

# Woodcock 2013

## Title

Woodcock Survey 2013

## Description and Summary of Results

During much of the 20<sup>th</sup> Century the Eurasian Woodcock *Scolopax rusticola* bred widely throughout Britain, with notable absences only on the highest ground in parts of Scotland, SW England and S Wales. However, during the 1990s the species was 'amber-listed' as a *Bird of Conservation Concern* because of an apparent long-term decline in breeding numbers (-76%, 1974-1999) and range (-31% between the Breeding Atlases of 1968-72 and 1988-91 which had become -55% from 1968-1972 and Bird Atlas 2007-11).

Cryptic plumage, secretive behaviour and nocturnal habits make the Woodcock a difficult species to survey and it seems likely that its presence in many woods is often unnoticed during general surveys. Hence there is considerable uncertainty about the reliability of all data and the true status of the species until the 2003 survey.

The 2003 survey was a specific national survey of breeding Woodcock in Britain, the aim of which was to produce reliable population estimates for England, Scotland and Wales. The survey estimated a population of 78,346 roding males in Britain (95% confidence limits 61,717-96,493) and with substantial differences in density between regions and woodland type. This total far exceeded all previous estimates, but as the survey was based on much more comprehensive and specific survey protocols, it is thought to be much more reliable. Since then numbers have appeared to decline further, e.g. a sample of the 2003 survey's sites were monitored each year and the further decline noted by Bird Atlas 2007-11. Hence a second national survey was organised for 2013 to evaluate this properly.

The breeding Woodcock population in Britain in 2013 was estimated at 55,241 males (95% confidence limits: 41,806–69,004), a reduction of 29% over ten years. The total comprised 24,229 in England (17,563-32,239), 30,098 in Scotland (19,664-41,015) and 914 in Wales (119-1,900), with the North Scotland region accounting for the majority of the estimated Scottish population (23,913 males). Of the England population, 59% were in the three northernmost regions. Southwest, Central South and Southeast England, East Anglia and Wales all experienced declines greater than 40%.

In 2013 Woodcock were estimated to be present at 22% of 1-km squares containing  $\geq 10$  ha of woodland, compared to 35% in 2003.

Note: Some squares have continued to be monitored each year since the 2013 survey.

## **Methods of Data Capture**

The field methods used in the 2013 survey were essentially the same as for the 2003 survey and for the monitoring in the intervening years. And in many cases the same points were sampled. In summary it was counts of roding males in randomly selected woods which had been stratified by region and woodland area. In the end 834 randomly selected sites were counted.

For sites which were surveyed in 2003, the same approximate count point was used in 2013 unless changes to the habitat had rendered it unsuitable. This meant 69% of repeated surveys were within 100m of the original 2003 count point and 82% were within 200m. As before observers were permitted to select a point up to 400m outside the allocated square if no other alternative was available. In such cases, the wood-size class was reclassified based on the new 1 × 1 km square.

A preliminary visit was made in April to find an appropriate survey point within the largest wood in the square, at an open location where the observer's view was not obstructed by the tree canopy. Then three surveys were made during May and June 2013, each at least one week apart, but if no Woodcock were observed on the preliminary visit and the first two survey visits, the final survey visit was not compulsory. Surveys were not conducted on evenings with continuous rain or wind exceeding Beaufort force 3, so that roding activity and detection of displaying birds were not influenced by weather conditions. Surveys began 15 minutes before sunset and lasted for 75 minutes – 15 minutes longer than in 2003 – but direct comparisons were possible as each occasion that a Woodcock was seen or heard, it was recorded as a separate registration and the time noted to the nearest minute.

Annual counts were undertaken between 2003 and 2013 at a selection of the random survey squares and additional observer-selected sites. Not all were covered for the entire 10-year period; the number visited ranged from 18 to 48 per year and averaged 26. Sites were spread across 24 counties and surveys were conducted using identical methods to those of the 2003 survey. Although these data came from a non-random sample that contained mostly sites with above average Woodcock densities, they provided an insight into year-on-year population change. Similarly following the 2013 survey some sites have continued to be monitored each year.

## **Purpose of Data Capture**

To obtain an updated estimate of the size of Britain's breeding Woodcock population, measure recent trends and identify spatial patterns of change.

## **Geographic Coverage**

All of Britain, sampling the largest block of woodland in a random selection of 1-km squares with more than 10% woodland. The country was divided into regions.

## **Temporal Coverage**

The breeding season of 2013. Following a preliminary visit in April, three surveys were made during May and June, each at least one week apart.

### **Other Interested parties**

The 2013 survey was funded by the Game & Wildlife Conservation Trust, the Shooting Times Woodcock Club and an anonymous English charitable trust, as was the 2003 one and the intervening annual monitoring surveys.

### **Organiser(s)**

Greg Conway for the BTO.

### **Current Staff Contact**

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### **Publications**

The main report of the survey is:

Heward, C.J., Hoodless, A.N., Conway, G.J., Aebischer, N.J., Gillings, S. & Fuller, R.J. 2015. Current status and recent trend of the Eurasian Woodcock *Scolopax rusticola* as a breeding bird in Britain. *Bird Study* 62:535-551.

<https://www.tandfonline.com/doi/full/10.1080/00063657.2015.1092497>. The results are summarised at <https://www.bto.org/our-science/projects/woodcock-survey/results>.

Prior to fieldwork, an article publicising the survey was published in BTO News in the Jan/Feb 2013 issue.

### **Available from NBN?**

No.

### **Computer data -- location**

All the data are stored in the BTO's online Oracle database, which was used to collect the data directly from the fieldworkers.

### **Computer data -- outline contents**

All records of sightings.

### **Computer data -- description of contents**

All records of sightings.

### **Information held in BTO Archives**

No paper records.

### **Notes on Access and Use**

### **Other information**

### **Notes on Survey Design**

The same survey site stratification and sample of random 1×1km squares were used in 2013 as for the 2003 survey. To find all potential survey squares, every 1-km square containing at least 10ha woodland was identified from the Land Cover Map 2000. Four woodland size

classes (10–30, 31–50, 51–70 and 71–100ha) were used and, using a GIS, 11 custom geographic regions were determined such that each contained similar numbers of squares belonging to the four wood-size classes and, as near as possible, equal numbers of BTO members (potential surveyors). Survey squares were selected using a random number generator, ensuring that the centre of each new square was at least 3km from the centre of all previously selected squares. The total sample of 2677 squares was made available on the BTO online Woodcock survey application, where potential observers could view their locations and register to survey a square. The 807 random squares where surveys were conducted in 2003 were flagged as high priority to encourage repeat surveys of these sites in 2013.

Woodland habitat was classified at two scales: the 1-km OS grid square and the stand level. At the 1-km square scale, survey squares containing woodland that was 70% deciduous or coniferous, based on Land Cover Map 2000 data were classified as such with the remainder classed as mixed. For stand scale classification, observers recorded the dominant and sub-dominant tree species and the dominant and sub-dominant species of ground vegetation at four points 50m from the count location in the cardinal directions. This information was used to classify conifer plantations according to the tree species and deciduous woods into those of basic, neutral or acid soils, beech woodland or wet woodland on the basis of characteristic National Vegetation Classification species.

Data checks were made to ensure that surveys commenced at the appropriate time. Where observers continued to count birds for more than 60 minutes, the data were truncated. The wood size class was reclassified according to the new 1-km square at the 49 random sites where observers located their observation point outside the allocated square. Some data from self-selected sites where landowners, foresters or gamekeepers wanted to participate were accepted for inclusion in habitat analyses, but population estimates were based solely on randomly selected sites. Data for 28 self-selected sites which were within 1.2 km of a random site were excluded.

### **Specific Issues for Analysis**

For calculating population estimates, the number of registrations in the first 60 minutes of each visit was summed (for compatibility with the 2003 survey). The maximum number (R) of registrations across visits at each site was used to estimate the number of individual male Woodcock (N) using the equation  $N = 0.74R^{0.708}$ . Although this relationship has associated errors, the approach is considered better than simply basing analyses on the number of registrations because roding intensity is density-dependent and the relationship between registrations and the number of individuals is non-linear. Consequently, a decline in the number of registrations is not directly proportional to a decline in density. However, the resulting population estimate should be viewed as an index and independent evidence demonstrating how well the index correlates with the actual population trend is still required. Estimates of density were derived from maximum counts, as they are considered to provide a better representation of the total number of males at a site than the mean. The estimated number of male Woodcock at each survey point was taken to be approximately equivalent to the density/km<sup>2</sup>. Confidence limits were produced by bootstrapping with 1000 samples generated for each stratum. The procedure used also

identifies the ten most influential squares by calculating the potential percentage change in the national population estimate when each of these squares is omitted. To bring the influence of all squares below 5%, we increased the sample size for poorly represented strata by including 11 additional surveys conducted in 2014. These were done at sites in the original random list that had not been surveyed in 2013.

Mean densities for England, Scotland, Wales and Britain were calculated by multiplying the density in occupied squares by the proportion of occupied squares for each region-wood-size stratum, and summing the values of the relevant strata.