

Abundance and breeding success of black grouse at Lintzgarth in 2020

Introduction

GWCT hold annual counts of displaying males at leks at Lintzgarth since 1988. These earlier records were supplied by Durham Bird Club, with GWCT staff conducting the counts since 1998. Numbers fluctuate over time in relation to weather, with winter severity and mid-summer rainfall determining bird abundance. These annual counts of males have been supplemented with counts of pre-breeding females by David Baines in 2016 & 2017 (Baines 2017) and with an estimate of breeding success using pointing dogs by GWCT in late-summer 2018. Monitoring of males attending leks in spring and counts of pre-breeding and breeding success were all undertaken by GWCT in 2019 (Baines 2019, GWCT 2019). Repeats of those counts in 2020 are reported here but noting that records of females in spring were restricted to the enclosed pastures surveyed as part of the waders and rush project (GWCT 2020). These data will help inform whether positive management changes such as planting scrub willow and providing supplementary hopper-based food in winter lead to increased over-winter survival. Similarly, it will help establish whether intended programmes of rush-cutting and cattle grazing may enhance breeding conditions, culminating in higher breeding success in future years.

Objectives

1. To continue to estimate numbers of displaying males in spring.
2. To continue to count and map pre-breeding males and females during systematic surveys of waders and other ground-nesting birds.
3. To use pointing dogs to estimate female abundance and their breeding success, thereby continuing the time series started in 2018.

Methods

Males in spring: All displaying males at lekking sites were counted on two visits, one in early April and the second at the end of April. Lek sites surveyed were on the PWUT ground and at three historic lek sites situated within 400m to the west of the PWUT holding (Table 1). Counts were added to the existing time-series to describe on-going 30-year trends from 1988 onwards.

Females in spring: All females flushed during the ground-nesting bird survey (of enclosed pastures only) in 2020 were counted and their locations (with males) were allocated to field compartment. Three survey-visits were conducted, on 22 April, 15 May and 30 May. Timings of the survey are incidental for black grouse, being when wader detection peaks. Accordingly, whilst accurate counts may be determined from visit one, those in subsequent visits will occur when female black grouse are incubating and will be much lower. The counts add to data collected in previous years.

Female abundance and their breeding success: A pointing dog was worked within the whole of the PWUT holding at Lintzgarth, except the in-bye meadows. Females were located and their chicks counted and mapped in relation to compartment number to provide an annual estimate of breeding success.

Results

Males in spring

Numbers of males recorded at each lek, on each of the two survey visits, are shown in Table 1. Over the two visits the maximum count at the Mine Workings lek in compartment 5242 was 11 males with three displaying males recorded at Windy Hill. At the leks on adjacent ground (within 400m of the PWUT boundary) a maximum count of eight males was recorded at Wolfcleugh and one at Lintzgarth B (Figure 1).

Table 1. Total numbers of males observed at leks at Lintzgarth on surveys in spring 2020

Lek	Grid ref	Date	
		3 rd April	29 th April
Lintzgarth A	NY915424	0	0
Lintzgarth B	NY914421	1	0
Mine Workings	NY928419	9	11
Windy Hill	NY914414	3	1
Wolfcleugh	NY911418	8	1

Lek surveys have been undertaken at Lintzgarth since 1988, initially by Durham Bird Club, with the GWCT undertaking surveys since 1998 (Appendix 1). No lek data are available for the Mine Workings lek prior to 1997 and this may be because it was a newly established lek in 1998 or that it was previously unrecorded. Since GWCT commenced comprehensive surveys in 1998 the numbers of males displaying across all sites has increased from 13 males in 1998 to 30 in 2006, before dropping back to 10 males in 2010 following poor breeding years and the severe winter of 2009/10. Numbers since recovered, peaking at 37 males in 2016 before dropping back to 27 males in 2019 and a further drop to 21 in 2020 following a series of successive poor breeding years (Figure 2).

Figure 1. Maximum numbers of males seen attending leks at Lintzgarth in spring 2020

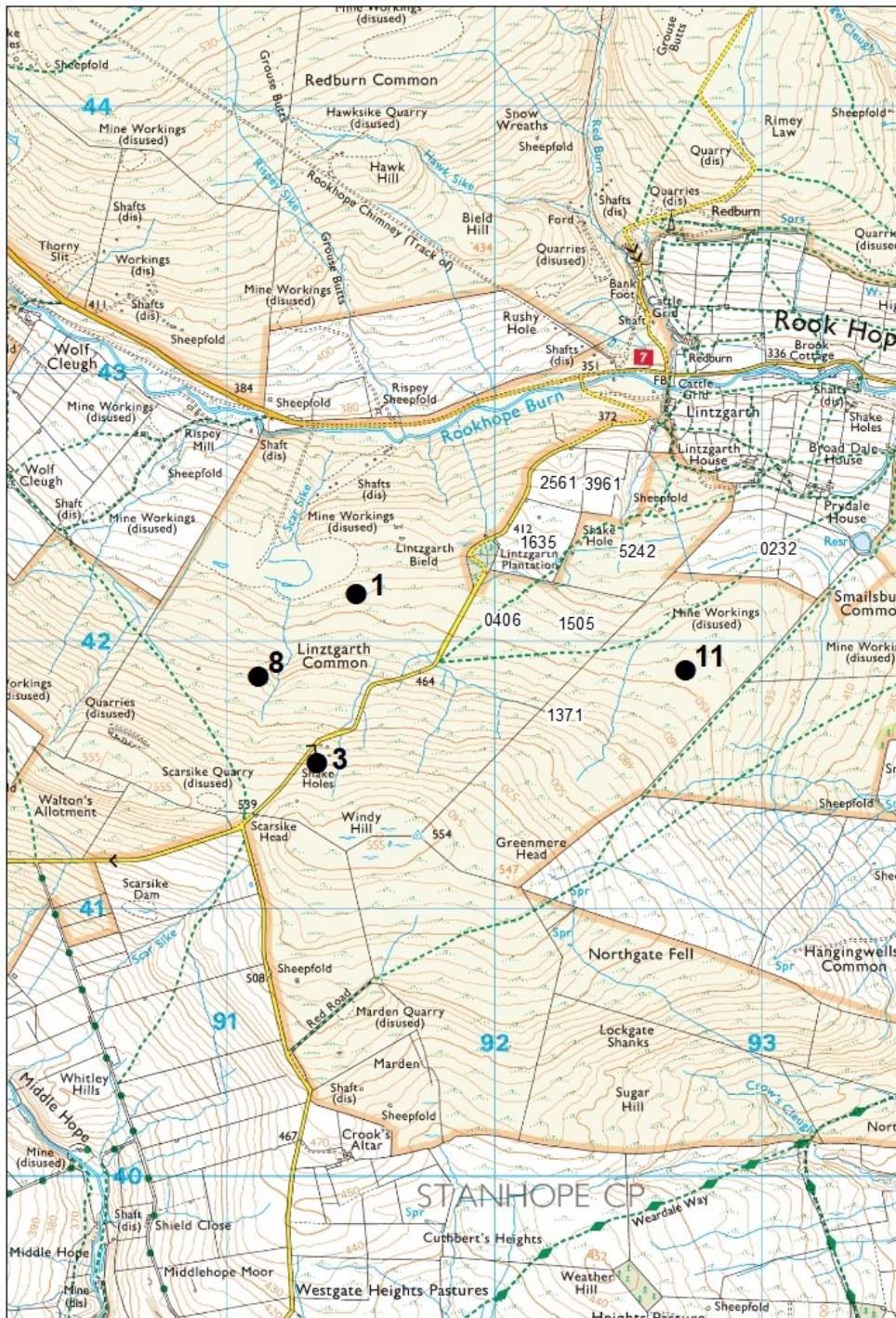
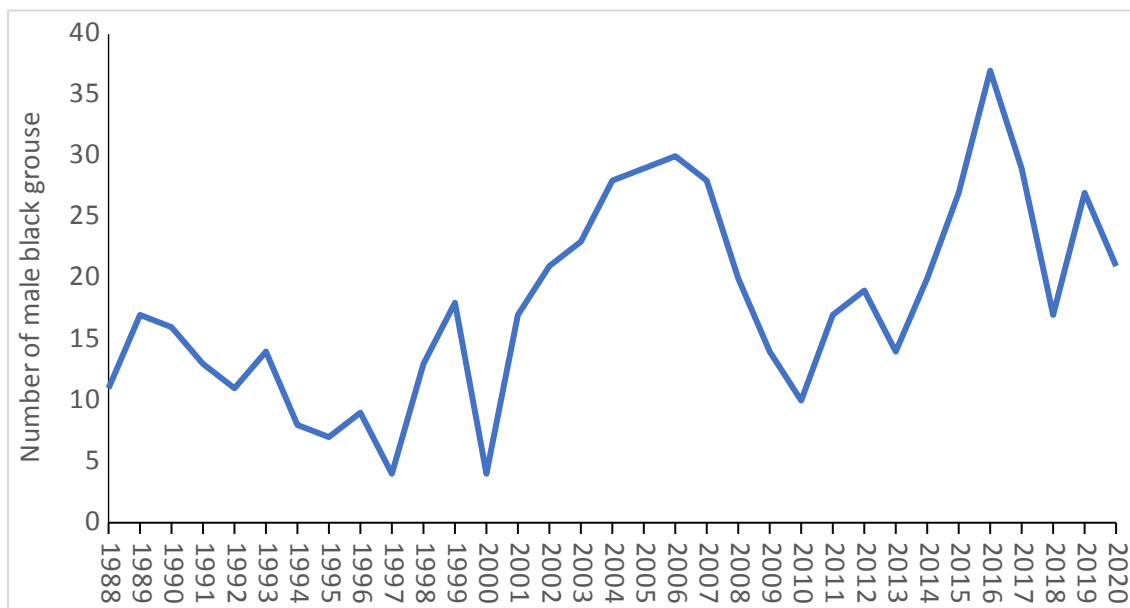


Figure 2. Total number of male black grouse observed at leks at Lintzgarth 1998-2020



Females in spring

As highlighted in the baseline survey report (Baines 2017) the Brown & Shepherd survey method is not designed for surveying black grouse. However, the timing of the first survey, which recorded three males and seven females, coincided with peak activity of black grouse, with males attending the lek and females actively feeding prior to commencement of incubation. On the second visit, although there were four males, no females were recorded, and just one male was recorded on the third visit. The absence of females in later visits may be explained by the visit coinciding with incubation. Locations of sightings of males and females combined in relation to grazing compartment are presented in Table 2.

Table 2. Black grouse abundance observed on spring ground nesting bird surveys and broken down into numbered spatial land units (see Rural Land Register Map). Values are maximum numbers per unit across visits in 2016, 2017 (Baines 2017) and 2019 (GWCT 2019). NC = not counted

Year	Compartment number								
	1371	0232	1505	5242	1635	0406	2561	3961	6374
2016	34	2	4	0	0	1	0	0	0
2017	36	3	4	0	0	1	0	0	0
2019	17	0	0	0	0	1	0	0	0
2020	nc	4	5	2	2	1	0	0	0

Breeding productivity

Surveys with pointing dogs were conducted on the 1st August and found five females, but no broods, which contrasts with the last two years (Table 3), although the reserve manager had reported separately sightings of a grey hen with two young in the cleugh at the northern end of the site (G. Hopper pers comm.). The locations of black grouse flushed in relation to grazing compartments is presented in Table 4. The results from this year's summer counts from across Northern England show that this has been a poor breeding year overall with productivity averaging 0.5 chicks per hen, the fourth worst breeding year since records commenced in 1989. Black grouse breeding productivity is linked with weather conditions in June when chicks hatch. This summer, June weather was 143% wetter than average, which was further compounded by the fact that it was largely dry up to the 10th, prior to peak hatch in mid-June. We have now had six below average breeding years (mean annual breeding productivity 1989-2020, 1.6 chicks per hen) in the past ten years which is a worrying pattern.

Table 3. Black grouse breeding productivity recorded at the PWUT holding at Lintzgarth in 2018, 2019 & 2020

Year	Black grouse				
	Males	Females	Broods	Chicks	Chicks/female
2018	1	11	3	9	0.8
2019	5	4	2	9	2.3
2020	6	5	0	0	0

Table 4. Numbers and breeding success of black grouse and other gamebirds encountered on summer breeding success surveys within grazing compartments at Lintzgarth in 2020

Compartment	Black grouse				Red grouse	Grey partridge		Pheasant			
	Males	Females	Broods	Chicks	Total	Adults	Chicks	Males	Females	Broods	Chicks
1371	5	3	0	0	28	0	0	0	0	0	0
1635	0	0	0	0	0	0	0	0	0	0	0
0406	0	2	0	0	0	0	0	0	1	0	0
0232	0	0	0	0	0	0	0	0	1	0	0
5242	0	0	0	0	0	0	0	2	1	1	1
1505	1	0	0	0	0	0	0	1	1	1	2
2561	0	0	0	0	0	0	0	0	0	0	0
Total	6	5	0	0	28	0	0	3	3	2	3

References

Baines, D. (2017) Breeding bird surveys at Lintzgarth and Thornhope in springs 2016 & 2017. Unpublished Report to Philip Wayre Wildlife Trust

Baines, D. (2019) Breeding bird surveys at Lintzgarth in spring 2019. GWCT, Eggleston.

GWCT (2019) Black grouse – monitoring abundance and breeding success at Lintzgarth – 2019. GWCT, Eggleston

GWCT (2019) Can rush management enhance habitat conditions for breeding waders? Year 1 report – September 2019. GWCT, Eggleston.

Appendix 1. Total numbers of males observed at leks at Lintzgarth 1988-2019. Leks were counted by Durham Bird Club 1988-1997 and by GWCT since 1998

SITE	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Lintzgarth A	7	11	16	11	11	9	8	4	4	2	8	7		7	9	9	11	9	7	6	2	1	0	0	0	0	0	0	0	0	0	0	0
Lintzgarth B	4	3		2				3	1	1	1				1			4	1	1	0	0	0	0	0	0	0	0	0	0	4	1	
Mine Workings											4	7		8	7	11	15	12	12	9	10	7	7	11	12	9	6	12	13	12	8	15	9
Wind Hill															2			0	0	0	0	0	0	0	0	0	3	0	6	5	0	1	3
Wolfeleugh		3				5			4	1	0	4	4	2	4	1	2	4	10	12	8	6	3	6	7	5	11	15	18	12	9	7	8
Total	11	17	16	13	11	14	8	7	9	4	13	18	4	17	21	23	28	29	30	28	20	14	10	17	19	14	20	27	37	29	17	27	21