

Breeding bird surveys at Lintzgarth and Thornhope in May 2016: a survey conducted on behalf of the trustees of the Philip Wayre Wildlife Trust

Introduction

The purpose of this survey was to establish a baseline of counts of key species of ground-nesting birds at Lintzgarth and Thornhope, both sites being holdings of the Philip Wayre Wildlife Trust. The survey was also intended to define a distinct method, which could be readily repeated in future years to minimise biases between observers and survey effort.

Methods

Possible survey methods were discussed with Lindsay Waddell (Trustee). Given the relatively small size of each the plots (Lintzgarth 168 ha, Thornhope 118 ha), it was decided that a complete survey of the ground, as opposed to a transect-based sample survey, would be most appropriate. Accordingly the survey was conducted by a bespoke modified form of the technique that has become known as the Brown & Shepherd survey (Brown & Shepherd 1993). The survey was originally designed particularly for upland breeding waders (Charadriiformes), an important group on both of the sites in question.

The survey employs a constant search effort per unit area of ground, and recommends that 20-25 minutes are spent in each 500 x 500 m grid cell on unenclosed moorland. Whilst constant search effort was maintained, due to the high density of birds present, time spent in each cell was not constrained to that specified, instead survey duration generally exceeded that stated. The observer followed a survey route throughout the sites so that all parts of the site were approached to within at least 100 m. At regular 100-200 m spaced intervals along the survey route, the observer scanned the area with binoculars, listened for songs or display calls and annotated the position of all birds onto a provided series of 1:10,000 maps. Accuracy of plotted bird positions was helped by using a hand-held Geographical Positioning System (GPS). All birds seen or heard whilst using each site were

recorded. Birds seen flying over the site, but not necessarily using it, were not recorded. Surveys were only conducted during weather of high visibility, i.e. no low cloud, no precipitation and when winds speeds were low.

The original method recommends that censuses are undertaken between 08.30 and 18.00, thus avoiding the main periods of rapidly changing bird activity, with waders (and other bird groups) exhibiting dawn and dusk peaks in activity. Instead, because surveys were confined to one site per day and each site could be covered during the recognised post-dawn period of peak bird activity, surveys were commenced at or shortly after dawn (05.00) and were concluded by 08.30 on three of the four site-surveys, and by 09.30 on the fourth. Birds tend to change their behaviour during the course of the breeding season, so each site was surveyed on two occasions: an early visit (early-April to mid-May) and a later visit (mid-May to late-June), with the expectation that this would improve overall detectability. Surveys were conducted in 2016 at Lintzgarth on 1st May (06.00-09.30) and on May 22nd (05.00-08.00) and at Thornhope on May 2nd (05.30-08.00) and May 23rd (04.45-07.45).

Typically, Brown & Shepherd (1993) derive population estimates for each species using combined data from both visit maps. However they considered that wader pairs were separate from one-another only if at least 1000 m apart on the different visit maps. Given the high density of waders observed at these sites, adoption of this interpretation would be impractical, hence, for the purpose of reporting, overall species abundance was recorded as the number of individuals seen on each visit to each site. Within-site bird distribution and abundance was recorded as the number of sightings within each land unit, defined by the land parcel identification number on the Rural Payment Agencies' Rural Land Register (RLR) Map. Original site-survey maps for each visit have been retained by the observer, but are available on request, whilst hard paper copies have been passed to LW.

Results

Survey results are expressed solely in tabular form. Overall species abundance for each site-visit is provided in Table 1, whilst a breakdown of abundance into each land unit on each holding is given in Table 2. Note that due to the values in Table 2 being the maximum number of individuals in each land unit from the two visits, the values from each land unit

when summed need not agree with site totals specified within Table 1. Any discrepancy is likely to be accounted for birds moving between land units between visits.

Discussion

Waders: The Brown & Shepherd method, described in detail in Brown & Shepherd (1993) has been specifically designed for surveying wading birds, especially over large blocks of upland moorland and associated hill farms. Species abundance estimates emanating from this method generally compare favourably with those derived from intensive studies of the same species. Its defined methodology render it acceptable for repeated use across observers with limited scope for bias due to the deployment of constant effort and route spacing structure across sites. However, even within wading birds, its use in estimating breeding numbers differs between species, depending on differences in species detectability. For example, whilst the technique should provide acceptable population estimates for conspicuous species such as lapwing, redshank, golden plover and curlew, it will under-estimate numbers of cryptic species such as snipe, which has low flushing distances. The latter can only be readily surveyed by repeated visits to count drumming birds, which varies markedly in relation to weather, with highest counts often on days of low cloud, drizzle and poor visibility (Green 1985).

At both sites surveyed, the numbers of each species of wader tended to be comparable between survey visits, indicating a reasonable level of consistency between visits and a reliable estimate of population size. The only exception being 29% more curlew observed on visit 2 at Lintzgarth compared to visit 1. This variation may have arisen because the estimated density of curlew at Lintzgarth was very high indeed, thus rendering consistency of results difficult due to a potentially high risk of repeat sightings of the same individual. In addition, curlew are highly mobile and the first visit followed a period of snow and low temperatures when some adults, especially non-incubating males, may have moved from the breeding site. That the second visit yielded more curlew than the first is predictable as the second visit was deliberately timed to when curlew and most other waders have chicks and their detectability was consequently higher.

Gamebirds: The two survey visits gave contrasting numbers of individuals for both grouse species; red and black. Whilst B&S is not designed for game birds, the diurnal timing of the first survey coincided with when male red grouse were at their most vocal and were conducting territorial display flights, and also with peak attendance of black grouse males at leks. Indeed, all males observed on all site-visits were actively lekking, with 13 males on the main lek and several secondary leks of 1-2 males at Lintzgarth and a lek with a maximum of eight males at Thornhope.

The survey also gave sex-related biases in detectability for grouse. Few female red grouse were observed on the first visit due to females incubating, whereas both fewer males and females were seen on the second visits due to secretive behaviour associated with the presence of chicks. In contrast, the first visit provided a similar number of female black grouse to males, with females actively feeding prior to commencement of incubation, which occurs later in the season than with red grouse. By the second visit, fewer female black grouse were observed and it is likely that this visit coincided with peak incubation. More accurate counts of red grouse will be derived by using pointing dogs, with a late-March count to determine the number of breeding pairs and a post-breeding count in late-July to determine numbers of adults and young should harvesting be a consideration.

Both sites are noted for their reasonably high numbers of grey partridge, with shooting conducted at Lintzgarth and also adjacent to the holding at Thornhope. The survey however only picked up 1-2 pairs on each site-visit. Partridge have low flushing distances and are visually difficult to detect. Better estimates of abundance would only be obtained by systematic listening for calling birds at dusk, particularly if call-back tape recordings were used to glean responses.

Passerines: Meadow pipits were the most common bird at both sites, but it was agreed that due to their high abundance, they would not be included within the surveys. Skylark were the second most common passerine after pipits. Skylark registrations were usually, but not solely, those of singing males, whose activity, even within a single morning, changed in relation to weather. All other passerines were included, but it should be noted that their detectability may have been limited due to the 100 m spacing of the search routes. Their inclusion should be noted as an indication of presence at each site rather than absolute abundance.

References

Brown, A. F. & Shepherd, K.B. 1993. A method for censusing upland breeding waders. *Bird Study*, 40, 189-195.

Green, R.E. 1985. Estimating the abundance of breeding snipe. *Bird Study*, 32, 141-149.

David Baines, Edge End, Middleton-in-Teesdale (June 2016)

Table 1. Bird species abundance (expressed as individuals seen) on each of two visits to Lintzgarth and Thornhope in May 2016 (m = male, f = female).

Species	Lintzgarth		Thornhope	
	Visit 1	Visit 2	Visit 1	Visit 2
Greylag goose	5	4	2	0
Mallard	2m	2m	2m 1f	0
Buzzard	1	0	0	0
Red grouse	9m 1f	2m 1f	6m	3m 1f
Black grouse	19m 18f	10m 4f	6m 5f	8m
Grey partridge	4	2	4	2
Pheasant	0	1f	3m 6f	1f
Curlew	48	62	17	14
Lapwing	35	38	15	14
Golden plover	15	15	6	8
Redshank	7	8	3	4
Snipe	6	4	8	8
Woodcock	0	0	0	1
Oystercatcher	6	6	0	1
Carrion crow	2	0	0	0
Jackdaw	1	12	0	0
Stock dove	0	0	4	0
Wheatear	2	0	2	0
Skylark	12	23	13	11
Meadow pipit	Y	Y	Y	Y
Tree pipit	0	0	0	1
Pied wagtail	0	1	0	0
Reed bunting	0	1	1	1
Willow warbler	0	0	8	6
Chiffchaff	0	0	1	0

Wren	0	0	4	2
Goldfinch	0	0	1	0
Chaffinch	0	0	1	1
Goldcrest	0	0	1	0
Cuckoo	0	0	1	2
Blue tit	0	0	1	0
Great tit	0	0	0	1
Robin	0	0	2	0

Table 2. Wader and gamebird species abundance broken down into numbered spatial land units as described by the Rural Land Register Map for a) Lintzgarth and b) Thornhope. Values are maximum numbers per unit across visits.

a) Lintzgarth

	<u>1371</u>	<u>0232</u>	<u>1505</u>	<u>5242</u>	<u>1635</u>	<u>0406</u>	<u>2561</u>	<u>3961</u>	<u>4676</u>	<u>6374</u>
Red grouse	9	1	0	0	0	0	0	0	0	0
Black grouse	34	2	4	0	0	1	0	0	0	0
Grey partridge	0	0	0	0	0	2	2	0	2	0
Pheasant	0	1	0	0	0	0	0	0	0	0
Curlew	46	6	1	4	1	1	1	2	0	0
Lapwing	8	8	2	6	10	1	3	6	2	0
Golden plover	12	1	2	1	0	0	0	0	0	0
Redshank	4	0	2	0	0	0	2	0	0	0
Snipe	1	2	1	0	1	0	2	0	0	0
Oystercatcher	0	4	0	0	2	0	2	0	0	1

b) Thornhope

	<u>1089</u>	<u>6493</u>	<u>5843</u>	<u>1655</u>	<u>9070</u>	<u>3608</u>
Red grouse	3	0	4	1	0	0
Black grouse	0	8	3	0	0	0
Grey partridge	4	0	0	0	0	0
Pheasant	7	0	0	1	0	0
Curlew	4	4	6	3	0	0
Lapwing	6	7	3	1	0	0
Golden plover	0	0	8	1	0	0
Redshank	0	4	0	0	0	0
Snipe	6	1	2	1	0	0
Oystercatcher	1	0	0	0	0	0
Woodcock	1	0	0	0	0	0