 | 1                    |                      | 2                    | 2                    |                      |
| Great Tit                  |             | 2                                 | 3                    | 3                    | 3                    | 5                    | 2                    |
| Jay                        |             |                                   |                      | 1                    |                      |                      |                      |
| Long-tailed Tit            |             |                                   |                      | 1                    | 1                    | 2                    | 3                    |
| Marsh Tit                  |             |                                   |                      |                      |                      |                      |                      |
| Mistle Thrush              |             |                                   |                      |                      | 1                    |                      | 2                    |
| Nuthatch                   |             | 1                                 |                      |                      | 1                    |                      | 2                    |
| Robin                      |             | 2                                 | 1                    | 5                    | 2                    | 2                    | 2                    |
| Song Thrush                |             |                                   |                      |                      | 1                    | 1                    | 1                    |
| Treecreeper                |             |                                   |                      |                      | 1                    | 1                    | 2                    |
| Wren                       |             | 4                                 | 5                    | 6                    | 9                    | 7                    | 10                   |
| <b>Total</b>               |             | 20                                | 13                   | 26                   | 24                   | 31                   | 35                   |

iii. 2 The disparity between the numbers of territories being held in Unit 3 when compared to Unit 12 maintains, although the scale of difference fluctuates year on year (from + 20% in 2013, to +138% in 2014 and + 25% in 2016), but overall a clear disparity maintains.

*iv Additional factors*

iv.1 Several additional factors, thought possibly to have a bearing on the records for each unit were also considered in 2016. These included:

- temperature at commencement of the survey sessions;
- timing of the survey session;
- woodland condition;
- deer impact;
- entomological variations between woodlands;
- differential impact of corvids and raptors in each unit.

<sup>4</sup> Please note that the totals for 2013 and 2014 territories held vary from those appearing in the previous report as the methodology for ascribing territories had been changed in 2016 (see para. 1.4 above for details).

### 3. DISCUSSION

1. It was agreed that the 2013, 2014 and 2016 survey results constituted a suitable data base and that this survey data should now be archived for future reference as and when any significant woodland work is undertaken in Unit 12.
2. As the Fen's management need reliable data on which to base decisions, the issue of this data's quality should be taken into consideration. Given that the same surveyor using exactly the same methodology had been responsible for providing this survey data and that additionally there seemed to be consistency with the ringer's findings, the likelihood of there being any surveyor effect skewing results was thought to be negligible.
3. The differences in numbers of birds recorded and the totals of territories estimated to be being held between each unit has fluctuated but maintained, thus a disparity clearly exists.
4. The reasons for this disparity are thought to be a combination of the habitat differences between the two units impacting differentially on invertebrate numbers that in turn helped to account for much of the reduced presence and poorer performance of birds historically in Unit 3. In addition the extensive presence of evergreen Box (*Buxus sempervirens*) in Unit 12 may have contributed to rendering the disparity more pronounced too.

### 4. CONCLUSION

1. It was agreed that the 2013, 2014 and 2016 survey results constituted an acceptable base line by which to measure the impact on bird species of any future woodland management work in Unit 12.



### III. 2015 - 16 REPORT

#### 1. BACKGROUND

1.1 This report concerns the fourth and fifth consecutive years a bird population survey has been conducted in units 3 and 12 at Chippenham Fen (for site details please refer to the original 2012 report and the map on this report's cover). This document covers the findings from not one but two year's surveying, as the partial data for 2015 (the survey sessions were limited to three, owing to the surveyor being injured) had not previously been written up, and the data for 2016 is now available.



Figure 1: Unit 3 Winter 2016



Figure 2: Unit 12 Winter 2016

1.2 In addition to the BBS survey, in summer 2015 the surveyor and reserve manager jointly conducted a woodland condition assessment and a deer survey of the two units. The latter was then repeated in February 2016. The results of these assessments are included in the 'Additional factors' section of this report.

1.3 Once again Michael Holdsworth has kindly permitted the 2016 bird ringer's data to be used. Despite this data being confined to Poor's Fen (the area between unit's 3 and 12), rather than the BBS's focus on woodland, nevertheless it provides an independent reading of the incidence of common breeding species at Chippenham and could serve as a control on the quality of BBS survey's data.

#### 2. RESEARCH OBJECTIVES

2.1 These remain unchanged and are to establish the numbers of species likely to be holding territories and therefore possibly breeding in two equivalent-sized NNR wooded units on the Chippenham Fen. Over time (2013 - 2016), it is also to note any change within these populations, whether attributable to natural events (such as unduly unseasonal or extreme weather episodes), woodland management interventions (as were proposed for Unit 12) or some species effect.

2.2 In the course of conducting the 2012, 2013 and 2014 surveys a disparity emerged between the numbers of birds recorded and the estimated numbers of territories held in the two similar-sized units. Specifically that consistently

more birds were seen and territories counted in Unit 12. In 2015 and again in 2016 additional effort was dedicated to confirming whether this disparity was consistent and to what it could be attributed.

### 3. METHODOLOGY

3.1 The methodology adopted for 2013 and 2014 was again followed in both 2015 and 2016.

3.2 During spring 2016 at a meeting with the BTO to discuss another survey, it was suggested that a minimum of four survey sessions are required for any confidence to be attached to the likelihood of a bird holding a territory. As only three survey sessions had been possible in 2015, this data was deemed insufficient for safe predictions of territory-holding to be made. This meeting thus led to a change to the data analysis convention employed, specifically the assessment of the probability of a territory being held.

3.3 Until 2014 it had been accepted that two sightings tabbed in the same environs, could be regarded as *possibly* constituting a territory. Following discussions with the senior research ecologist at the BTO noted above, such records are now ignored in the analysis that follows for 2016, except in the case of migrating warblers (which have tended to arrive midway through the survey period and thus had a maximum achievable score of two or three). Thus for these latter species, where the lower threshold is achieved, we continue to regard two sightings as evidence for possible territory holding by a migrant warbler.

3.4 So, for all other species of bird recorded in an area equivalent to that species' defined breeding area on three occasions or more it is deemed to *probably* be holding that area as a territory. It then follows that, if a bird is recorded on four occasions in that vicinity, it is *likely* to be holding a territory, while if it is present on five separate survey sessions, then it is considered to be *definitely* holding a territory in that area. In this way the decision regarding the threshold for territory holding has simplified the content of the territories' data.

### 4. RESULTS

4.1 The results section is divided into three main topics viz.:

- i. Birds numbers recorded
- ii. Species recorded
- iii. Estimate of territories held

#### *i. Bird numbers recorded*

##### **a. 2015**

4.i.a.2 Note the survey in 2015 only consisted of three surveying sessions. This was due to the physical incapacity of the surveyor, so the two sessions planned for May 2015 did not occur. This incomplete data set has nevertheless been included, as it should cast light on the Fen's bird records.

Table 1: 2015 Total bird species recorded x visit x unit

| Visit date                          | 18 | Mar | 1  | Apr | 22 | Apr | Total | 3  | 12 |
|-------------------------------------|----|-----|----|-----|----|-----|-------|----|----|
| Unit                                | 12 | 3   | 3  | 12  | 12 | 3   |       |    |    |
| Total Species noted                 |    |     |    |     |    |     |       |    |    |
| <i>a. Field species<sup>5</sup></i> |    |     |    |     |    |     |       |    |    |
| Barn Owl                            |    |     | 1  |     |    |     | 1     | 1  | -  |
| Cuckoo                              |    |     |    |     |    |     |       |    |    |
| Lapwing                             |    |     |    |     |    |     |       |    |    |
| Meadow Pipit                        |    |     |    |     |    |     |       |    |    |
| Skylark                             |    |     |    |     |    |     |       |    |    |
| Starling                            |    |     |    |     |    |     |       |    |    |
| Swift                               |    |     |    |     |    |     |       |    |    |
| <i>b. Wetland</i>                   |    |     |    |     |    |     |       |    |    |
| Canada Goose                        |    |     |    |     |    |     |       |    |    |
| Greylag Goose                       |    |     |    |     |    |     |       |    |    |
| Mallard                             | 1  | 1   |    | 2   | 2  |     | 6     | 1  | 5  |
| Marsh Harrier                       |    |     |    |     |    |     |       |    |    |
| Snipe                               |    |     |    |     |    |     |       |    |    |
| Water Rail                          |    |     |    |     |    |     |       |    |    |
| <i>c. Woodland</i>                  |    |     |    |     |    |     |       |    |    |
| Blackbird                           | 4  | 4   | 1  | 2   | 2  | 3   | 16    | 8  | 8  |
| Blackcap                            |    |     |    |     | 3  |     | 3     | -  | 3  |
| Blue Tit                            | 20 | 7   | 5  | 17  | 10 | 11  | 70    | 23 | 47 |
| Buzzard                             |    | 2   |    |     |    |     | 2     | 2  | -  |
| Chaffinch                           | 1  | 1   |    | 6   | 1  | 1   | 9     | 3  | 6  |
| Chiffchaff                          |    |     | 2  | 1   | 5  | 1   | 9     | 3  | 6  |
| Coal Tit                            |    | 1   |    | 4   | 1  | 2   | 8     | 3  | 5  |
| Crow                                |    | 10  | 1  |     | 1  |     | 12    | 11 | 1  |
| Dunnock                             |    |     |    |     |    |     |       |    |    |
| Fieldfare                           |    |     |    |     |    |     |       |    |    |
| Goldcrest                           | 2  |     | 2  |     | 1  | 2   | 6     | 4  | 2  |
| Great Spot Wd.                      | 1  | 1   |    | 2   | 1  |     | 4     | 1  | 3  |
| Great Tit                           | 15 | 4   | 12 | 9   | 5  | 5   | 50    | 21 | 29 |
| Greenfinch                          |    |     |    |     |    |     |       |    |    |
| Green Wood.                         |    |     |    | 1   | 1  |     | 2     | -  | 2  |
| Jackdaw                             | 6  | 2   |    | 8   | 1  |     | 17    | 2  | 15 |
| Jay                                 |    | 1   |    |     |    |     | 1     | 1  | -  |
| Kestrel                             |    |     |    |     |    |     |       |    |    |
| Long-tailed Tit                     | 2  | 2   | 2  | 5   | 2  | 2   | 13    | 6  | 7  |
| Magpie                              |    |     |    |     |    | 3   | 3     | 3  | -  |
| Marsh Tit                           |    |     | 1  |     |    |     | 1     | 1  | -  |
| Mistle Thrush                       |    |     |    |     |    |     |       |    |    |
| Nuthatch                            | 1  |     | 1  | 1   | 3  | 1   | 7     | 2  | 5  |
| Redpoll                             |    |     |    |     |    |     |       |    |    |
| Redwing                             |    |     |    |     |    |     |       |    |    |
| Reed Bunting                        |    | 1   |    |     |    |     | 1     | 1  | -  |
| Robin                               | 6  | 4   | 1  | 2   | 4  | 2   | 19    | 7  | 12 |
| Siskin                              |    |     |    |     |    |     |       |    |    |
| Song Thrush                         | 1  |     | 1  | 1   | 1  | 1   | 5     | 2  | 3  |
| Sparrowhawk                         |    |     | 1  |     |    |     | 1     | 1  | -  |
| Stock Dove                          |    |     |    |     | 1  |     | 1     | -  | 1  |

<sup>5</sup> As this list comprises all species of bird ever seen in the two units, year on year some species remain blank.

|                      |    |    |    |    |    |    |     |     |     |
|----------------------|----|----|----|----|----|----|-----|-----|-----|
| Tawny Owl            |    |    |    |    |    |    |     |     |     |
| Treecreeper          | 1  |    |    | 2  |    |    | 3   | -   | 3   |
| Woodpigeon           | 6  | 10 | 1  |    | 1  | 1  | 19  | 12  | 7   |
| Wren                 | 13 | 4  | 4  | 7  | 6  | 8  | 42  | 16  | 26  |
| <i>d. Game birds</i> |    |    |    |    |    |    |     |     |     |
| Pheasant             | 1  |    |    | 1  | 2  | 1  | 5   | 1   | 4   |
| Red-legged Partridge |    | 1  |    |    |    |    | 1   | 1   | -   |
| <b>Total species</b> | 16 | 18 | 15 | 17 | 18 | 16 | 31  | 26  | 22  |
| <b>Total numbers</b> | 81 | 57 | 36 | 71 | 50 | 45 | 340 | 138 | 202 |

4.i.a.3 Can any conclusions be drawn from 2015's truncated survey? As the BTO meeting affirmed, it is obviously too risky to draw any definitive conclusions from such limited data. But, when comparing with the totals of birds recorded for 2013, 2014 and 2016, no consistent pattern emerges – apart that is from the slight rise in 2015 and 2016 that may have been partly attributable to Crows, Jackdaws, Magpies and Woodpigeons now being recorded and thus increasing net numbers. So an examination of the 2015 data could be instructive:

*Table 2: Numbers of birds recorded in three sessions 2013 – 16 x unit*

|        | March |    | April |    |    | Total |     |
|--------|-------|----|-------|----|----|-------|-----|
| Unit # | 12    | 3  | 3     | 12 | 12 | 3     | All |
| 2013   | 98    | 60 | 91    | 81 | 44 | 20    | 394 |
| 2014   | 61    | 33 | 44    | 54 | 50 | 26    | 268 |
| 2015   | 81    | 57 | 36    | 71 | 50 | 45    | 340 |
| 2016   | 89    | 78 | 49    | 58 | 75 | 50    | 399 |

4.i.a.4 In Table 2 above it is actually the results for 2014 that seem to emerge as slightly anomalous. For that year's totals are almost uniformly below those of the other three years and thus largely accounts for a seeming lack of consistency in the first three survey sessions over the four-year survey period. Despite this 2014 anomaly, it is proposed that the reserve's management are still likely to be safe in relying on a data set comprised of these 2013, 2014 and 2016 records, as this will should act as a reasonably reliable base line, against which to compare future records obtained subsequent to any significant woodland management activities in either unit.

## b. 2016

*Table 3: 2016 Bird records per visit x date*

| Date/(Session) | Unit 3 | Unit 12 |
|----------------|--------|---------|
| 16 March/ #1   | 78     | 89      |
| 30 March/ #2   | 49     | 58      |
| 20 April. #3   | 50     | 75      |
| 4 May/ #4      | 46     | 48      |
| 1 June/ #5     | 30     | 29      |
| Total          | 253    | 299     |

4.i.b.5 It is instructive to compare the 2015 results with those for 2016:

Table 4A: 2015

|          | Unit 3 | Unit 12 |
|----------|--------|---------|
| 18 March | 57     | 81      |
| 1 April  | 36     | 71      |
| 22 April | 45     | 50      |
| Total    | 138    | 202     |

Table 4B: 2016

|          | Unit 3 | Unit 12 |
|----------|--------|---------|
| 16 March | 78     | 89      |
| 30 March | 49     | 58      |
| 20 April | 50     | 75      |
| Total    | 177    | 222     |

4.i.b.6 Comparing tables 4A and 4B, the disparity in total number of birds recorded in units 3 and 12 still remains distinct, though it may be reducing. In Unit 3 in 2015 30% fewer birds were recorded than in Unit 12, although in 2016 this disparity had reduced to 20%.

Table 5: 2016 Total birds recorded x visit x Unit

| Visit date                 | 16 | Mar | 30 | Mar | 20 | Apr | 20 | May | 1  | Jun | Total |    |    |
|----------------------------|----|-----|----|-----|----|-----|----|-----|----|-----|-------|----|----|
| Unit <sup>6</sup>          | 12 | 3   | 3  | 12  | 12 | 3   | 3  | 12  | 12 | 3   |       | 3  | 12 |
| <b>Total Species noted</b> |    |     |    |     |    |     |    |     |    |     |       |    |    |
| <i>a. Field species</i>    |    |     |    |     |    |     |    |     |    |     |       |    |    |
| Barn Owl                   |    |     |    |     |    |     |    |     |    |     |       |    |    |
| Cuckoo                     |    |     |    |     |    |     |    |     |    |     |       |    |    |
| Lapwing                    |    |     |    |     |    |     |    |     |    |     |       |    |    |
| Meadow Pipit               |    |     |    |     |    |     |    |     |    |     |       |    |    |
| Skylark                    |    |     |    |     |    |     |    |     |    |     |       |    |    |
| Starling                   |    |     | 1  |     |    |     |    |     |    |     | 1     | 1  | -  |
| Swift                      |    |     |    |     |    |     |    |     |    |     |       |    |    |
| <i>b. Wetland</i>          |    |     |    |     |    |     |    |     |    |     |       |    |    |
| Canada Goose               |    |     |    |     |    | 2   |    |     |    |     | 2     | -  | 2  |
| Greylag Goose              |    |     |    |     |    |     |    |     |    |     |       |    |    |
| Mallard                    |    |     | 1  | 1   | 1  | 2   | 2  |     |    |     | 8     | 6  | 2  |
| Marsh Harrier              |    |     |    |     |    |     |    |     |    |     |       |    |    |
| Snipe                      |    |     |    |     |    |     |    |     |    |     |       |    |    |
| Water Rail                 |    |     |    |     |    |     |    |     |    |     |       |    |    |
| Woodcock                   |    |     |    |     | 1  |     |    |     |    |     | 1     | -  | 1  |
| <i>c. Woodland</i>         |    |     |    |     |    |     |    |     |    |     |       |    |    |
| Blackbird                  | 2  | 2   | 1  |     | 2  | 3   | 1  | 1   |    | 2   | 14    | 7  | 7  |
| Blackcap                   |    |     |    |     | 2  | 1   | 4  | 1   |    | 2   | 10    | 7  | 3  |
| Blue Tit                   | 12 | 3   | 9  | 13  | 8  | 5   | 6  | 6   | 1  | 4   | 66    | 26 | 40 |
| Buzzard                    |    | 2   | 1  |     |    |     | 1  |     |    |     | 4     | 4  | -  |
| Chaffinch                  |    |     |    |     |    |     |    |     | 3  | 1   | 4     | 1  | 3  |
| Chiffchaff                 |    |     | 2  | 1   | 10 | 5   | 4  | 3   | 1  | 1   | 27    | 12 | 15 |
| Coal Tit                   | 1  | 2   |    |     | 2  | 1   | 2  | 3   | 1  |     | 12    | 5  | 7  |
| Crow                       | 1  |     | 2  | 4   |    |     |    |     |    |     | 7     | 5  | 2  |
| Dunnock                    |    |     |    |     |    |     |    |     | 1  |     | 1     | -  | 1  |

<sup>6</sup> Once again the Unit numbers appear in the tables column headers in the order in which the survey was conducted – as before this year the visits' direction again alternated, commencing with Unit 12 on the first, third and final visits.

|                      |           |           |           |           |           |           |           |           |           |           |            |            |            |
|----------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|------------|------------|
| Fieldfare            |           |           |           |           |           |           |           |           |           |           |            |            |            |
| Goldcrest            |           | 1         | 2         | 2         | 2         | 1         | 1         | 2         | 1         | 1         | 12         | 7          | 5          |
| Great Spot Wd.       |           |           |           |           | 4         | 1         |           |           |           | 1         | 6          | 2          | 4          |
| Great Tit            | 5         | 10        | 3         | 7         | 5         | 8         | 4         | 1         | 2         | 2         | 47         | 27         | 20         |
| Greenfinch           |           |           |           | 1         |           |           | 1         |           |           |           | 2          | 1          | 1          |
| Green Wood.          |           |           |           |           |           |           |           |           |           |           |            |            |            |
| Jackdaw              | 1         |           | 5         |           | 2         | 2         |           |           | 1         | 1         | 12         | 8          | 4          |
| Jay                  | 1         | 1         | 2         |           |           | 2         |           |           |           | 1         | 7          | 6          | 1          |
| Kestrel              |           |           |           |           |           |           |           | 1         |           |           | 1          |            | 1          |
| Long-tailed Tit      | 6         | 9         | 3         | 7         | 9         | 1         | 1         | 4         | 1         | 1         | 42         | 15         | 27         |
| Magpie               |           |           |           | 1         |           |           |           | 1         |           | 1         | 3          | 2          | 1          |
| Marsh Tit            |           |           |           |           |           |           |           | 1         |           |           | 1          | 1          | -          |
| Mistle Thrush        |           | 2         |           |           | 1         |           |           |           |           |           | 3          | 2          | 1          |
| Nuthatch             |           |           | 3         | 1         | 4         | 1         |           | 2         | 2         |           | 13         | 4          | 9          |
| Redpoll              | 20        | 30        |           |           | 1         |           |           |           |           |           | 51         | 30         | 21         |
| Redwing              |           |           |           |           |           |           |           |           |           |           |            |            |            |
| Reed Bunting         |           |           |           |           |           |           |           |           |           |           |            |            |            |
| Robin                | 3         | 5         | 7         | 4         | 1         | 4         | 5         |           | 1         | 2         | 32         | 23         | 9          |
| Siskin               | 10        | 1         |           |           |           |           |           |           |           |           | 10         | -          | 10         |
| Song Thrush          | 2         |           |           | 1         | 1         | 2         | 1         |           | 2         | 1         | 10         | 4          | 6          |
| Sparrowhawk          |           |           | 1         |           |           |           |           |           |           |           | 1          | 1          | -          |
| Stock Dove           |           |           |           | 1         | 1         | 1         |           | 1         |           |           | 4          | 1          | 3          |
| Tawny Owl            |           |           |           |           |           |           |           |           |           |           |            |            |            |
| Treecreeper          |           |           |           | 4         | 1         | 2         | 4         | 1         |           |           | 12         | 6          | 6          |
| Woodpigeon           | 10        | 10        | 1         | 4         | 1         | 2         | 2         | 3         |           | 1         | 34         | 18         | 16         |
| Wren                 | 14        | 3         | 6         | 8         | 10        | 7         | 7         | 12        | 11        | 6         | 84         | 29         | 55         |
| <i>d. Game birds</i> |           |           |           |           |           |           |           |           |           |           |            |            |            |
| Pheasant             |           |           |           | 1         |           |           |           | 1         |           | 1         | 3          | 2          | 1          |
| Red-legged Partridge |           |           |           |           |           |           |           |           |           |           |            |            |            |
| <b>Total numbers</b> | <b>89</b> | <b>78</b> | <b>49</b> | <b>58</b> | <b>75</b> | <b>50</b> | <b>46</b> | <b>47</b> | <b>29</b> | <b>30</b> | <b>552</b> | <b>255</b> | <b>297</b> |

4.i.b.7 The overall incidence of birds is once again comparable to that obtained in 2013, although it has to be admitted that the decision to record Crows, Jackdaws, Magpies and Woodpigeons in 2015 and 2016 contributed somewhat to this apparent 'recovery'. Once again the disparity between the total numbers of birds recorded in the two units has maintained, but seemingly at a lower level than previously noted, so we can conclude birds per se remain more abundant in Unit 12.

4.i.b.8 Following discussion it was agreed that, unless there is clear evidence for any of these four species (viz. Crows, Jackdaws, Magpies and Woodpigeons ) actually nesting in the units, they will not be counted in future.

## *ii. Species recorded in 2016*

4.ii.1 For the reasons previously stated above, the 2015 data has not been analysed with regard to this variable.

*Table 6: 2016 total species recorded per visit x Unit*

|                  | March |    |    | April |    |    | May |    |    | June |     |    | Totals |  |  |
|------------------|-------|----|----|-------|----|----|-----|----|----|------|-----|----|--------|--|--|
| <b>Unit #</b>    | 12    | 3  | 3  | 12    | 12 | 3  | 3   | 12 | 12 | 3    | All | 3  | 12     |  |  |
| <b>Species #</b> | 15    | 12 | 17 | 17    | 22 | 18 | 18  | 17 | 14 | 18   | 35  | 31 | 30     |  |  |

4.ii.2 How does this compare with previous years?

*Table 7: Species recorded 2013 – 2016 x Unit*

|               | March |    |    | April |    |    | May |    |    | June |     |  | Total |
|---------------|-------|----|----|-------|----|----|-----|----|----|------|-----|--|-------|
| <b>Unit #</b> | 12    | 3  | 3  | 12    | 12 | 3  | 3   | 12 | 12 | 3    | All |  |       |
| <b>2013</b>   | 20    | 21 | 26 | 17    | 20 | 14 | 14  | 24 | 21 | 14   | 39  |  |       |
| <b>2014</b>   | 18    | 14 | 17 | 16    | 14 | 11 | 11  | 16 | 16 | 12   | 34  |  |       |
| <b>2015</b>   | 16    | 18 | 15 | 17    | 18 | 16 |     |    |    |      |     |  |       |
| <b>2016</b>   | 15    | 12 | 17 | 17    | 22 | 18 | 18  | 18 | 14 | 18   | 36  |  |       |

4.ii.3 While to some degree fluctuations are inevitable, from one visit to a unit from another, no overall statistically significant trend emerges. The three years 2013, 2014 and 2016 are all appear to be roughly comparable.

4.ii.4 Once again, concentrating on woodland species in Table 8 below, we note (despite fewer species actually being logged in Unit 12) that the incidence of species in Jerusalem Wood/Unit 12 was higher than that for Unit 3 - +51%, which is similar to the 2013 result of +59%. This continues to suggest a greater abundance of birds in Unit 12 when compared to Unit 3.

*Table 8: 2016 Woodland birds<sup>7</sup> species recorded within each Unit*

|                            | Unit 3          |                          | Unit 12         |                          |
|----------------------------|-----------------|--------------------------|-----------------|--------------------------|
| <b>Total Species noted</b> | <b>#/visits</b> | <b>average per visit</b> | <b>#/visits</b> | <b>average per visit</b> |
| <i>c. Woodland species</i> |                 |                          |                 |                          |
| Blackbird                  | 7/5             | 1.4                      | 7/3             | 2.3                      |
| Blackcap                   | 7/3             | 2.3                      |                 |                          |
| Blue Tit                   | 26/5            | 5.2                      | 40/5            | 8                        |
| Chaffinch                  | 1/1             | 1                        | 8/2             | 4                        |
| Chiffchaff                 | 12/4            | 3                        | 15/4            | 3.75                     |
| Coal Tit                   | 5/3             | 1.6                      | 7/4             | 1.75                     |
| Goldcrest                  | 7/5             | 1.4                      | 5/4             | 1.25                     |
| Great Spotted Wood.        | 2/2             | 1                        | 4/1             | 4                        |
| Great Tit                  | 27/5            | 5.4                      | 20/5            | 4                        |
| Greenfinch                 | 1/1             | 1                        |                 |                          |
| Jay                        | 6/4             | 1.5                      |                 |                          |
| Long-tailed Tit            | 15/5            | 3                        | 27/5            | 5.4                      |
| Marsh Tit                  | 1/1             | 1                        |                 |                          |
| Mistle Thrush              | 2/1             | 2                        | 1/1             | 1                        |
| Nuthatch                   | 4/2             | 2                        | 9/4             | 2.25                     |
| Robin                      | 23/5            | 4.6                      | 9/4             | 2.25                     |
| Song Thrush                | 4/3             | 1.3                      | 6/4             | 1.5                      |
| Treecreeper                | 6/2             | 3                        | 6/3             | 2                        |
| Wren                       | 29/5            | 4                        | 55/5            | 11                       |
| (Total species 19)         | (19)            | 2.4                      | (15)            | 3.63                     |

<sup>7</sup> Note the list does not include Green Woodpecker, Mallard, Pheasant, Red-legged Partridge or Woodcock that were also recorded in small numbers.

4.ii.5 Not surprisingly, as noted above, the incidence of species being encountered is also higher in Unit 12 – i.e. +51% as noted above despite the species recorded being lower (19: 15).

4.ii.6 How reliable are these figures? The ringer’s data may serve as an indicator of the quality of the BBS data:

*Table 9: 2016 incidence of species recorded in the BBS compared to ringer’s data*

| Rank | Woodland        | n/% <sup>8</sup> | Poor’s Fen*   | *n/%  |
|------|-----------------|------------------|---------------|-------|
| 1    | Wren            | 84/15            | Chiffchaff    | 30/23 |
| 2    | Blue Tit        | 66/12            | Reed Warbler  | 29/22 |
| 3    | Redpoll         | 51/9             | Wren          | 22/17 |
| 4    | Great Tit       | 47/8             | Robin         | 11/8  |
| 5    | Long-tailed Tit | 42/8             | Great Tit     | 9/7   |
| 6    | Woodpigeon      | 34/6             | Blackcap      | 8/6   |
| 7    | Robin           | 32/6             | Sedge Warbler | 7/5   |
| 8    | Chiffchaff      | 27/5             | Blue Tit      | 7/5   |
| 9    | Blackbird       | 14/2             | Reed Bunting  | 3/2   |
| 10   | Nuthatch        | 13/2             | Marsh Tit     | 2/1   |

\* Data presented in the far right hand column is extracted from *Chippenham West Standards 2016*, and is courtesy of Michael Holdsworth of Cambridgeshire Bird Club.

4.ii.b.7 Ignoring the facts that, a. a different mix of species to be found in woodland vs. fen habitats, b. that BBS and the CES-lite programme are entirely different sampling techniques and, what’s more, c. there were only three ringing sessions (compared to five BBS survey sessions) some conducted later than June, the joint results for common species (Wren, Robin, Great Tit and Blue Tit) are such as to suggest, when the percentage occurrence is considered, remarkably consistent population levels (only Blue Tits at 12% recorded in the BBS and 5% for ringed birds was perhaps significantly different – while that for the Chiffchaff of 5% : 23% is to be expected) are revealed by both studies.

4.ii.b.8 In 2014 there were equally good fits between the two sets of percentages for Blue Tit, Great Tit, Robin and Wren.

4.ii.b.9 In view of this degree of concordance between the results of the BBS and the CES-lite ringing totals, suggests that both studies are providing a reasonably accurate and similar sample of their respective habitat’s bird populations.

### *iii. Estimate of territories held in 2016*

4.iii.1 The evidence for different species’ territory sizes was dealt with in previous reports (see Appendix 3 to the 2014 report), while the change to estimating of territory-holding protocol has been dealt with in section III.3 above. As a result the 2015 truncated survey data has not been analysed in this respect.

<sup>8</sup> There are two figures in the totals columns of this table. That appearing to the left of the oblique represents the actual number of birds recorded in the two units/or Poor’s Fen, while that to the right of the oblique denotes the % of all birds recorded or ringed,



4.iii.2 As a reminder, the certainty of a territory being held are:

- 3 instances is a probable territory
- 4 instances is a likely territory
- 5 instances is definitely holding a territory

Thus as indicated here the likelihood of a territory being held increases with the number of times a bird is spotted in a particular environ.

*Table 10: 2016 Total territories x Unit*

| Unit          | 3  | 12 |
|---------------|----|----|
| Territories # | 26 | 35 |

4.iii.3 Applying the revised territory-holding protocol, in 2014 Unit 3 held 13 territories, while Unit 12 offered an impressive 31, so again a similar level of disparity to that seen in Table 10 above. Let us examine the 2016 results in more detail:

*Table 11: 2016 Estimate of bird species' possible woodland territories x Unit*

| Species noted              | Unit 3          |                                  | Unit 12         |                         |
|----------------------------|-----------------|----------------------------------|-----------------|-------------------------|
|                            | Territory total | Certainty range 3-5 <sup>9</sup> | Territory total | Certainty range 3-5     |
| <i>c. Woodland species</i> |                 |                                  |                 |                         |
| Blackbird                  | 2               | 3,3                              | 1               | 3                       |
| Blackcap                   | 1               | 3                                |                 |                         |
| Blue Tit                   | 3               | 3, 4, 4                          | 4               | 5,3,3,3                 |
| Chaffinch                  |                 |                                  |                 |                         |
| Chiffchaff                 | 3               | 3, 3, 3                          | 5               | 2,2,2,2,3               |
| Coal Tit                   |                 |                                  | 1               | 3                       |
| Goldcrest                  | 1               | 3                                |                 |                         |
| Goldfinch                  |                 |                                  |                 | -                       |
| Great Spotted Wood.        |                 |                                  |                 |                         |
| Great Tit                  | 3               | 3,3,4                            | 2               | 3,4                     |
| Jay                        | 1               | 4                                |                 |                         |
| Long-tailed Tit            | 1               | 4                                | 3               | 4,4,4                   |
| Marsh Tit                  |                 |                                  |                 |                         |
| Mistle Thrush              |                 |                                  | 2               | 3,3                     |
| Nuthatch                   |                 |                                  | 2               | 2*, 3                   |
| Robin                      | 5               | 5, 4, 4, 3, 3                    | 2               | 4,3                     |
| Song Thrush                |                 |                                  |                 |                         |
| Treecreeper                |                 |                                  | 2               | 2*, 3                   |
| Wren                       | 6               | 5,4,4,3,3, 3                     | 10              | 5,5,5,4,4,4,4,3,3,3,3,3 |
| <b>Total (15 species)</b>  | 26              | Average 3.46                     | 35              | Average 3.4             |

\* Pair seen together twice strongly suggestive of a territory occupied

4.iii.4 The certainty associated with territories in each unit is about the same at 3.4. See Appendix 1 for the location of each unit's territory-holding species.

4.iii.5 A degree of disparity between the two units continues with regard to territories too - Unit 3 with 26 amounted to 25% less territories than Unit 12 with 35. This persistent imbalance in totals (although declining somewhat

<sup>9</sup> Except for Blackcap and Chiffchaff, which still qualify for territory-holding if birds were present on a particular territory on at least two occasions.

lately) suggests that some additional factor may be operating in Unit 3 to reduce its degree of territory holding?

4.iii.6 Next, how consistent is this performance over time?:

*Table 12: 2016 Comparison between 2013, 2014 & 2016 estimated woodland bird species' territories held x Unit*

| Species noted              | Unit 3               |                      | Unit 12              |                      | Total                |                      |
|----------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
|                            | Territory total 2013 | Territory total 2014 | Territory Total 2016 | Territory total 2013 | Territory total 2014 | Territory Total 2016 |
| <i>c. Woodland species</i> |                      |                      |                      |                      |                      |                      |
| Blackbird                  | 1                    |                      | 2                    | 1                    |                      | 1                    |
| Blackcap                   | 1                    | 1                    | 1                    | 1                    | 1                    |                      |
| Blue Tit                   | 4                    | 2                    | 3                    | 5                    | 6                    | 4                    |
| Chaffinch                  | 2                    |                      |                      | 2                    | 1                    |                      |
| Chiffchaff                 | 1                    |                      | 3                    | 1                    | 1                    | 5                    |
| Coal Tit                   |                      |                      |                      | 2                    | 2                    | 1                    |
| Goldcrest                  |                      |                      | 1                    | 1                    |                      |                      |
| Goldfinch                  | 1                    |                      |                      |                      |                      |                      |
| Great Spotted Wood.        | 1                    | 1                    |                      | 2                    | 2                    |                      |
| Great Tit                  | 2                    | 3                    | 3                    | 3                    | 5                    | 2                    |
| Jay                        |                      |                      | 1                    |                      |                      |                      |
| Long-tailed Tit            |                      |                      | 1                    | 1                    | 2                    | 3                    |
| Marsh Tit                  |                      |                      |                      |                      |                      |                      |
| Mistle Thrush              |                      |                      |                      | 1                    |                      | 2                    |
| Nuthatch                   | 1                    |                      |                      | 1                    |                      | 2                    |
| Robin                      | 2                    | 1                    | 5                    | 2                    | 2                    | 2                    |
| Song Thrush                |                      |                      |                      | 1                    | 1                    | 1                    |
| Treecreeper                |                      |                      |                      | 1                    | 1                    | 2                    |
| Wren                       | 4                    | 5                    | 6                    | 9                    | 7                    | 10                   |
| <b>Total</b>               | <b>20</b>            | <b>13</b>            | <b>26</b>            | <b>24</b>            | <b>31</b>            | <b>35</b>            |

4.iii.7 Please note in Table 12 above the totals for 2013's and 2014's territories are at variance with those previously published. This is because to produce this comparison table we reverted to the original data and re-counted territories using the revised territory holding protocol adopted for 2016 (i.e. apart from Blackcap and Chiffchaff records, all other species with #2 sightings were to discounted as holding territories<sup>10</sup>).

4.iii.8 While year-on-year the differences between the two units remains evident over all four years, there are fluctuations, but these are not sufficient for us to revise our opinion that Unit 12 consistently exhibits more territory-holding than Unit 3.

<sup>10</sup> There were two exceptions in Unit 12 in 2016, where on two occasions a pair of Nuthatch and of Treecreeper were observed together, which was deemed highly suggestive of territory holding.

#### iv. Additional factors

4.iv.1 In Appendix 4 of the 2014 report the disparity between the two units was considered and a number of further factors<sup>11</sup> were suggested as being potentially influential. Thus for the 2015 and 2016 surveys it was decided to explore some of these potential influences further, so that four more 'Additional factors' were considered this year:

##### a. Timing

4.iv.a.2 As in previous reports the timing of each survey session has been noted, thus:

*Table 13: 2016 Survey timing*

|                | 16.iii         | 30.iii         | 20.iv          | 4.v            | 1.vi           |
|----------------|----------------|----------------|----------------|----------------|----------------|
| <b>Unit 3</b>  | 8:15 -<br>8:45 | 7:55 -<br>8:40 | 6:50 -<br>7:30 | 5:20 -<br>6:00 | 5:50 -<br>6:40 |
| <b>Unit 12</b> | 6:40 -<br>7:35 | 09:00          | 5:40 -<br>6:30 | 6:25 -<br>7:00 | 4:40 -<br>5:25 |

4.iv.a.3 It would appear there is a slight tendency for the earlier starts to yield more records, though the disparity between the two units still maintains. It is therefore proposed that the practice of alternating start times be maintained.

##### b. Temperature

4.iv.b.4 The temperature at the start of each survey session has also again been considered:

*Table 14: 2016 Temperature at start of visit*

|                | 16.iii           | 30.iii           | 20.iv           | 4.v            | 1.vi            |
|----------------|------------------|------------------|-----------------|----------------|-----------------|
| <b>Unit 3</b>  | -                | 3.5 <sup>0</sup> | -               | 1 <sup>0</sup> | -               |
| <b>Unit 12</b> | 3.5 <sup>0</sup> | -                | -1 <sup>0</sup> | 2 <sup>0</sup> | 11 <sup>0</sup> |

4.iv.b.5 While the temperature range is significant (this year it was -1<sup>0</sup> to 11<sup>0</sup>), there seems to be no impact on the bird numbers recorded. With the lower incidence recorded in June being more likely due to the time of the year the session was conducted (as by early June many young birds and their parents may well have dispersed off territory into the surrounding countryside).

4.iv.b.6 So, as was concluded in previous years, this additional factor emerges as having little or no bearing on the final results and thus probably not necessary to consider in the future.

##### c. Woodland condition assessment

4.iv.c.7 First, the surveyor and the reserve manager jointly conducted a woodland assessment on 23 August 2015. The standard 'Woodland Condition

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<sup>11</sup> A dozen candidates were proposed in all, but lack of resource meant not all could be explored this year.

Assessment' form was used and the pair concluded that both units were in an unfavourable condition and, further, that Unit 12 was also in a declining state.



Figure 3: Lack of understorey in Unit 3

4.iv.c.8 Possibly another major difference was that Unit 3 consisted of more recent woodland (< 200 years) and was apparently drier on its western edge (the whole plantation is on a rising slope and thus much of the NNR's western boundary is well above the water table) and had a limited understorey (see Figure 3 above). These two factors may prove to be a significant difference between the compartments.

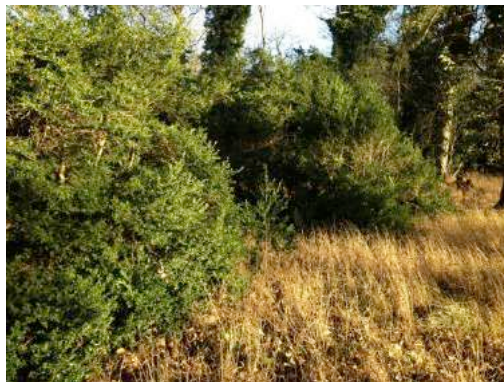


Figure 4: Extensive Box in Unit 12

4.iv.c.9 Finally, the extensive area of Common Box (*Buxus sempervirens*) in Unit 12 (which is increasing) provides a significant understorey with large tangles of evergreen vegetation. The resulting dense thicket would seem to afford more protection to smaller passerines, safer nesting opportunities and, perhaps, may be encouraging greater levels of insect life. By contrast Unit 3's understorey is much sparser. This difference could also be contributing to the disparity too.

#### *d. Deer impact survey*

4.iv.d.10 The surveyor conducted two deer activity and impact assessments. The first of these was carried out on 6 August 2015, while the second was completed on 28 February 2016. While no deer were encountered during these assessments (although Fallow, Muntjac and Roe Deer have all been encountered during early-morning BBS surveys), racks were noted throughout - though most seemed to be lightly used, leading to activity scores of Low to None for both units.

4.iv.d.11 The general lack of bramble in both units and the sparse ground cover in Unit 3 suggests they have already been denuded by deer grazing - hence the racks' light usage.

4.iv.d.12 However impact scores were marginally greater in both the February assessments, presumably when less vegetation is generally available elsewhere and woodland tends to take a disproportionate hit. In both assessments the score for Unit 12 was slightly higher as a distinct browsing line could be seen at a larger number of points throughout it (although the large area of Box seemed relatively impervious to deer impact, though racks had been 'driven' through it at some points – see Figure 5 below).



Figure 5: Deer rack passing through Common Box in Unit 12

4.iv.d.13 The possibility of there being a differential impact in the gamekeeping of these two units (the Chippenham Estate's 'gamekeeper' manages Unit 12, while Unit 3 is handled separately by Fordham Estate) on deer numbers was also considered. Following discussion it was felt the variation in shooting levels was unlikely to be unduly disproportionate and thus this factor is unlikely to be contributing to the disparity.

4.iv.d.14 Frankly these results seem to suggest there is little difference between the two units and thus, at the moment, deer impact has little bearing on the relative incidence of birds in each. Unless the deer infestation increases to a marked degree and the fabric of the woodland becomes severely damaged, the surveyor suggests this factor does not account for the disparity or contribute to it.

#### *e. Entomological variation*

4.iv.b.15 One further clue, perhaps fundamentally underpinning the disparity between the two units, may lie with the suspected relative abundance of insects in each unit. On a brief visit an off-the-cuff observation by a Natural England entomologist suggested that the younger, drier woodland (Unit 3) would inherently deliver fewer invertebrates. He considered the consequence of this to be that Unit 3 (the Underdown Plantation) would be likely to sustain a lower density of breeding birds that might, in turn, lead to a lower level of breeding productivity

4.iv.e.16. It thus stands to reason, if this is indeed the case and that it has maintained over time, that this factor could partially account for the disparity.

#### *f. Differential impact of corvids and raptors*

4.iv.f.17 Finally, it has been speculated that Unit 3 tended to harbour more evidence of corvid and raptor activity, which could have a deleterious impact on the level of bird productivity in that Unit. While it is true Unit 3 has a slightly higher corvid/raptor presence (with Buzzards noted, Jays and Jackdaws marginally more apparent and a solitary hunting Sparrowhawk once – though Unit 12 did harbour a single instance of a Kestrel hunting and there was evidence of a Kestrel nesting in the adjacent fen edge), overall their presence is minimal.

4.iv.f.18 In view of the above this factor, while possibly having a marginal impact on bird numbers in Unit 3, is unlikely to account significantly for the overall disparity between the two units.

## **5. DISCUSSION**

5.1 Now we have three full years of data we propose the Fen's management has a reasonable base line from which to assess the impact on bird life of any future woodland management action in Unit 12 – which became an objective of the project in the first place. In view of this the surveyor proposes that the 2013/14/16 data be archived and that no new bird surveying work be undertaken for at least the next five years<sup>12</sup>, or until such time as there is any significant work scheduled for this woodland compartment.

5.2 As some management decisions could be reliant on this data, the issue of its quality needs to be confronted, i.e. the 'surveyor effect' ought to be considered. The surveyor concerned freely admits to not being up to the same high standard as some others who have worked as surveyors on the Fen. However, while this surveyor admits to failing to identify a few birds in each session, the striking consistency with the ringer's data suggests not too much is actually being missed. In view of this, and given that the same surveyor has been responsible for the surveys throughout the four years, the 'surveyor effect' itself will be equally common to both units and may only be marginally deflating overall records. The consistency between the BBS and ringer's data (see Table 9 above) further supports this assumption.

5.3 Over the four years surveyed the disparity in the numbers of birds has been noted and a higher degree of territory holding between the two units has definitely maintained.

5.4 With the addition of the 2016 findings, plus the woodland assessment and the entomological considerations<sup>13</sup> over the last 12 months, we may now be a little nearer to getting to the root cause of the disparity to levels of bird life between the two units. In short it would appear the habitat differences

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<sup>12</sup> Given the speed with which climate change and the decline in Eastern England's biodiversity is occurring, any longer than five years could mean this base line data becoming out of date.

<sup>13</sup> The impact of deer is presently muted and thus has been discounted, while the slightly higher level of corvids/raptors in Unit 3 is only likely to have been of marginal significance.

impacting differentially on invertebrate numbers probably accounts for much of the reduced presence and poorer performance of birds historically in Unit 3. In addition the extensive presence of Common Box in Unit 12 (estimated at occupying around 20% of the woodland surface area) affording good cover for passerines may also contribute to the disparity.

## **6. CONCLUSION**

6.1 Although the anomaly in levels of territory holding between the two woodland compartments was maintained over the four year's the survey was conducted, it was not exactly constant. Nevertheless it was sufficiently consistent for us to feel it is safe to conclude that this study has provided a good base line against which to measure the impact of a significant woodland management intervention on bird residency in Unit 12 (Jerusalem Wood) by the Chippenham Estate (although this is now thought to be unlikely).

6.2 While it is not possible to be definitive about the reasons for the anomaly, it seems reasonable to assume from the investigations to date that the variation in the extent of the understorey in the two compartments (it is greater in Unit 12) and the relative dryness of Unit 3 largely accounts for the anomaly. In short, Unit 12 provides both greater cover for nesting passerines and probably a higher level of food resource too.

6.3 Given the speed of climate change in the region this base line ought to hold for at least the next five years.

Modified 27.2.17.

## IV. Annexe

### Technical Note

1. The territory location maps overlaid were compiled as follows. First, the location of different species in each unit are transferred from the original A4 survey sheets (see example below)...

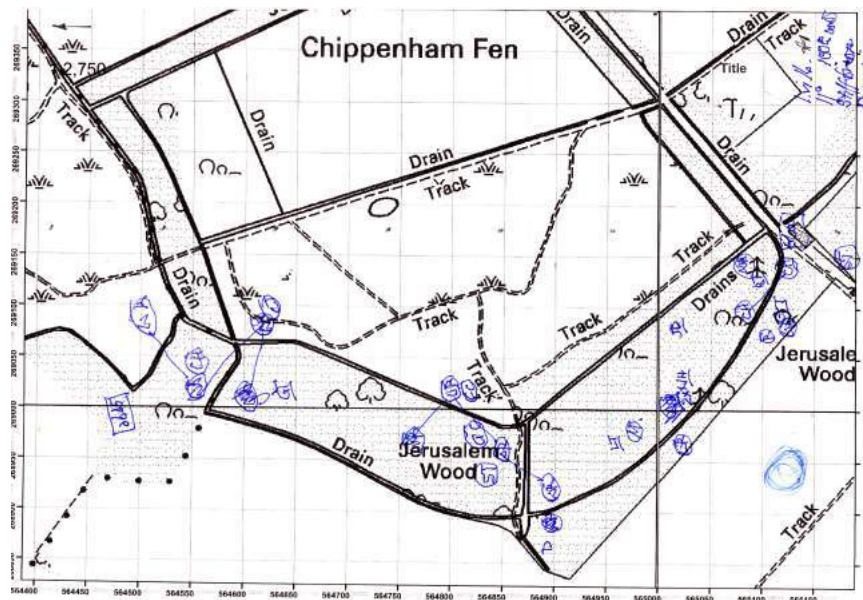


Figure 6: Unit 12 1<sup>st</sup> June, base data for Jerusalem Wood

...onto an A3 sheet of tracing paper (as example below).



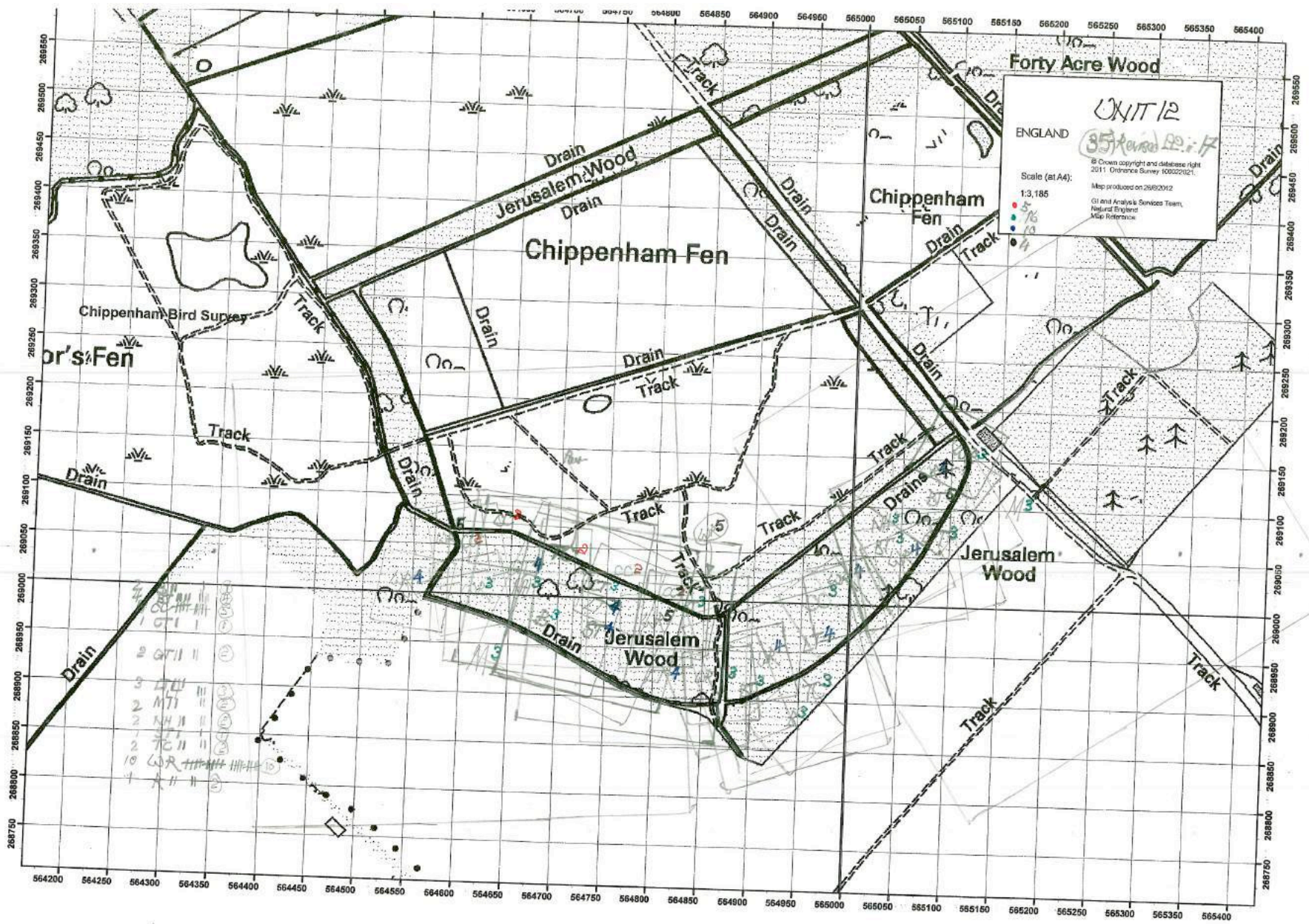
Figure 7: Unit 12 1<sup>st</sup> June, western section of trace overlay for Jerusalem Wood

2. Each survey session is then placed on a separate sheet of trace and all five sets of data are then accurately overlaid onto a base map to thereby produce a compound view of bird species locations throughout the unit concerned over the survey period.



3. Then the composite five weeks of data within a section of the woodland is examined and the number of time a species appears at a set point, or within its likely territory area (see Appendix 3 of the 2014 report for the estimated sizes of different species' territories), especially if it is singing, is logged. As specified earlier (see para. 3.4 above) a territory is adjudged to be *probably* held if a species is noted on three occasions (x3), *likely* to be held (x4) and *definitely* holding territory (x5).

4. The maps of the two units that follow display both the species involved and the respective score for each territory.



**UNIT 12**  
 ENGLAND  
*35 Revised 22.17*  
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 2011 Ordnance Survey 10002021.  
 Map produced on 26/03/2012  
 GI and Analysis Services Team,  
 Natural England  
 Map Reference  
 Scale (at A4):  
 1:3,185

|    |        |   |          |
|----|--------|---|----------|
| 1  | OT I   | 1 | (Symbol) |
| 2  | OT II  | 1 | (Symbol) |
| 3  | OT III | 1 | (Symbol) |
| 2  | MTI    | 1 | (Symbol) |
| 3  | NH     | 1 | (Symbol) |
| 2  | TC     | 1 | (Symbol) |
| 10 | WR     | 1 | (Symbol) |
| 1  | A      | 1 | (Symbol) |

