

Red Grouse

on The Long Mynd

Survey and Population Estimate

2018



Estimating the Red Grouse Population on The Long Mynd 2018

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Strettons Area Community Wildlife Group

There are several Community Wildlife Groups in the Shropshire Hills Area of Outstanding Natural Beauty (AONB), including the Strettons Area Community Wildlife Group (SACWG), which was launched in February 2012.

The Groups

- Bring together people interested in wildlife
- Undertake survey work to establish the status of key bird and plant species and habitats
- Encourage and enhance local interest in wildlife
- Actively promote conservation.

SACWG helped promote this survey, and has organised it since 2013. Several members participated.

SACWG holds an Annual Public Meeting, at which this and other wildlife surveys are discussed.

More information can be found on the website, www.ShropsCWGs.org.uk

Introduction

Systematic monitoring of the Red Grouse population was carried out by the National Trust, through dawn counts of calling territorial males in winter, for several years. Two dawn counts in the winter of 2009–10, coupled with casual records, indicated a minimum of 32 territories, but, adding observations of birds only seen or heard once, the estimated population was around 51. Three dawn counts in the winter of 2010–11, coupled with casual records, indicated a minimum of 40 territories, but, adding observations of birds only seen or heard once, the estimated population was around 59 (Caroline Uff, *pers.comm.*).

This method did not produce a sufficiently accurate population estimate for such a scarce species, or to assess the effectiveness of the Trust's heather management. It was therefore decided to pilot a new survey method in 2011. Personal observations over many years have found that male birds also display at dusk, and a project was undertaken to estimate the Red Grouse population by mapping such displays.

Efforts were made to recruit as many participants as possible, and the project produced a population estimate of 60 – 63 territorial males. The project was considered a success, and has been repeated each year since 2012. The newly formed Strettons Area Community Wildlife Group helped organise the project in 2012, and has led on the organisation each year since.

A full report has been produced each year (*Red Grouse on The Long Mynd: Survey and Population Estimate (Year)*). These Reports can be found on the Community Wildlife Groups website, www.ShropsCWGs.org.uk

It is hoped to repeat the project each year to produce a population trend. For the 2018 survey, efforts were again made to recruit as many participants as possible. The 2018 publicity leaflet is attached as Appendix 1.

Everyone who offered to help with the project was invited to a briefing on Thursday 29 March 2018, though many people who participated in previous years felt it unnecessary to attend a further briefing. A PowerPoint presentation was made, explaining the objectives of the project, and what to look for and record. A video of displaying Grouse was shown.

A Project Brief was supplied to all participants. It is attached as Appendix 2. It has evolved since the first survey in 2011, incorporating the lessons learnt as set out in each annual Report.

Methodology

Sixty-seven Watch-points, selected to give a good field of view of part of the survey area, were identified, and marked on enlarged copies of 1-10,000 Ordnance Survey maps. The same Watch-points have been used since 2013, but they include seven that were added in the light of experience in 2012, including some new areas on the edge of the range, as they might be coming into suitable condition as a result of the heather management. There were 48 Watch-points used in the 2011 pilot project, and 60 in 2012.

There were 12 different survey maps altogether, and some of these are used as background to present the Project results (see pages 6 – 12). The 67 Watch-points are marked on these maps (There is no Watch-point 43).

It was intended to start the survey on 5 April, and hold it each Thursday until 10 May. This was similar to the timetable followed in the previous six years, which started two weeks earlier than the 2011 survey because more Grouse were observed on the earlier survey dates in 2011.

However, in view of the poor recording conditions on several surveys in 2012, the local weather forecast was again used, so a planned survey could be postponed in advance if

conditions were likely to be unsuitable (rain or strong winds). As a result, several planned surveys were cancelled, but all except one of the nine that were held took place in reasonably good conditions.

Ideally, a count should be made at each Watch-point three times. It was originally intended to record every Thursday between 5 April and 10 May. However, bad weather forecasts meant that the first two of those counts, on 5 and 12 April, were cancelled, and additional counts were added on 7, 15, 17, 22 and 24 May, to try and ensure that three counts were carried out at each Watch-point. Unfortunately, there were fewer participants available on the new dates than there would have been on the dates planned originally. Based on previous experience, counts would not have been arranged after 15 May, as the Grouse become less active as they settle down to breed, but the bad weather in the first half of April delayed the onset of breeding, and high numbers were counted on 15 May, so it was decided to extend the recording period.

Copies of all 12 numbered survey maps, together with a fieldwork recording sheet, were emailed to all participants before the first planned survey. Then, the day before each survey date, every participant was notified of their allocated Watch-point by email, together with the start and finish time and the map number they should print (together with two fieldwork recording sheets) and take to their Watch-point.

The fieldwork recording sheet is attached as Appendix 3. Participants were asked to record on the map all Grouse seen or heard, together with a number for each observation. The display flight of a territorial male often provokes a response from an immediate neighbour, often another display flight to the edge of the territory. There were several instances of two birds landing close together at the edge of their respective territories. On other occasions several birds were seen and heard concurrently, or nearly so. These are the most helpful observations in determining the boundary between territories, and participants were particularly asked to record all such events.

The time of each observation was entered on the fieldwork recording sheet, together with a description of what had been observed. The times were recorded to allow cross-referencing of the same observation from adjacent Watch-points, and on some occasions to prove that concurrent records must have been due to different birds. The symbols used on the map were described in the project briefing, and were shown on the fieldwork recording sheet.

Participants were also requested to summarise their observations, with their own assessment of how many different territorial males they had observed.

Observations

The Project organised 30 individuals, who recorded the birds seen or heard from the 67 different Watch-points on nine separate evenings. Fieldwork recordings were made from all except three Watch-points. Eighteen had a count made on only one date; the majority, 36, had counts on two dates; and only 10 had counts on three dates. None had counts on four or more.

It was initially hoped to cover all Watch-points at least three times, the level of coverage almost achieved in 2012, but the number of observers was lower than in any previous year, and the cancellations and re-arrangements meant there were fewer participants on the rescheduled dates. In addition, a few observers did not return survey maps, or did not report that they had not carried out surveys at their allocated Watch-points, so it was believed that surveys had been carried out at particular Watch-points when they had not been.

A total of 120 result sheets (102 maps with observations, plus 18 zero counts) were returned for analysis. These maps included 643 different observations of Red Grouse (some of which were concurrent observations of two or more birds). The coverage in every year since the survey started is summarised in Table 1. Compared with the previous four years, the number of counts, and counts per Watch-point, was the lowest, and the number of records was the

second lowest, reflecting the reduced number of participants, while average number of records on each count was the highest, and the number of counts with no Grouse recorded was the lowest. These latter results reflect the relatively good weather conditions on, and immediately preceding, the counts that did take place. The weather on each count is described later.

Surveyors are allocated adjacent Watch-points on each evening, to increase the likelihood of the same observations being made from adjacent Watch-points, and display near one provoking a reaction near another, both helping to identify territory boundaries. However, that means that bad weather on a particular evening, or other factors which depress Grouse activity, affects results in particular areas, rather than uniformly across the whole area. In 2018, only one evening was adversely affected, but all six Watch-points covered had effective counts on at least one other date.

Table 1. Summary of Survey Coverage and Results 2011 - 18

Year	2011	2012	2013	2014	2015	2016	2017	2018
Total Number of Watchpoints	38	60	67	67	67	67	67	67
Number of Surveyors	48	67	40	52	62	63	60	31
Number of Counts	147	204	122	181	184	167	164	120
Average Number of Counts / Watchpoint	3.9	3.4	1.8	2.7	2.7	2.5	2.4	1.8
Number of Records	818	816	460	865	839	637	721	643
Average Records / Count	5.6	4.0	3.8	4.8	4.6	3.8	4.4	5.4
Counts with no Grouse recorded	12	51	26	44	38	50	52	18

Table 2 provides a breakdown of the results on each of the nine Survey dates in 2018. A full breakdown is attached in Appendix 5.

Table 2. Summary of Observations of Red Grouse during 2018 survey.

Counts	Survey Dates									Totals		
	April		May						Counts	Records	Average	
	19	26	3	7	10	15	17	22				24
Total Counts	19	16	21	6	19	10	12	8	9	120		
Counts of Zero	3	3	4	3	1	2	2	0	0	18		
Total Grouse Records	59	56	97	12	118	66	88	35	112		643	
Ave. Records / Count	3.1	3.5	4.6	2.0	6.2	6.6	7.3	4.4	12.4			5.4

Analysis

All observations were transcribed onto master maps, using a different colour for each date.

For all parts of the area these were A3 blow-up versions of the A4 survey maps. A sample map from a previous report, showing all the observations used for analysis, is shown in Appendix 6. It shows the dashed lines between birds observed concurrently, and these dashed lines are highlighted. There were 12 such maps used altogether.

The analysis was carried out using the territorial mapping method (*Bird Census Techniques* Bibby *et al* Academic Press, London 2006). This method uses concurrent observations of different birds exhibiting territorial behaviour (display flight, aggression or song) to identify boundaries between territories. Observers were also asked to record the times at which each activity was observed, and this data too has been used to identify different birds calling concurrently against each other. The territory boundary passes between the positions of the males recorded concurrently. Similar observations on different dates identify the different sides of each territory, so that clusters of observations can be grouped into a territory.

Care was taken when transcribing the observations from the survey maps onto the Master Map to join each observation of two or more birds together with dashed lines. By the rules of the territory mapping method, observations of a bird at the same position twice in three visits

constitutes a territory. The difficulty with utilising this method for Red Grouse is that each territorial male has a large territory, and moves around it. A lot of the calling and display activity is at the edge of the territory, as each male competes with his neighbours, and sometimes the birds actually invade the neighbouring territory. Thus each male may be recorded several times on the same evening by participants at several nearby Watch-points; and then again, in different locations, on subsequent survey visits. This difficulty is overcome by rigorously applying one of the rules of the territory mapping methodology – the data must be interpreted to produce the minimum population estimate.

Using the concurrent observations, joined by dashed lines, to define territory boundaries, all observations can be grouped into the different territories shown in the results section.

It must be stressed that there is not necessarily any correlation between the size and shape of each territory shown on the maps with the ground that each Grouse actually occupies. Many of the Grouse recorded cannot be assigned to a territory with any degree of certainty, and the maps represent notional territories, based on those observations which locate (often very approximately) a boundary between territories.

Also, if there are no observations to establish the boundary on one side of a territory, the analysis will show one territory when in fact there are two. The population estimate calculated by this method is therefore the minimum, and there may be more.

Results

The next seven pages each show one of the maps issued to the project fieldworkers, with all the territories found in 2018 on that map shown, based on the analysis described in the preceding section. (Only seven of the 12 maps are shown – the remaining five maps did not show any other territories that were not wholly on one or more of these seven)

The Watch-points are the grey numbers in circles. All territories are numbered on each map (in red), to ensure all have been counted (1-64). In addition, there was a probable additional territory east of Shooting Box, and a possible additional territory west of Wildmoor. A single page summary map showing all the territories (Map 8) is shown on page 17.

The total number estimated from the Survey maps is 64 – 66 territorial males, fractionally better than the previous highest ever recorded, in 2012.

Comparison of Results with those from NT and Other Records

Once the results were finalised, and the territories were mapped, they were compared with the casual records collected by the Trust during 2018. These records fell within the area occupied by the Grouse found on the surveys, and did not identify any additional territories to those shown on the survey maps.

The total population estimate for 2018, derived from the survey results, is 64 - 66 territorial males, similar to the previous high of 63 – 66 in 2012.

Population Trends – Summary

The population estimate made in each year is shown in the Table

Table 3. Annual Population Estimate

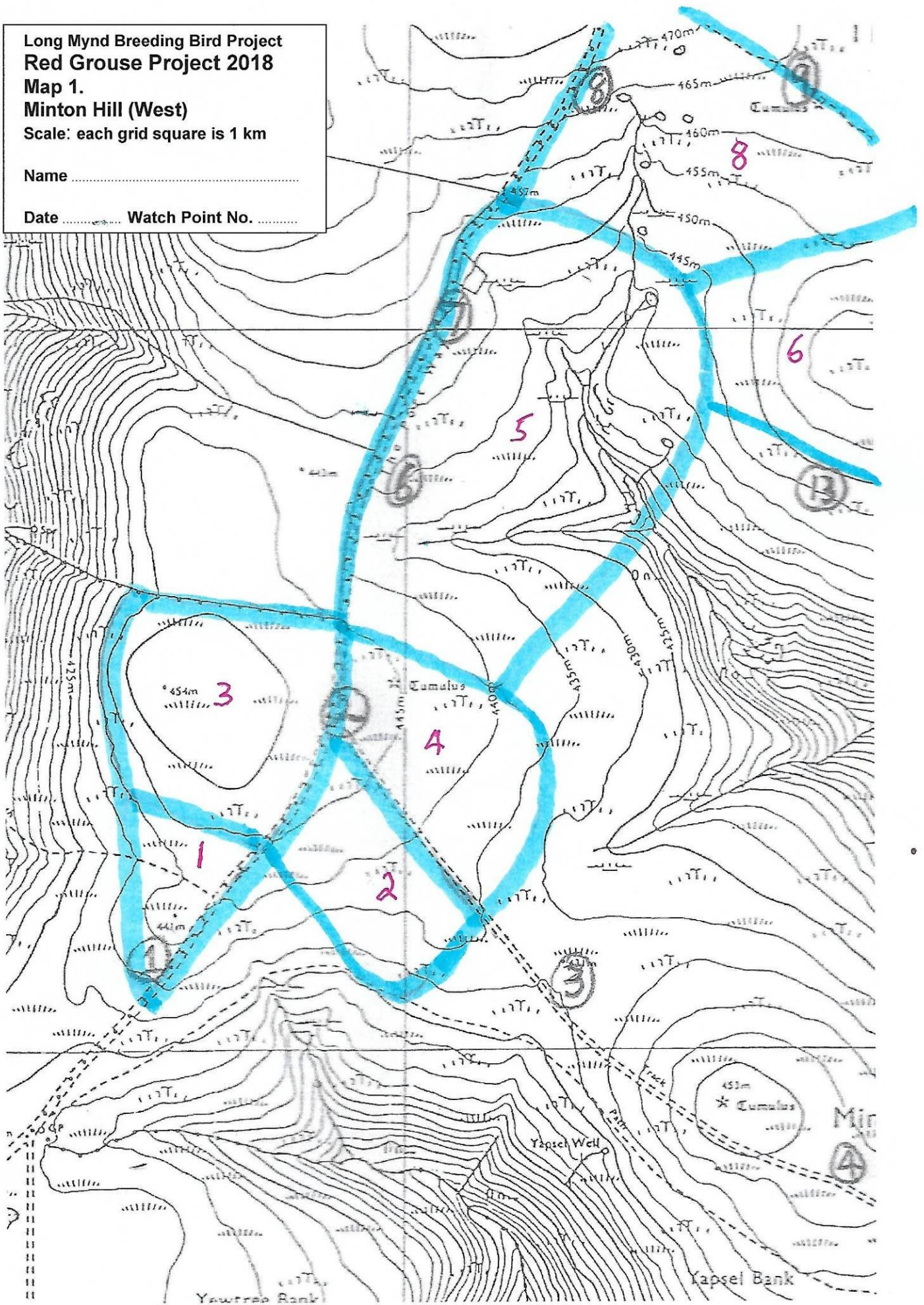
Year	2011	2012	2013	2014	2015	2016	2017	2018
Population Estimate	60 - 63	63 - 66	52 - 54	56 - 58	57 - 59	42+	49+	64 - 66

Long Mynd Breeding Bird Project
Red Grouse Project 2018
Map 1.
Minton Hill (West)

Scale: each grid square is 1 km

Name

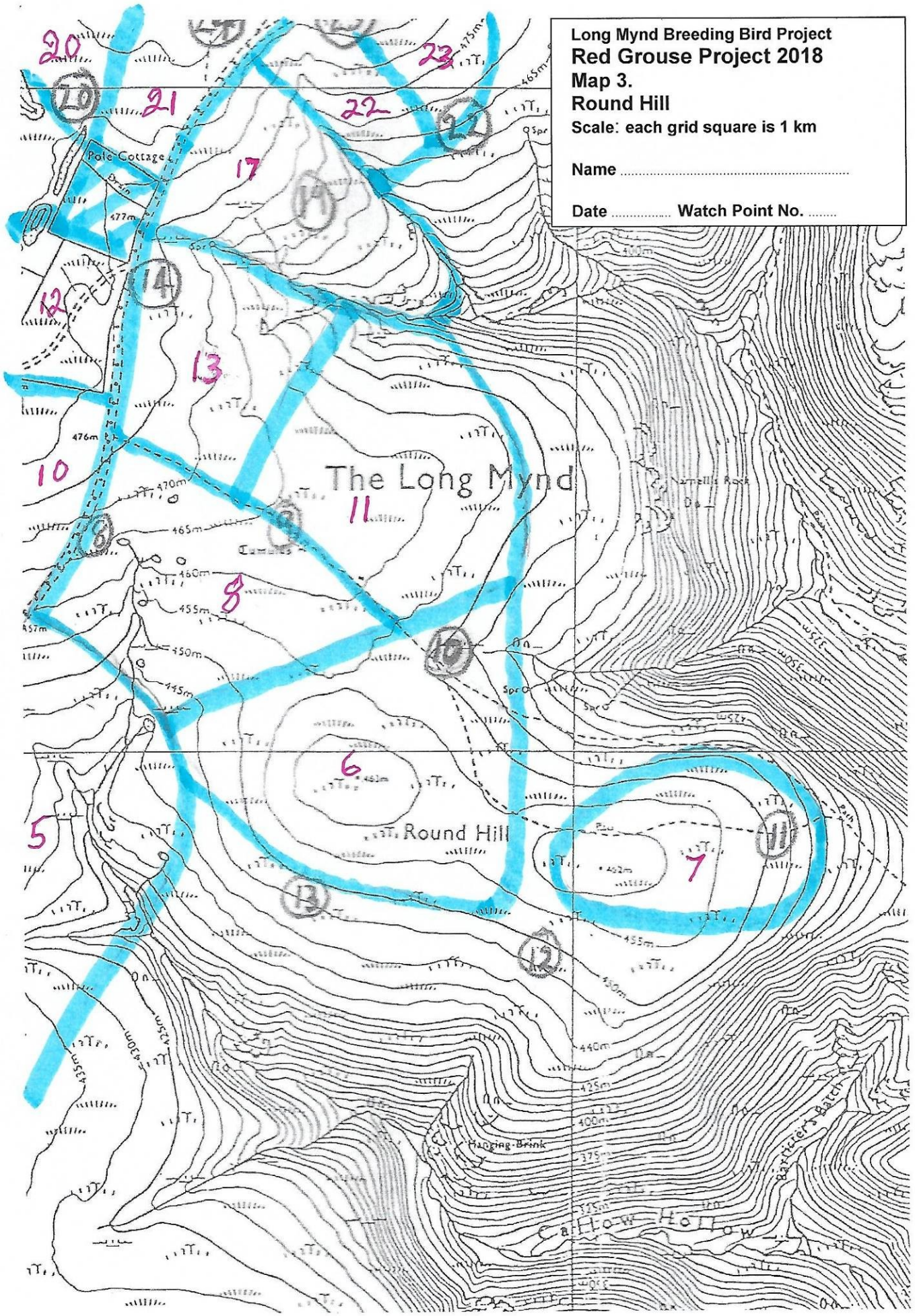
Date Watch Point No.



Long Mynd Breeding Bird Project
Red Grouse Project 2018
Map 3.
Round Hill
Scale: each grid square is 1 km

Name

Date Watch Point No.

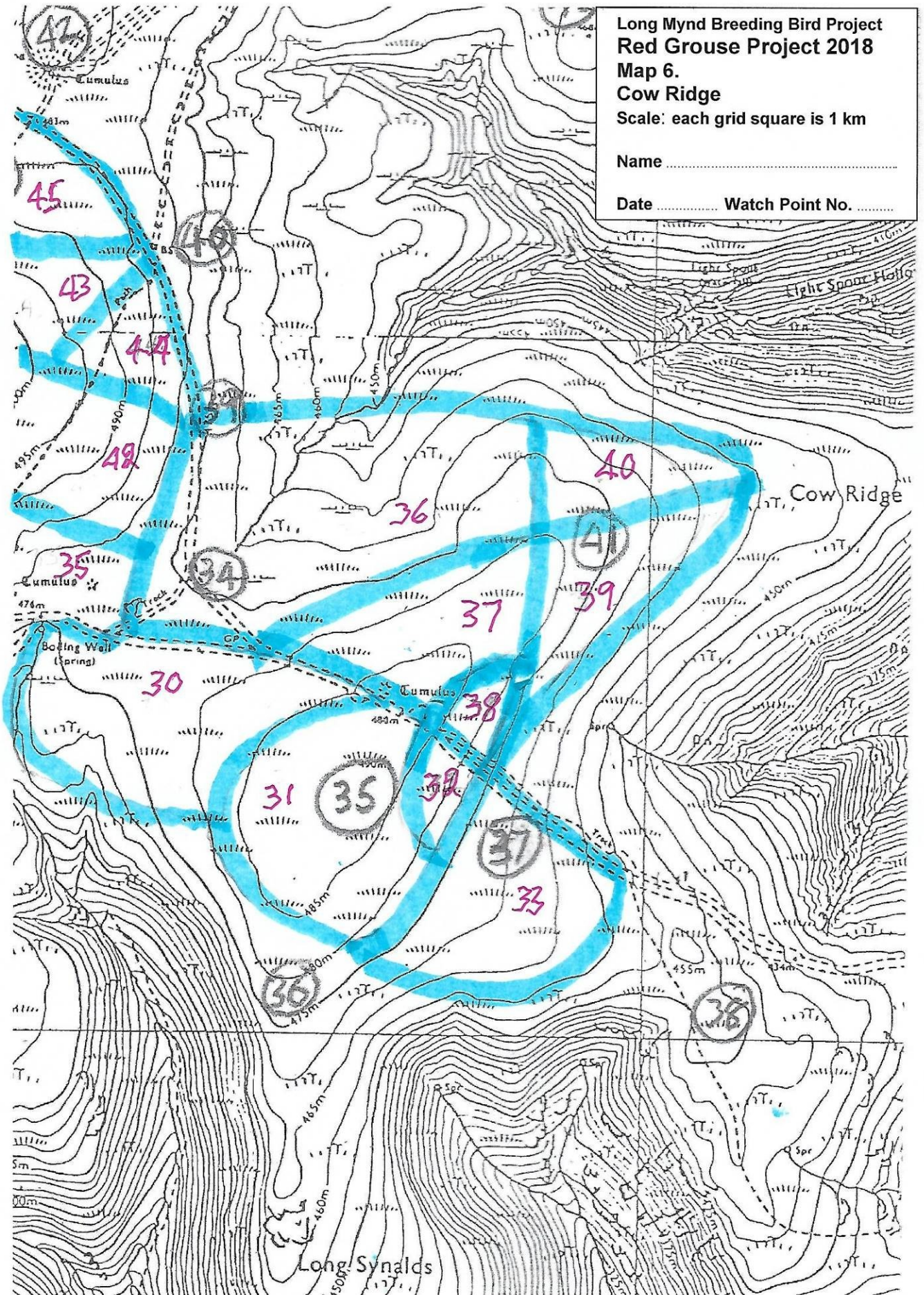


Long Mynd Breeding Bird Project
Red Grouse Project 2018
Map 6.
Cow Ridge

Scale: each grid square is 1 km

Name

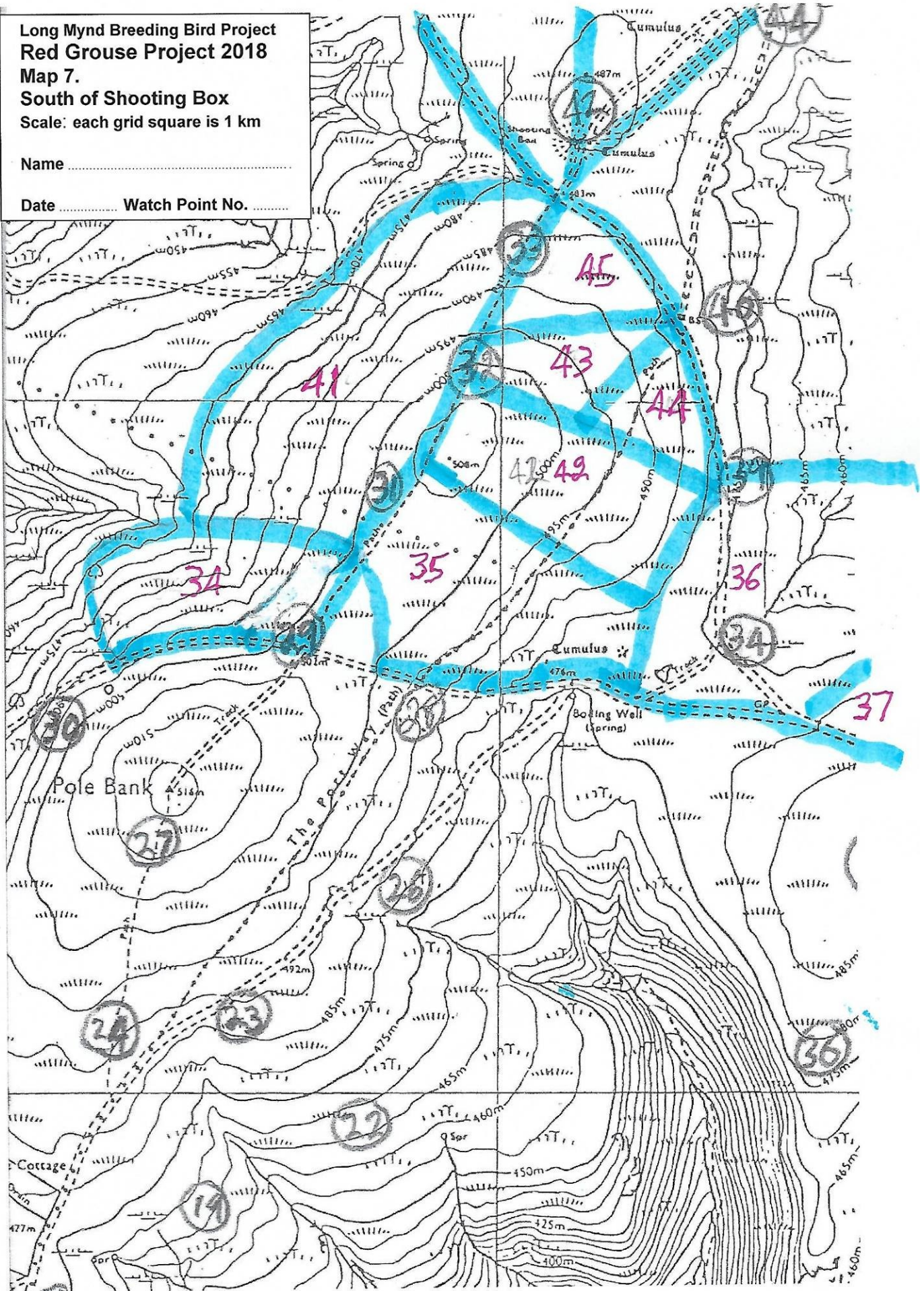
Date Watch Point No.



Long Mynd Breeding Bird Project
Red Grouse Project 2018
Map 7.
South of Shooting Box
Scale: each grid square is 1 km

Name

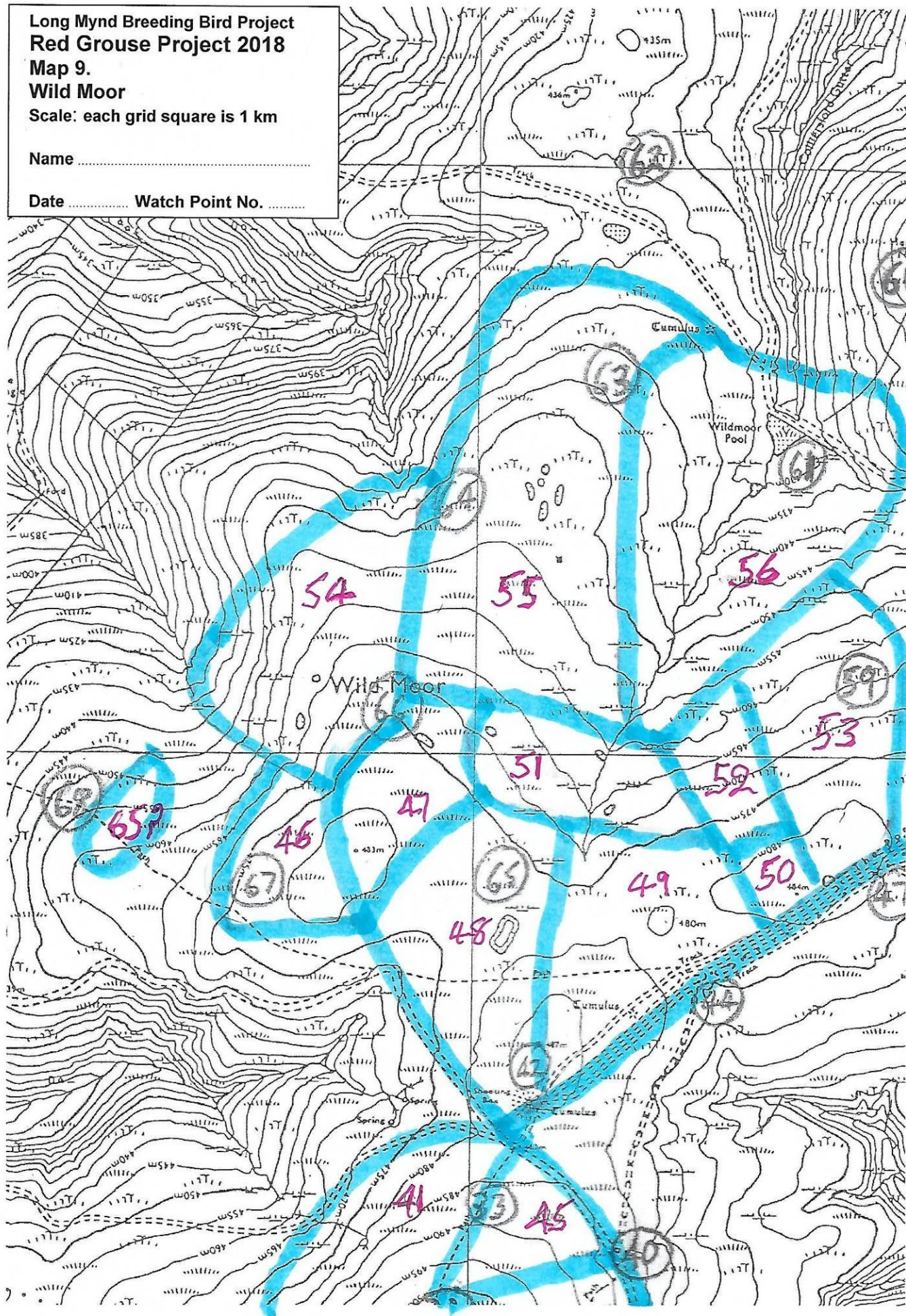
Date Watch Point No.



Long Mynd Breeding Bird Project
Red Grouse Project 2018
Map 9.
Wild Moor
Scale: each grid square is 1 km

Name

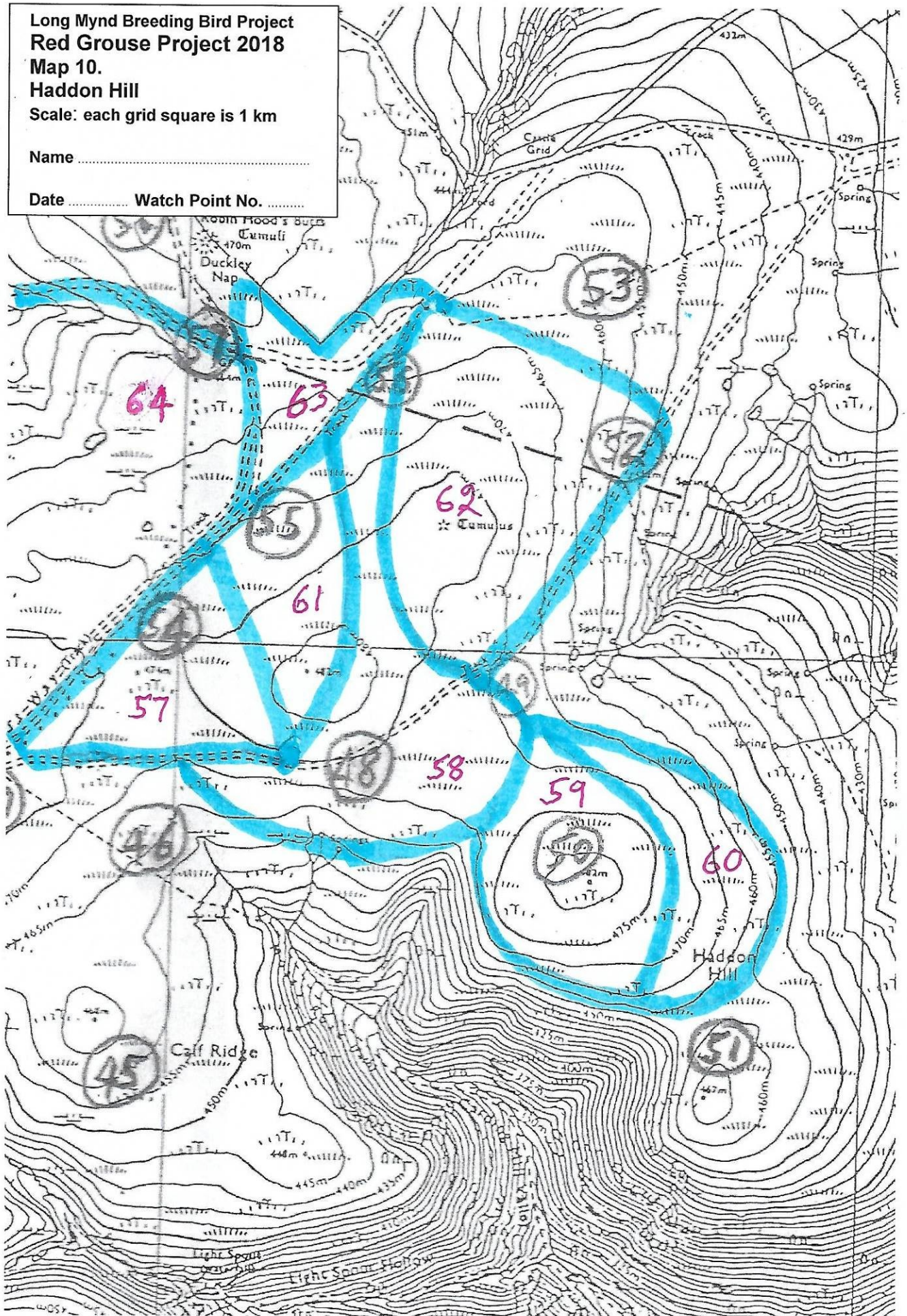
Date Watch Point No.



Long Mynd Breeding Bird Project
Red Grouse Project 2018
Map 10.
Haddon Hill
Scale: each grid square is 1 km

Name

Date Watch Point No.



The 2013 survey was disrupted by bad weather, and the average number of records per count was the equal lowest for all eight years, in spite of four of the six counts being disrupted by bad weather in 2012. Not surprisingly, the level of activity recorded in 2013 was lower than in other years. This may be because the Grouse were present but inactive, or because there were fewer to count, due to birds not coming into breeding condition because of the unusually late bad weather at the start of the season, or high mortality.

The 2014 and 2015 counts show an increase over the 2013 estimate, but the population still appears to be slightly less than that found in 2011 and 2012. Therefore it is likely that the bad weather at the start of the 2013 breeding season did have a real impact on the population, but it appeared to have almost recovered to the 2011 level by 2015.

The 2016 and 2017 surveys were also disrupted by bad weather, resulting in fewer Grouse, and fewer territorial interactions, being recorded. Two of the three dates with more than 5 records per count were not a Thursday, so there were fewer participants and fewer Watch-points were covered. On evenings when there were several records of Grouse, there were good numbers of interactions to prove the presence of several males, but there were no effective counts at a large number of Watch-points, and several of the “territories” shown on the maps may hold more than one male. It is therefore highly likely that there were more than 49 territorial males, but breeding success on the Stiperstones was poor in 2015, resulting in fewer males being counted at the start of 2016 than in recent years (see p 22 and Annexe 2), so it is likely that the population on Long Mynd was lower in 2016 than in 2015 too. There was little change on the Stiperstones between 2016 and 2017.

In 2018, although there were fewer observers, weather conditions were good on all except one date, when the average number of records / Watch-point was less than 3.5, but there were only six counts on that evening, so the effect on the results was small. The onset of breeding was delayed by “the beast from the east”, and subsequent cold weather into mid-April, so the first survey was not until 19 April. However, the delay meant that Grouse activity was still high in the second half of May, and counts were extended until 24 May.

It is not reasonable to infer that the population has been largely unchanged because the occupied area of heathland was similar in 2015, 2016 and 2017. Many species occupy the same territories year after year, but it is difficult making such comparisons in the case of Grouse. The maps show notional territories, rather than the areas actually occupied by the Grouse, and there will be rearrangement of territories, year on year, reflecting the changing suitability of the heather: after burning it is initially unsuitable, and then it improves in subsequent years; but after the heather matures, it becomes too thick and overgrown.

However, there were five territories on Wildmoor in 2018 that were apparently unoccupied in 2017, and three there in 2016, but this area was not affected by recent management, so there is a good chance that these territories were in fact occupied in 2017 as well. There were additional territories occupied on Minton Hill and Round Hill as well. As indicated above, these were all areas that had no effective counts in 2017, but were occupied in 2016, reinforcing the view that the population estimate from the survey results in 2017 was too low.

Recording Conditions

The activity levels of the Grouse, and the likelihood of them being observed and recorded, vary according to the weather conditions. Although conditions may vary across the whole plateau, so on each evening they were not the same at every Watch-point, in general they were good on all except one survey date. In summary, the conditions during each survey were:-

- 19 April – Cloudless blue sky, warm, very light breeze from the south-west, sound carried well
- 26 April – Very high cloud >66%, strong wind from west until 7.45pm, cold
- 3 May – 100% high cloud, dull and overcast. Strong breeze from south-west.

7 May – Almost cloudless blue sky, very warm, very faint breeze from the south-west, sound carried well

10 May – Almost cloudless blue sky, slight breeze from the west, cold, sound carried well

15 May - Cloud >66% but visibility good, stiff cold breeze from north-west, increasing from 8.30pm. Sound carried well until 8.30pm

17 May – cloudless blue sky, fairly warm, almost still, sound carried well

22 May – cloudless blue sky, warm, slight breeze from the north-east, sound carried well

24 May – cloud < 33%, still until 9.00pm, then cold breeze from north-east. Sound carried well until 9.00pm

Comparison with Recording Conditions in Previous Years

In 2011, there was no rain on any evening that the survey was conducted, although some of the evenings were quite windy. The total number of record sheets submitted was 147, containing 818 records. The average number of Grouse records per sheet was 5.66. No Grouse at all were recorded on only 12 (8.2%) record sheets.

In 2012, conditions on the first two dates were reasonably good (good visibility, slight breeze, no rain), on the third date conditions during the actual survey period were also reasonable, but heavy rain all day depressed Grouse activity. There was rain, mist and wind on the three final dates. The total number of record sheets submitted was 204, containing 816 records. The average number of Grouse records per sheet was 4.0. No Grouse at all were recorded on 51 (23.9%) record sheets. The poor weather meant that, although there were far more counts than in 2011, the number of records was virtually the same.

In 2013, heavy snow at the beginning of April, and then a prolonged period of cold wet weather, meant the first survey was not carried out until 25 April, and it was cold on that date. Indeed, nationally, this was the coldest spring for over 50 years. Several new dates were fixed and then cancelled, and the last three surveys were carried in the second half of May, well after the normal time of peak Grouse activity. Although conditions were good for all except the first date, the average number of Grouse recorded on each survey sheet was the equal lowest of the six years (see Table 1).

In 2014, in general conditions were good during six of the seven surveys, but the cancellation of several planned surveys (including on rearranged dates) because of forecast bad weather meant that the period over which the counts were conducted was extended by a week, and three of the counts occurred in the second and third week in May, when Grouse activity has usually declined because territories have been established and egg-laying starts.

In 2015, in general conditions were good on at least four of the seven survey dates. There was no rain during any count, but rain during the day depressed Grouse activity on two counts. On another, the wind was too strong (the forecast was for it to have dropped).

In 2016, there was no rain during any count, but the wind was much too strong on two counts, which would have been cancelled if the forecast had been correct. A strong breeze on two other dates resulted in the equal lowest average number of records / count.

In 2017, poor weather meant that only seven counts could be arranged, and conditions were poor on four of them (two would have been cancelled if the weather forecast had been accurate, and the other two were cold, depressing Grouse activity). Many Watch-points had no effective count.

Peak Grouse Activity

The 2012 survey started two weeks earlier than in 2011, because the level of observed activity reached a peak at the end of April, and then declined considerably.

A similar timetable was planned for 2013, but the actual event was substantially different. That year had the worst weather, so more planned counts had to be rearranged, and the final survey was not undertaken until 30 May.

A similar timetable to 2012 was planned for 2014, but the first and last two planned surveys had to be cancelled and rearranged. However, one was rearranged for 28 April, and all were finished by 15 May.

In 2015, the first planned count was cancelled, and replaced by two in mid-May.

An analysis has been done of the average number of Grouse records per survey sheet for all the survey dates over the seven years of the project, in date order. There is no obvious pattern, as the average depends more on the weather conditions during each survey, and the area being covered (some parts of the area have higher densities of Grouse than others). However, in general, April counts recorded more Grouse than May counts, because territorial activity declines as territories are established and egg-laying starts. In 2016, efforts were made to reschedule any April dates that were cancelled within April, rather than add new dates onto the end of the survey period, and this was partially successful with replacement surveys on 19 April and 3 May, but two others were added at the end, on 12 and 17 May.

Counts after 16 May have been held on four dates altogether, all with low average records / survey, and it is now considered that surveys after mid-May are not likely to be worthwhile unless the onset of breeding is delayed, as happened in 2018.

The low number of records / count on 17 April 2014, 21 April 2016, and 13 and 20 April 2017 suggests that low temperatures may reduce Grouse activity too, although the location of the counts at the northern end of the hill, where densities are lower anyway, also contributed. In 2015, the lowest average count coincided with both cold conditions, and counts in the north.

Distribution of Territories and Heather Management areas

There are approximately 700 hectares of heather dominated heathland owned and managed by the National Trust on Long Mynd. Of this, an estimated 450ha is continuous heather (>75% cover), but 150ha of this is either non-intervention or unsuitable for burning or cutting (e.g. it is on a steep slope, boggy ground or dominated by bracken). This leaves around 300ha to be managed on an approximately 15 year rotation, an average of 20ha per year. This systematic management started in 2001, but some burning had taken place in earlier years. Up until 2012, approximately 160ha of heather had been cut or burnt in scattered patches. Burning can only take place in favourable conditions during a limited winter period (1 October – 31 March), and none was possible in 2013. A further 25ha was burnt in the spring of 2014, 10ha in 2015, 18.6ha in the winter of 2015-16 and 6ha in the winters of both 2016-17 and 2017-18, making a total of around 226ha since management began. Although the target is 20ha per year, this is frequently not achieved due to lack of suitable burning days within the permitted period.

This management is done primarily to add structural diversity to the heathland whilst maintaining heather as the dominant species. It benefits a range of wildlife species, but in particular the Red Grouse. The young areas of heather resulting from the management are also more accessible and nutritious to livestock than the old heather. The remaining 150 ha of continuous heather is left as 'non-intervention' to support less mobile species which may be negatively affected by burning or cutting.

All the territories shown on the seven maps on pages 6 - 12 have been input into the National Trust's GIS system to produce a summary Map 8 as shown on page 17. This map also shows the contours, and confirms that the Red Grouse only inhabit the relatively flat plateau.

Map 10 shows the results for 2017, to facilitate comparison.

Map 11 shows all areas of heather, and the areas where management has been carried out since 1998.

Map 12 overlays the 2018 Territories Map onto the Heather Management map.

It will be seen that a few areas which have been managed in the last seven years, and have short heather, should be good for Grouse, but none were found there. Some were occupied for the first time in 2018. Conversely, some apparently 'unsuitable' areas where there has been no management do have Grouse, such as south-west of Pole Cottage (not NT land).

While there are areas of managed heather outside the areas included on the Grouse territories map, there are Watch-points already in use which should be suitably placed to record any Grouse that have been overlooked, or move into them.

Comparison of Results with Previous Years

The 2018 results are summarised in Map 9, and a direct comparison can be made with the 2017 results in Map 10.

Comparison of the number of territories found each year, and their boundaries, is difficult, as the maps are a product of the methodology, rather than a reflection of the actual area occupied by each Grouse.

However, the number of territories found on the edge of the core area grew in 2012, reflecting the continued growth in the population since 1994. The apparently reduced population found by the 2013 survey was reflected mainly in the disappearance of many of the territories on the edge of the range. If the population really declined, then contraction of the range is likely. However, any birds occupying such territories are likely to be less active, as they have fewer neighbours to compete with (display against), so they are more likely to be overlooked.

More positively, it appears that a recent burn (2009) has allowed the creation of one or two new territories on Haddon Hill, where no Grouse were found in 2012.

In general most territories have some area of short heather in them. It appears that the heather management being carried out by the Trust is continuing to benefit Red Grouse.

Some of the recently managed areas of heather have probably not yet had sufficient time to regenerate into suitable habitat. Some additional Watch-points were added to the 2012 survey to monitor such areas, but, as outlined above, inspection of the heather management map suggests that no new Watch-points are needed in 2019.

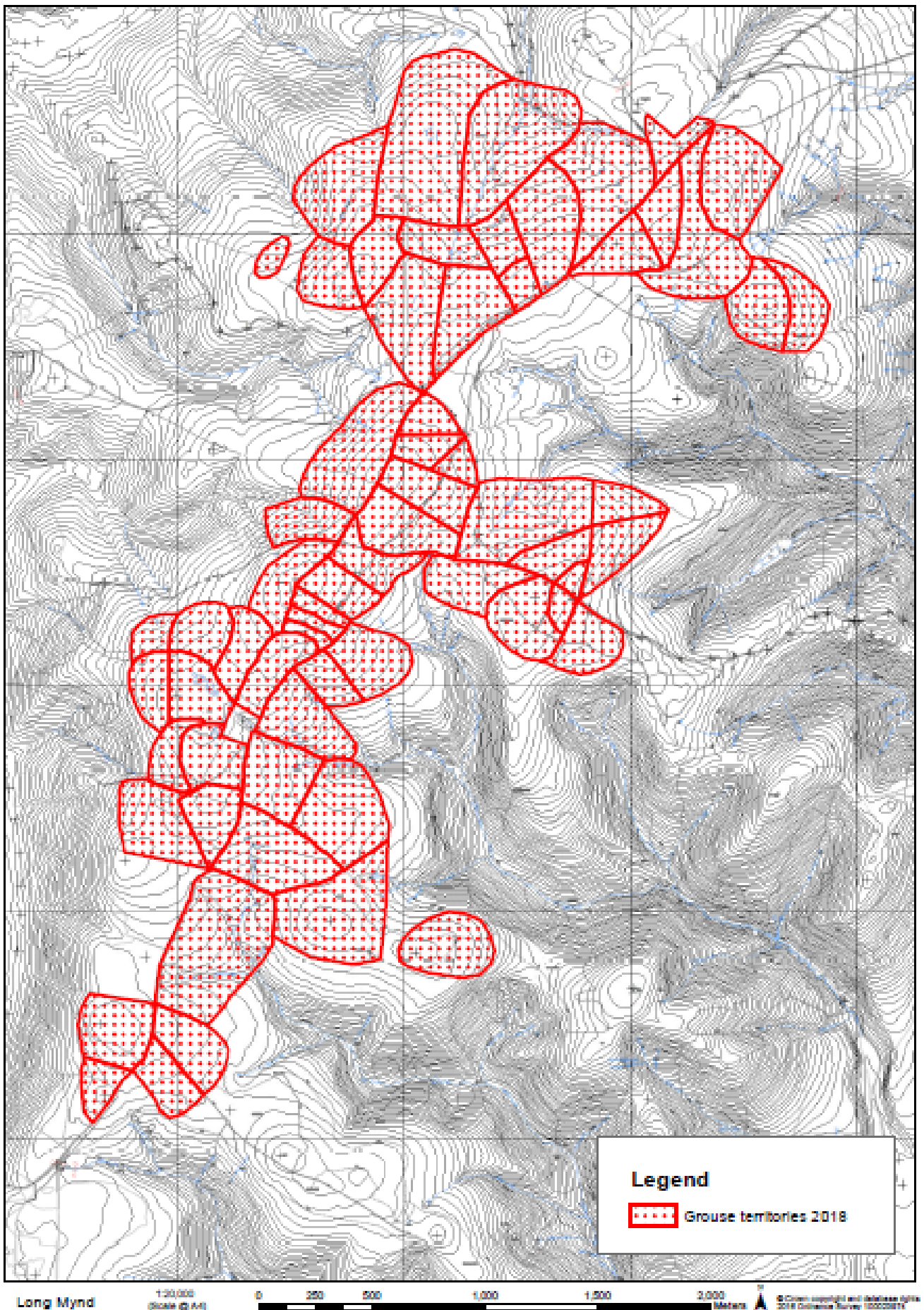
Notes of Caution

In 2011, the survey produced a more accurate (and higher) population estimate than that obtained by the three counts made at dawn by National Trust staff and volunteers in the preceding winter. The large number of participants, with systematic coverage of the whole of the Long Mynd over six separate evenings, produced excellent results. However, the Report listed several notes of caution, some of which were addressed by changes in the methodology in 2012, but some of them still apply.

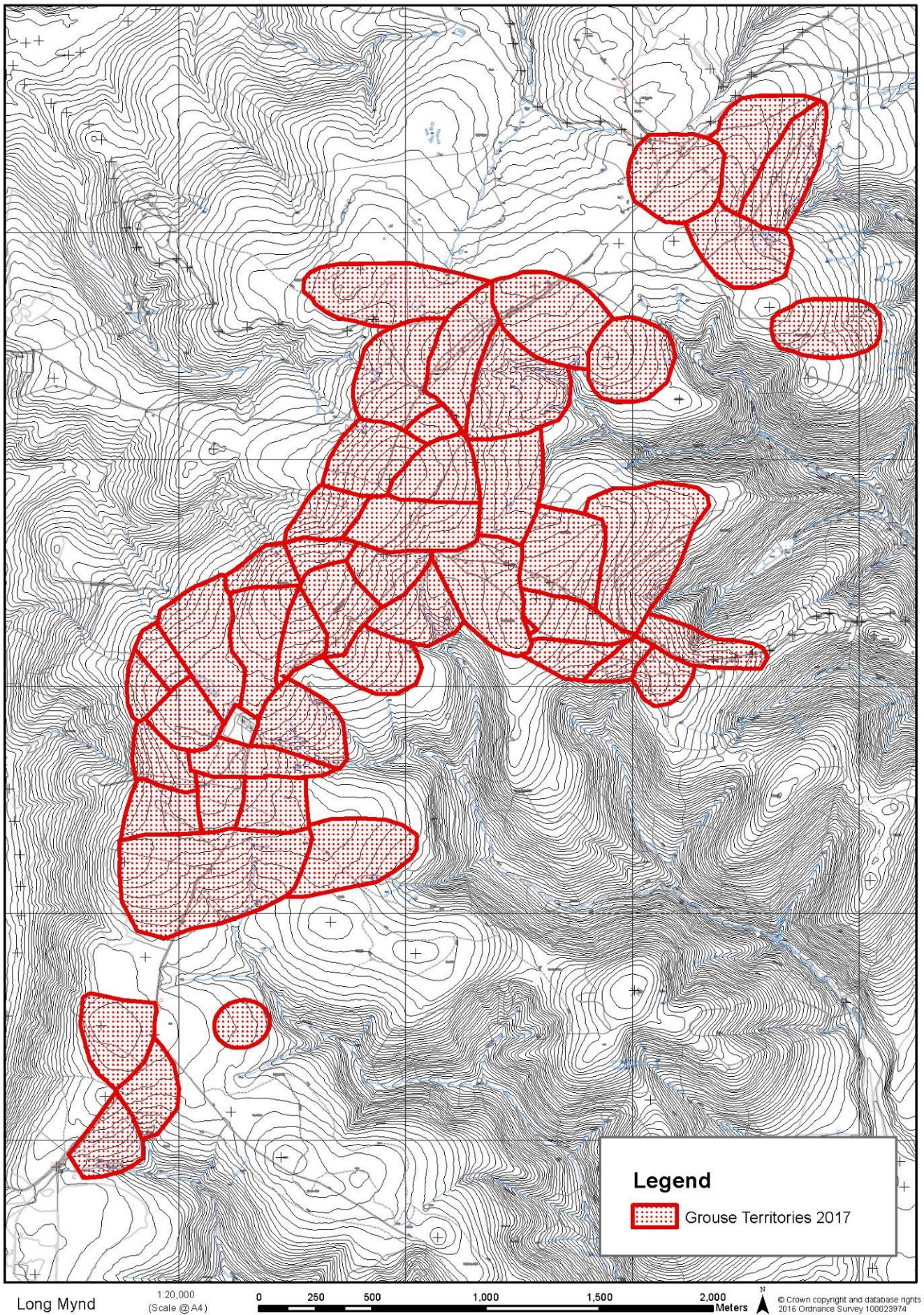
It should be noted that:-

1. Poor weather conditions during individual surveys, especially strengthening wind over the course of an evening, and rearranged dates for surveys which then occurred in May, after the peak of territorial activity, may have limited the number of occasions when two or more displaying males were recorded concurrently. Such observations are crucial for locating territory boundaries, so it is possible that there are two males in some of the larger "territories", as no observations were made during the surveys to separate them.

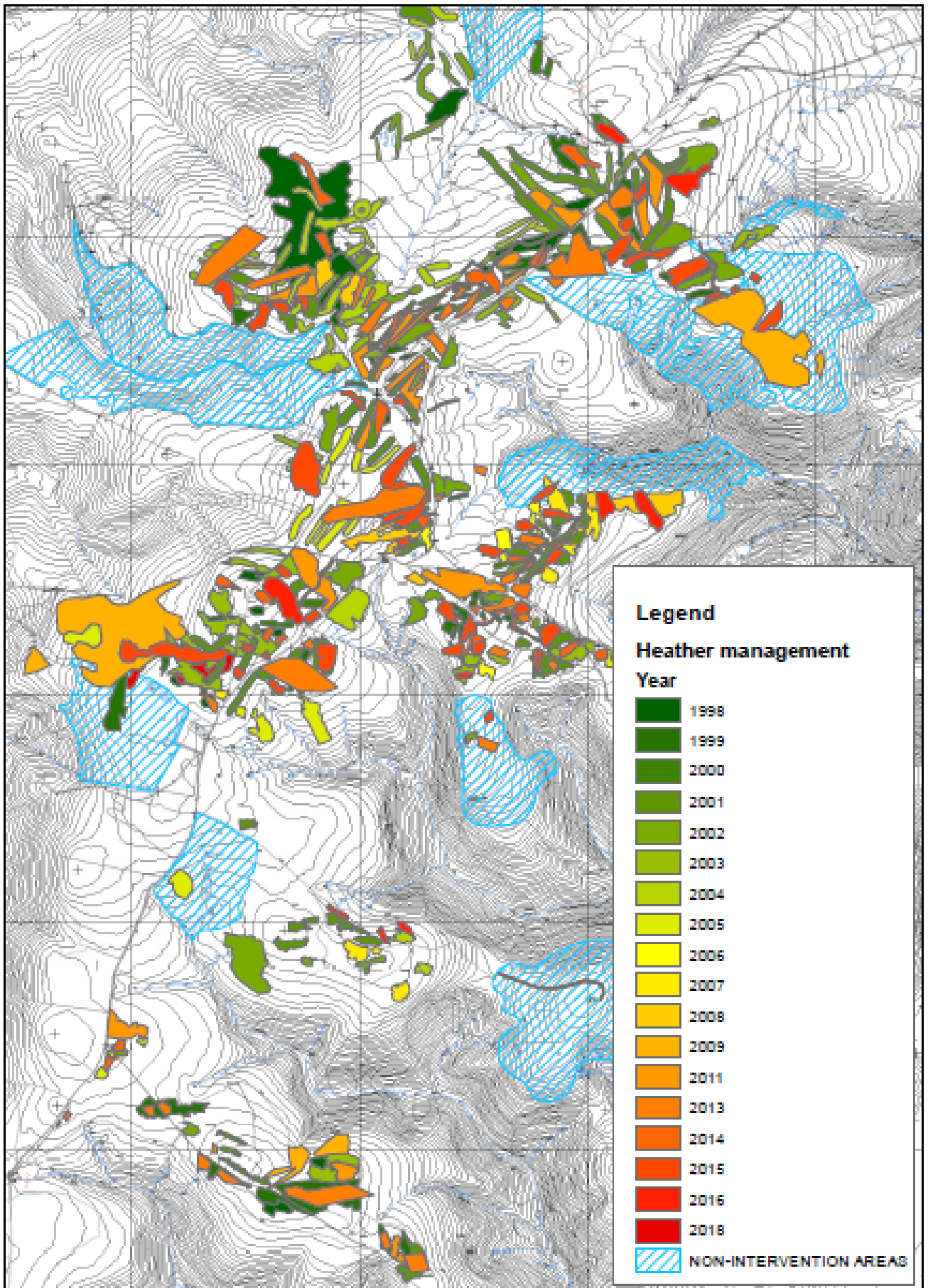
Map 8. Summary Map (with contours) – All Territories 2018



Map 9. Summary Map (with contours) – All Territories 2017



Map 10. Heather Management Areas 1998 – 2018



Long Mynd

1:20,000
(Scale @ A4)

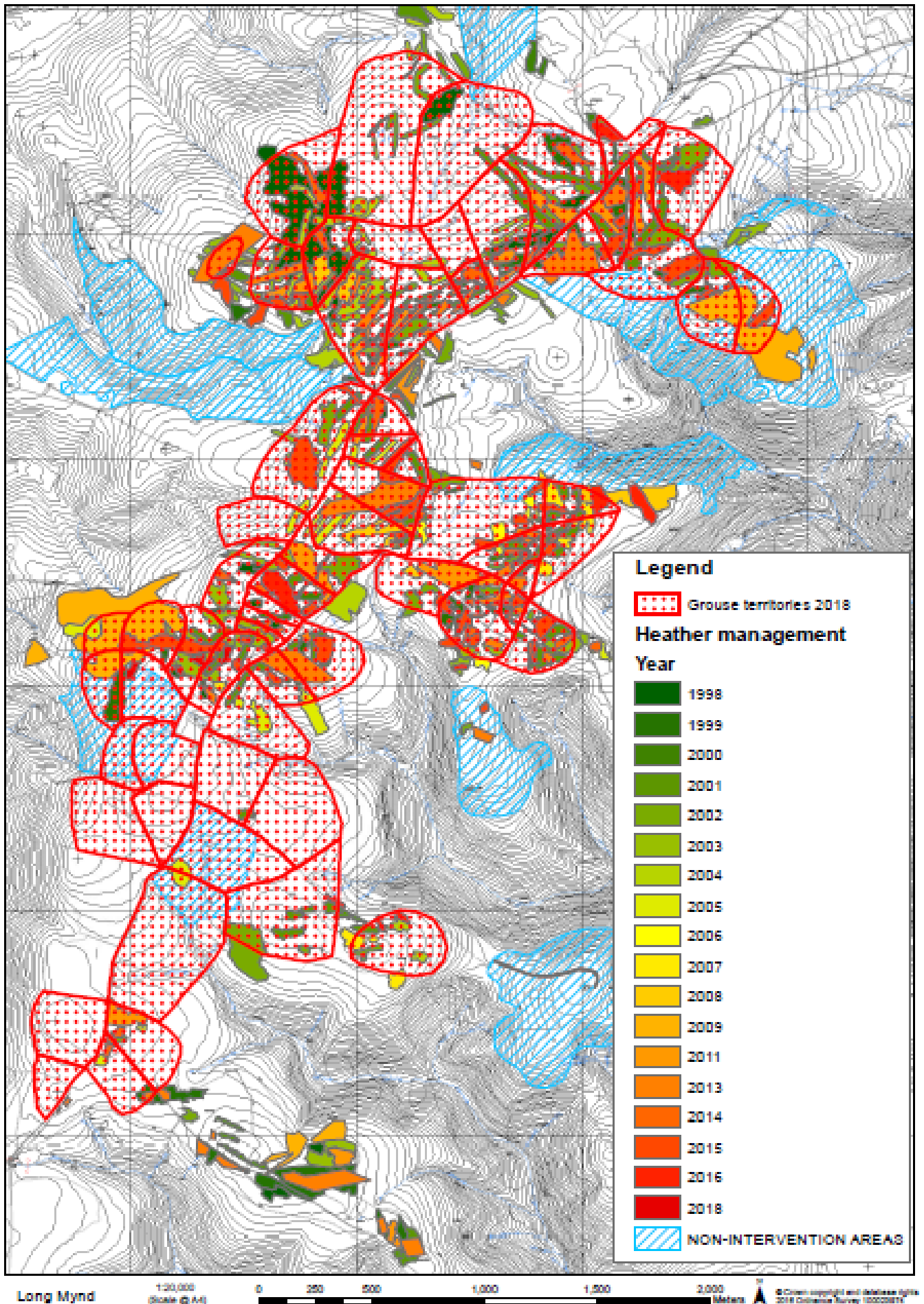
0 250 500 1,000 1,500

2,000



Meters
© Crown copyright and database rights
2018 Ordnance Survey 100020814

Map 11. Grouse Territories 2018 overlain on Heather Management Areas 1998-2018



2. Every effort was made to select Watch-points with a good field of view (some new Watch-points were added in the light of experience in 2011, and seven more were added in 2013), and participants were asked to move slightly if they could obtain a better field of view in the vicinity of the Watch-point, rather than at it. Even so, some Watch-points, particularly those on the hilltops, had fairly restricted fields of view. Records from these Watch-points were generally of calls, rather than of seen birds, with some resulting inaccuracy in the mapping.
3. There were Watch-points within hearing range of all places where Grouse had been seen prior to the start of the Survey, and the Heather Management map on page 19 shows some areas which should be suitable for Grouse, but where none were found. Grouse may perhaps have been overlooked there, and these areas should be monitored thoroughly in future years.
4. Concurrent observations of the same Grouse activity from different Watch-points would not necessarily have resulted in those observations being mapped in the same position. This is particularly true for records of calls heard faintly in the distance.
5. Although the scale of the maps provided to participants was increased after 2011, there were still a few occasions where the scale was too small – the observations could not all be clearly differentiated.
6. Participants' experience of Red Grouse, and their experience of bird watching generally, varied tremendously. Some may have missed birds, and / or were not confident enough to summarise their observations into the number of definitely different and probably different males.
7. However, inaccurate mapping of observations did not present any apparent problems during the analysis, and concurrent observation of (or hearing) adjacent males usually included one made from the nearest Watch-point, which was presumably reasonably accurate. Therefore the potential limitations of the survey methodology do not appear to be reflected in the mapping, although they may lead to the number of territories being underestimated.

Considerations for the Future

The method has generally produced excellent results, and it will be repeated annually, so long as sufficient volunteers can be recruited, to monitor the Red Grouse population on the Long Mynd.

The 2015 report highlighted two issues to stress to observers, as a result of lessons to date:-

1. Even stronger encouragement will be given to observers in future years to summarise their observations, so they record which observations relate to each bird, and which are definitely different birds.
2. Observers will again be requested to notify the organisers as soon as possible if they do not carry out a survey at a Watch-point they have been allocated.

These issues have been stressed in 2016, and each subsequent year, but they have still been a problem every year. In the light of this experience, these issues will be stressed even more strongly in future years, as well as the need to collect in all the survey maps as soon as possible.

Enjoyment

Most participants said they enjoyed being on the Long Mynd in the evening, not least for the birds, but also, for some, beautiful clear long distance views, spectacular sunsets and / or a moonlit walk home.

Red Grouse Elsewhere in Shropshire

Apart from The Long Mynd, the only other established population of Red Grouse elsewhere in Shropshire is on The Stiperstones. Details of monitoring results there are shown in Annexe 2. The population in 2018 was estimated at 21-24 territorial males, compared to 24-31 in 2017, 28-34 in 2016, 35-37 in 2015, 33-38 in 2014, 18-21 in 2013, 18 in 2012 and 11 in 2011. 2014 was the first time more than 30 have been found since monitoring started in 1989, but the number was less than 30 in 2016, and has declined further subsequently.

The total number of Grouse counted in August 2014, including fledged young, was the highest ever recorded, reaching over 100 for the first time, but in 2015 there were 58-75, significantly down from the previous year with no net recruitment. This was probably due to wet weather through the breeding season (other moors had similar poor years too). Conditions were better in 2016, and 78-91 were counted, but there were only 47-55 in 2017, another year with no net recruitment. The autumn count has been discontinued, partly because of the difficulty of recruiting volunteers, and partly because Natural England have acquired the shooting rights, so it is no longer necessary to know the total population before the start of the shooting season.

Red Grouse used to breed on Brown Clee (five pairs in 1989 - *Atlas 1992*), but none have done so there since the mid-1990s, and there are none there currently (information from the Game Keeper in 2011, via Gareth Thomas, *pers.comm.*).

They have also bred on Heath Mynd in the past, but attempts to reintroduce them there have not been successful (Neil Wainwright, *pers.comm.*).

The Bird Atlas survey 2007-13 found no Red Grouse during the breeding season anywhere other than on the Long Mynd and the Stiperstones, but during the winter period two were seen on Heath Mynd (in December 2008), as well as on the two breeding sites

Other Species

Participants also recorded Curlew, Hobby, Kestrel, Red Kite, Buzzard, Snipe, Cuckoo, Whitethroat, Grasshopper Warbler, Raven and Reed Bunting, as well as several other more common species.

Acknowledgements and Distribution

Most importantly, thanks to the 30 individuals, including 1 couple, who participated in the Project, and submitted survey maps:

John Arnfield, Sandy Burton, Chris Cooke, Judith Darling, Stephen Darling, Gill Davies, Malcolm Dixon, Greg Forster, Sue Forster, Jeremy Freeland, Julian French, Joe Gomme, Darren Hall, Frank Hinde, Pat Holbourn, Peter Houlder, Peter and Jane Howsam, Peter Jackson, Ray Jones, Sarah Lane, Edward Marvin, Anna McCann, Roger Owen, Sue Pinsent, Jane Potts, Leo Smith, Mike Statham, Ben Warren and Heather Williams,

Thanks particularly to Dwenwen Williams, a placement ranger with the National Trust, for helping organise the survey, especially for allocating the observers to Watch-points for each count.

Thanks also to Caroline Uff, former National Trust Ecologist at Long Mynd, for providing the results of previous monitoring of Red Grouse on The Long Mynd, information about the Heather Management policy, and the maps up to 2014 from the Trust's GIS system, and Andrew Perry, the current ecologist, for the maps and data for 2015 onwards.

Data in Annexe 2 has been provided by Simon Cooter, Stiperstones NNR Site Manager

The photograph on the cover is © Jenny Steel. Thanks to her for permission to use it.

An Electronic version (.pdf format) of this Report has been supplied to all the participants. A paper copy has been supplied to the National Trust, together with all the fieldwork observations and analysis.

The report can be viewed on, or downloaded from, the Strettons Area section of the Shropshire Community Wildlife Groups website, www.ShropsCWGs.org.uk

A summary report was not available to be included in the SACWG Annual Report for 2019, presented to the Annual Public Meeting on 26 February 2019. It has now been circulated to all SACWG and Church Stretton SOS Branch members.

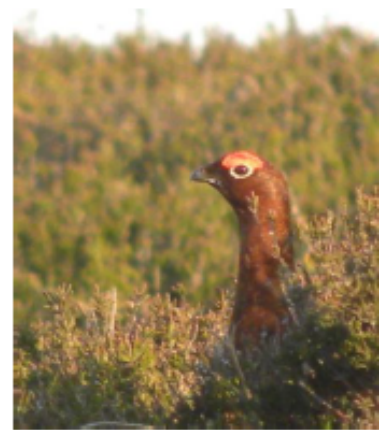
Summary and Conclusion

The total estimated population of Red Grouse in Shropshire in 2018 is therefore 88 – 97 territorial males (compared to at least 74 in 2017, 70 in 2016, 92-94 in 2015, 89 – 96 in 2014, 70 – 75 in 2013 and 81 - 84 in 2012), of which around two-thirds are on The Long Mynd.

It appears that the heather management being carried out by the National Trust is continuing to benefit Red Grouse, although the population growth appears to have tailed off.

Leo Smith
Long Mynd Breeding Bird Project
January 2020

Appendix 1. Project Recruiting Leaflet (size reduced)



Red Grouse Survey 2018

Introduction

For the last seven years, the Red Grouse population on the Long Mynd has been counted by the co-ordinated efforts of volunteers at dusk on several evenings between late March and early May. Volunteers have included participants on the National Trust / SOS *Birds of Shropshire* courses, members of the local SOS, SWT and RSPB groups, National Trust Volunteers, members of the Strettons Area Community Wildlife Group, and other people interested in birds. Last year there were 70 volunteers, and we need the same again this year.

The Strettons Area Community Wildlife Group is leading the project. We want to recruit as many helpers as possible for the 2017 survey. It's easy to do, and new participants will be very welcome. Counts will be held on six successive Thursdays from the end of March to early May. Additional dates will be arranged on other days of the week, so please sign up even if Thursdays are inconvenient. Participants do not need to come to every count. Please come to as many as you can.

Method

Pairs are secretive in the breeding season, and stay in the deep heather, so they are difficult to count. However, territorial males display around sunset. Most territories are within sight and hearing distance of the road along the top, between the Gliding Station and the Shooting Box car park. The display flight is noisy, conspicuous and unmistakable, and can be observed over long distances, so this is a suitable project for anyone interested in birds or conservation. No special knowledge or skills are needed. A full briefing, and training for anyone that wants it, will be provided

A number of Watch Points on or near the road are marked on large scale Ordnance Survey maps. Each participant will be allocated a Watch Point, and go to it around one and a half hours before sunset, and stay there until about 15 minutes after sunset. The location and activity of all Grouse seen or heard will be marked on a map (recording instructions and a map will be provided). A population estimate can be made by collating all the observations.

The methodology is very straightforward, and will be explained at the Briefing Meeting for new participants. In addition, if you want you can have "on the job" training on the first survey date you can attend, rather than go to a Watch Point on your own. A Briefing Note for all Participants will be distributed to everyone beforehand.

Project Briefing & Methodology

7.30pm – 8.30pm Thursday 29th March 2018

Carding Mill Valley Tea Room (Refreshments provided)

Planned Count Dates (Thursdays). Please be at your Watchpoint by the start time

Sunset is about 7.45pm on the first date, and gets later by 15 minutes per week

- 6.20pm, 5th April
- 6.35pm, 12th April
- 6.50pm, 19th April
- 7.00pm, 26th April
- 7.10pm, 3rd May
- 7.20pm 10th May

Surveys will be held on other days of the week in mid – late April, so even if Thursdays are difficult for you, please join in – you will still be able to help.

Watch Point allocations for each date will be sent to participants by email the day before. Wherever possible, participants should go straight to their Watch Point. Alternatively, you can meet at Pole Cottage Car Park (OS Grid Reference SO413937) on the first evening at the stated Start Time, to collect paperwork (if you don't use email) or receive training. After the first survey date it will only be possible to meet at Pole Cottage by prior arrangement.

People who want a lift up should meet at the car park in Carding Mill Valley just before the Tea Room half an hour earlier. N.B. Lifts must be booked in advance. Arrangements for doing this will be announced at the Briefing, and emailed to other participants.

Participant Form

So we can plan, every participant will be asked at the briefing to complete a form, indicating which of the Count dates you can attend, watchpoint preferences, and contact details. People who have helped before, and who do not wish to attend the briefing, can download the form from the Community Wildlife Group website, <http://www.shropscwgs.org.uk/sample-page/strettons-area-community-wildlife-group/> Anyone can also request a form by email from Abby Knight (see below). All forms must be returned no later than Friday 30th March.

Weather Warning

It can get very cold or wet, so please bring plenty of warm and weatherproof clothing.

Why Count Red Grouse?

The Long Mynd holds most of the Shropshire population. Many years ago, numbers were considerably higher than they are now, but suffered a substantial decline. They now appear to be recovering as a result of the heather management carried out by the National Trust. This project helps the Trust assess the effectiveness of the management by providing annual population estimates, and a population trend. Therefore it is hoped to repeat the project each year.

Adding the result to The Stiperstones counts gives an estimate of the total Shropshire population.

Red Grouse was added to the *Amber List of Birds of Conservation Concern* in the 2009 review, as the population is dwindling across the Country as a whole. The Shropshire population is the most southerly in England, apart from a few on Dartmoor. The Exmoor population has recently died out. Monitoring the population is therefore important nationally as well as locally.

The usual survey method involves mapping territorial displaying males on several dawn visits in spring, and analysing the comparative results (the "Territory Mapping Method"). The Long Mynd is a large area, and the National Trust had difficulty organising three dawn counts between December and February each year (poor weather, and not enough helpers). This project method produced better results than the previous NT dawn counts in 2011, so it has replaced them.

A copy of the 2017 Survey Report has been supplied to everyone who participated last year. New participants will be able to download it from the Community Wildlife Group website, www.ShropsCWGs.org.uk. Previous reports since 2012 are also available on the website.

Other Bird Species

In previous years, some participants have been lucky enough to see or hear Hobby, Merlin, Peregrine, Hen Harrier, Red Kite, Short-eared Owl, Curlew, Snipe, Golden Plover, Cuckoo, Stonechat, Grasshopper Warbler and Reed Bunting. As an optional extra, participants are requested to record any Curlew, Snipe or Grasshopper Warbler seen or heard, if possible.

Bird monitoring on the Long Mynd

The project will be part of the bird monitoring on the Long Mynd carried out for the National Trust as part of their Environmental Stewardship Higher Level Scheme Agreement with Natural England, which is co-ordinated by *Leo Smith Ornithological Surveys and Consultancy*

Further Information

Abbi Knight (NT Placement Ranger)
Office phone 01694 725005, Mobile: 07425 144597
Abbi.Knight@nationaltrust.org.uk

Leo Smith
February 2018

Appendix 2. Project Briefing 2018

Strettons Area Community Wildlife Group & Long Mynd Breeding Bird Project Estimating the Red Grouse Population on the Long Mynd Project Briefing 2018

Complete the Participant Details Sheet

Which dates can you come? (Absolutely necessary for our planning)

Are you willing to cover a Watch Point on a main footpath, or on the open heath, rather than on the road?

Training is available in the field, if you want it, on the first evening you are able to attend.

N.B. Mobile Phone Number is important, if you have one. We will give it out to other participants, partly so you can confer with adjacent observers, and partly for health and safety reasons.

We will endeavour to provide lifts from Carding Mill Valley to Pole Cottage for those that want them, but that is conditional on other people being willing to offer them. If you want a lift, or can offer lifts, please complete the relevant parts of the Participant Details form.

Observation Dates (All Thursdays) and times

Sunset is about 7.45pm on the first date, and gets later by 15 minutes per week

- 6.20pm, 5th April
- 6.35pm, 12th April
- 6.50pm, 19th April
- 7.00pm, 26th April
- 7.10pm, 3rd May
- 7.20pm, 10th May

We will check the weather forecast the day before, and notify you if the count is postponed. We will try and re-arrange it for the following Monday or Tuesday, so please include the additional days you can do on the participants form.

Watch Points

The survey will be carried out by watching and listening from a series of pre-determined Watch Points. All Watch Points are marked on the survey maps which will be issued to you. You will be allocated a Watch Point number on each evening you have told us you can come on the Participants Form. If your availability changes, please tell Abbi Knight immediately. Your Watch Point number (together with the number of the survey map you need to take) will be sent out by email the afternoon of the day before. Go directly to your Watch Point by the Start Time for that date. Otherwise meet at Pole Cottage Car Park (OS Grid Reference SO413937) on the first date, or meet just east of the Carding Mill Valley Tea Room (by the staff car park) half an hour earlier if you've booked a lift up. N.B. Lifts must be booked in advance. See above. If you need to meet up to collect maps, etc., this will need to be by prior arrangement with Abbi Knight after the first evening.

The Watch Points have been selected to give a good field of view over places where Grouse have been recorded before. At some Watch Points, note the contour lines on the map around the Watch Point to determine the direction you should be looking. They are not necessarily at the highest point, as that may offer a poor field of view. Use your discretion on where to stand / patrol – maximise your field of view. Stepping up onto the bank next to the road / path may provide a much better view. If there is a particular hot-spot of Grouse activity, you may wish to leave the Watch Point to investigate. Be careful on rough terrain!

You don't need to stand still for the whole period (you'll need to keep warm!), but please spend almost all of your survey time within 50 metres of the Watch Point marked on the map.

If possible, stay at the Watch Point until 15 minutes after sunset (but make sure you can get back to your car in daylight, if you don't have a torch).

Change of Plans

If you've said you're coming, but find you can't, please leave a message with Abbi Knight as soon as possible. N.B. If you are allocated a Watch Point on any date, but you cannot get there, for whatever reason, please email Abbi Knight the following day Abbi.Knight@nationaltrust.org.uk

This is **essential** in planning subsequent surveys, as we aim to cover each Watch Point three times, and if you don't tell us your Watch Point wasn't covered, we'll assume that it has been.

Estimating Distance

It is important that your observations are mapped as accurately as possible. Use the features on the map (especially the contours) to determine locations. If you aren't familiar with the terrain, or estimating distances, you may want to pace out 100 metres before you start to help you to estimating distance

What to Record on the Site Visits

Name, Date & Watching Point Number

Start Time and Finish Time at Watch Point

Mark your observations on your Survey Map as accurately as possible, particularly the landing point at the end of the Display Flight. Number each observation.

Use the symbols below (they are all reproduced on the Fieldwork Record sheet).

The most useful observations are of two birds seen or heard concurrently. Therefore using the dotted line, to distinguish two separate birds, is particularly important.

Symbols to use on Map

- M = male Red Grouse (seen - position certain)
- P = pair of Red Grouse (seen - position certain)
- ? = Unseen Male calling in distance, position uncertain
- D = Display flight
- = Direction Of Flight
- = Bird disappeared from view
- X = Landing Place
- D = Landing Place

Two males seen concurrently

- Territorial Aggression
- M — M = Same bird moved (solid line)
- M - - - M = Two different birds (dotted line)

Clearly identify observations that are definitely different Males

Put the Map and the Fieldwork Record Sheet on separate pieces of paper. Put Name and WP Number on both. Write neatly – if the observations are illegible, there's no point in sending them in!!

Different Males heard Simultaneously

You are more likely to hear two male birds than see them, when they display against each other. These calls are usually not simultaneous, but the second will be heard a minute or so after the first. If it's not physically possible for a single bird to fly the distance between the two different locations in the time interval, or if you have a clear field of view of the ground between the two calls and no Grouse flew across it, mark the two calls as definitely different birds with the dotted line. Use your judgement.

Estimate the number of different Grouse you have observed

Put your estimate in the space provided at the bottom of the recording sheet, Use your judgement.

Liaison with Neighbour

Are any of your observations also on your neighbour's map, or not (use mobile phone for contact – if so, enter "Also recorded from WPx" in comments column. (Check that both watches say the same time!!!).

Other Species – Optional Extra

If you can, please record any Curlew, Snipe, Red Kite, Whinchat and Grasshopper Warbler you see or hear.

What to bring (in addition to survey map, two copies of recording sheet, and clipboard)

- Coloured pen (fine felt tip best) & clipboard / book to rest on
- Watch & Mobile phone. NB Check the watch is accurate, or adjust the times you record so they are correct.
- Very Warm, Windproof and Waterproof Clothing (it can get very cold)
- Possibly a Torch, if you volunteer to leave the road
- Possibly a compass, if you have one, to help map the direction of your observations

Inclement Weather

Weather forecasts are not always accurate, and might change at the last minute. Check your email before setting off, but otherwise we won't be able to have last – minute cancellation arrangements. If the plateau is in thick mist, or it's raining hard, or it's very windy, and it's not going to change, don't come. If in doubt, turn up. If you don't turn up, let us know the next day. If you come, and it starts to rain continuously, there's no point in staying. If you see lightning, or hear thunder close by, leave immediately.

Handing in Survey Maps

If you can, hand them in to Leo Smith or Abbi Knight before going home. If not, either bring them next week, or post to Abbi Knight, National Trust, Carding Mill Valley, Church Stretton SY6 6JG

Casual Records

If you are on Long Mynd any other time, and see 2 male Grouse displaying against each other, or a pair, please mark the locations on a Survey Map.

If it's on the same map as you use for your next Survey, mark the locations on that (but clearly record that observation was on a separate date). If you want more maps for such records, please ask

More Information

If in doubt, ask Abbi Knight, preferably by email Abbi.Knight@nationaltrust.org.uk (or mobile: 07425 144597)

Feedback - Project Report

By comparing the information on all the maps at the end of the survey period, plus casual records collected between now and July, we hope to be able to define the different territories, and count them. The results will be presented in a report which will be sent to all participants, probably early next year.

Repeat Next Year

Long term monitoring is important, so hopefully participants will join in again next year.

Leo Smith
March 2018

Appendix 3. Fieldwork Recording Sheet

Strettons Area Community Wildlife Group & Long Mynd Breeding Bird Project

RED GROUSE SURVEY 2018

Name _____ Date _____ Watch Point Number _____

Start Time _____ Finish Time _____ (At Watch Point)

Symbols to use on Map

- M = male Red Grouse (seen - position certain)
- P = pair of Red Grouse (seen - position certain)
- ? = Unseen Male calling in distance, position uncertain
- D = Display flight
- = Direction Of Flight
- = Bird disappeared from view
- X = Landing Place
- D = Landing Place
- Two males seen concurrently
- M:M** Territorial Aggression
- M — M = Same bird moved (solid line)
- M - - - M = Two different birds (dotted line)

Number each observation recorded on the Survey Map , using the Ref. No. below

Ref		OBSERVATION	COMMENTS <small>(Clearly identify observations that are definitely different Males)</small>
No.	Time		
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			

Summary (Please summarise the records above - Number of Definitely Different Males and Probably Different Males. Group the observation numbers that you think are the same bird e.g. 1, 4 & 5 same bird, 2 & 3 same bird, different from 1. 6 is another different bird. 7 may be the same as 3. Total definitely 3, possibly 4 different males)

Contact Number: Leo Smith 07791 901 732

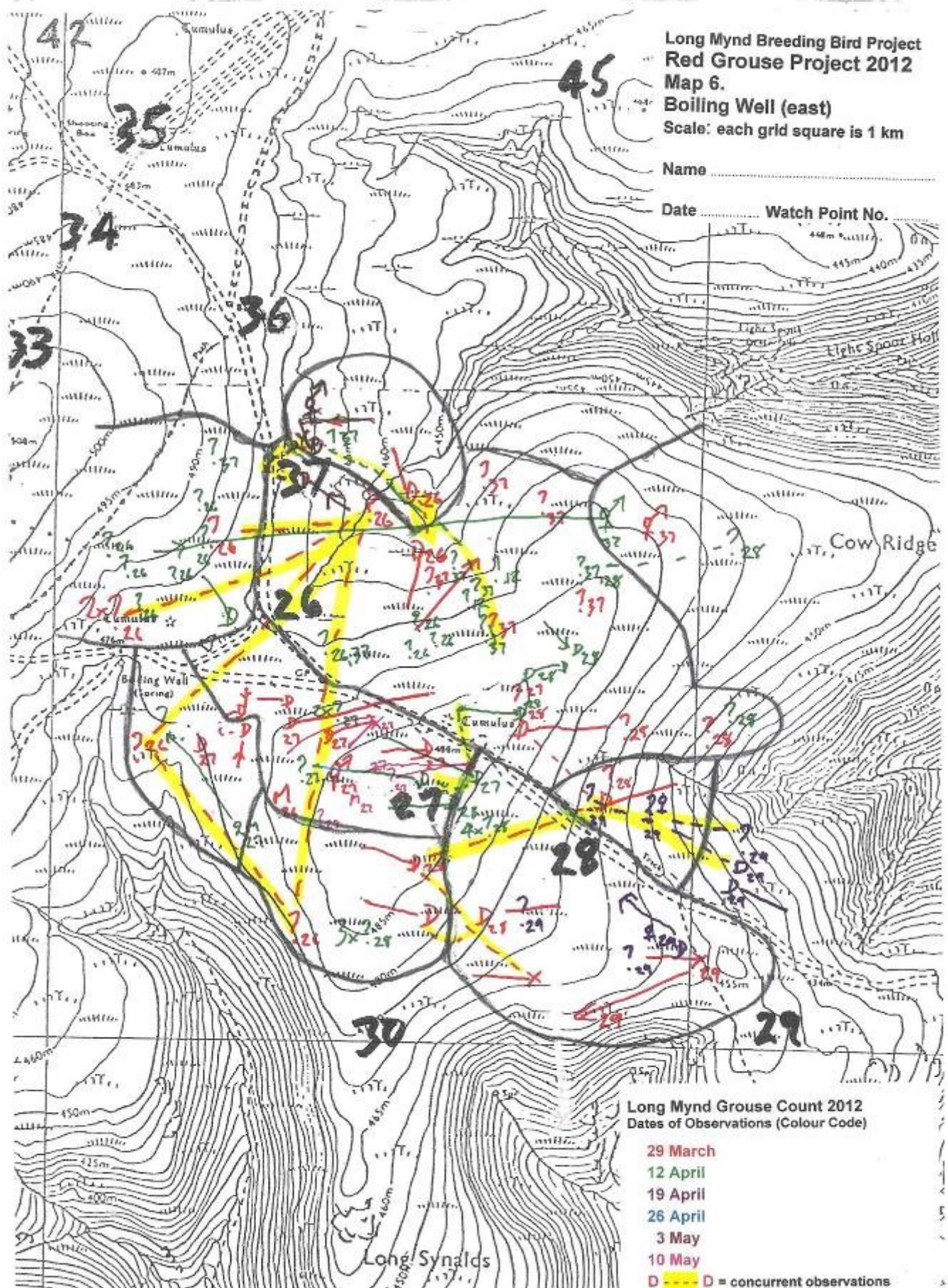
Appendix 4. Fieldwork Recording – Watch-point Coverage

Watch point	April		May						
	19	26	3	7	10	15	17	22	24
1	Williams		Jackson						
2	French		Houlder					French	
3	Forster, S							Holbourn	
4			Lane						
5			Gomme						
6	Warren		Arnfield					Williams	
7	Arnfield			Arnfield					
8	Pinsent			McCann					
9	Freeland				Pinsent				
10	McCann				Darling, S				
11	Burton			Marvin					
12	Dixon			Warren					
13	Houlder								
14	Holburn			Davies				Arnfield	
15	Hinde				Lane			Dixon	
16	Darling, S				Gomme			Smith	
17	Potts								
18								McCann	
19	Jones			Smith					
20	Lane							Davies	
21	Gomme				McCann				
22									
23					Jackson				Williams
24	Smith								Lane
25		Cooke			Dixon				
26		Jackson			Arnfield				French
27		Davies							Gomme
28					Williams				Dixon
29					French		Gomme		
30		Darling, J			Hinde		Lane		
31		Darling, S			Forster				Cooke
32		Marvin			Forster				Smith
33		Howsam			Hall				
34		Arnfield							
35		Warren			Howsam				Forster, S
36					Warren				
37		Houlder			Cooke				
38					Burton				
39		Smith			Smith				
40						Davies			
41									Hall
42		Lane							
44		Jones				Smith			
45		Statham				Darling			
46									
47						Dixon			
48		Williams				Lane			
49		French				Gomme			
50			Cooke						
51			Owen						
52			Freeland						
53			Davies			Howsam			
54			Darling			French			
55			French			Williams			
56			Williams			McCann			
57			Warren				Williams		
58			Pinsent				French		
59			Hinde						
60							Warren		
61									
62							Hall		
63			Jones				Forster		
64			Statham				Forster		
65			Hall				Dixon		
66			Smith				Smith		
67			Forster				Davies		
68			Forster				McCann		
Total	19	16	21	6	19	10	12	8	9

Appendix 5. Fieldwork Recording – All Observations

Counts	Survey Dates									Totals		
	April		May							Counts	Records	Average
	19	26	3	7	10	15	17	22	24			
1	9		0							2	9	4.5
2	8		1					2		3	11	3.7
3	1							2		2	3	1.5
4			0							1	0	0.0
5			0							1	0	0.0
6	0		1					3		3	4	1.3
7	0			0						2	0	0.0
8	2			3						2	5	2.5
9	0				8					2	8	4.0
10	2				6					2	8	4.0
11	2			0						2	2	1.0
12	2			0						2	2	1.0
13	1									1	1	1.0
14	3			4			8			3	15	5.0
15	2				10			7		3	19	6.3
16	2				7			6		3	15	5.0
17	2							3		2	5	2.5
18								7		1	7	7.0
19	2			5						2	7	3.5
20	8							5		2	13	6.5
21	7				12					2	19	9.5
22										0	0	
23					8					11	19	9.5
24	6									21	27	13.5
25		4			7					2	11	5.5
26		4			9				7	3	20	6.7
27		5							22	2	27	13.5
28					5				4	2	9	4.5
29					4		18			2	22	11.0
30		0			3		8			3	11	3.7
31		0			1				9	3	10	3.3
32		2			2				10	3	14	4.7
33		3			11					2	14	7.0
34		6								1	6	6.0
35		3			9				25	3	37	12.3
36					3					1	3	3.0
37		0			7					2	7	3.5
38					0					1	0	0.0
39		4			6					2	10	5.0
40						5				1	5	5.0
41									3	1	3	3.0
42		11								1	11	11.0
44		4				15				2	19	9.5
45		2				0				2	2	1.0
46										0	0	
47						7				1	7	7.0
48		3				13				2	16	8.0
49		5				4				2	9	4.5
50			4							1	4	4.0
51			3							1	3	3.0
52			3							1	3	3.0
53			5			0				2	5	2.5
54			11			8				2	19	9.5
55			7			9				2	16	8.0
56			7			5				2	12	6.0
57			7				10			2	17	8.5
58			2				7			2	9	4.5
59			10							1	10	10.0
60								0		1	0	0.0
61										0	0	
62							0			1	0	0.0
63			2				3			2	5	2.5
64			0				7			2	7	3.5
65			20							1	20	20.0
66			10				10			2	20	10.0
67			3				7			2	10	5.0
68			1				10			2	11	5.5
Total Counts	19	16	21	6	19	10	12	8	9	120		
Counts of Zero	3	3	4	3	1	2	2	0	0	18		
Total Grouse Records	59	56	97	12	118	66	88	35	112		643	
Ave. Records / Count	3.1	3.5	4.6	2.0	6.2	6.6	7.3	4.4	12.4			5.4

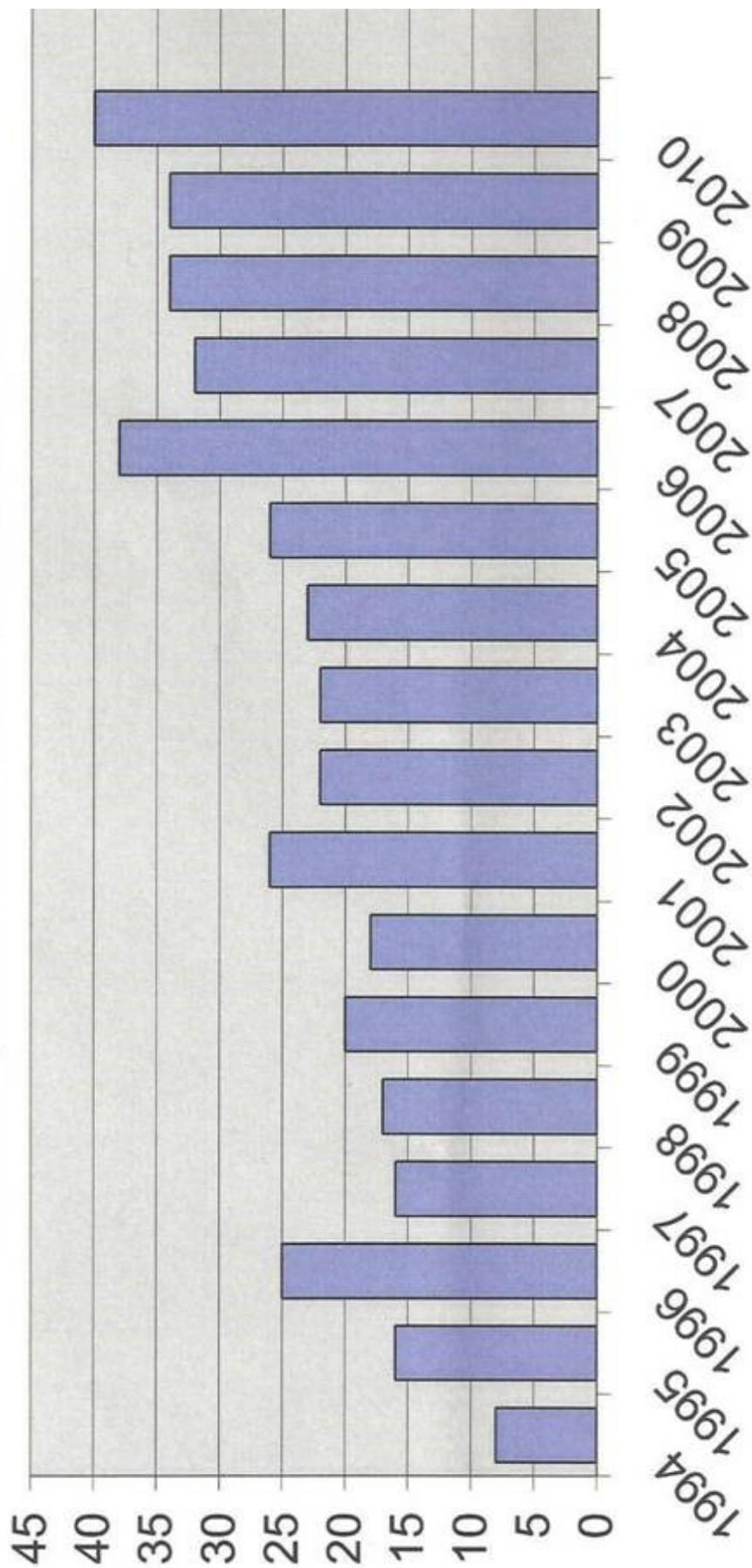
Appendix 6. Sample Master Map, showing all Fieldwork Observations



Annexe 1. Results of National Trust Dawn Counts on The Long Mynd

Number (minimum) of Red Grouse Territories on Long Mynd

min no. usually relates to territorial males recorded in at least 2 /3 visits



Annexe 2. Results of Natural England Monitoring on The Stiperstones

Natural England have done two counts each year. The first, mapping calling males at dawn in Spring, is similar to the monitoring previously carried out up until 2011 by the National Trust on The Long Mynd.

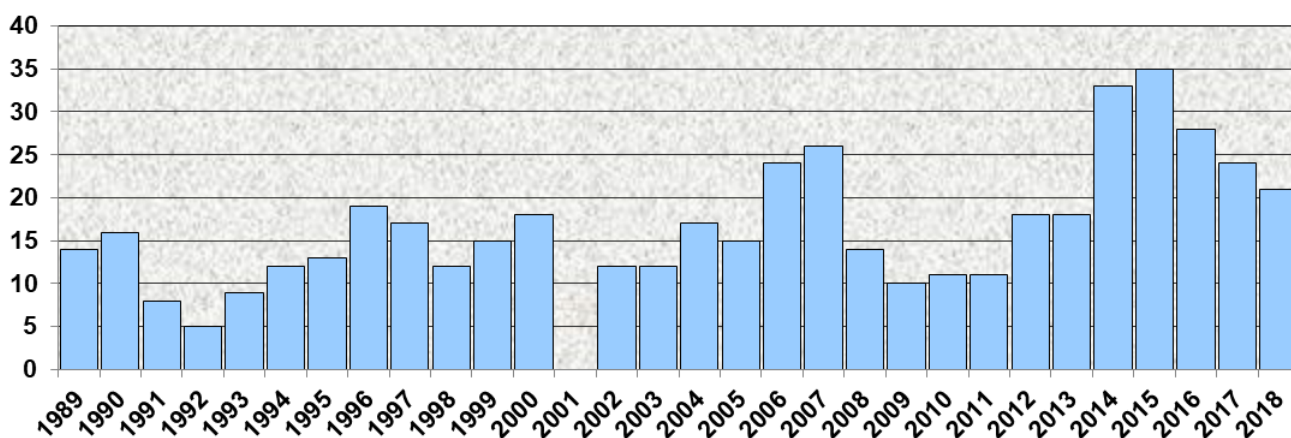
The second count involved several volunteers dragging a rope across the heather at the end of the breeding season, usually in August, but sometimes in September. Most of the Grouse habitat was covered, and the same area was covered each year. All flushed birds were counted, and the number of recently fledged young within the total were estimated. This provided an indication of breeding success. However, this count has been discontinued.

2013 was the best year for Grouse on the Stiperstones since monitoring started in 1989. 2014 was better still, and the first time that over 100 have been counted in August.

In 2015, between 35 and 37 territorial males were counted in spring, slightly higher than 2014. More might have been expected, given the good August count in 2014. In August, there were 58-75, significantly down from the previous two years, with no net recruitment. This was probably due to wet weather throughout the breeding season (other moors had similar poor years). Numbers in August 2016 improved, and 78-91 were counted, but the 47-55 in August 2017 was the lowest since 2012. The poor breeding season may have been due to the exceptionally dry spring, reducing the amount of available invertebrate food.

The charts show the results of these counts from when they were first started. The figures are the minimum in the counts, in years where a range was estimated. Having reached a maximum in 2015, the number of territorial males has fallen steadily.

Minimum Spring Count (Calling Males at Dawn)



Minimum Summer/Autumn count (Whole Population)

