RING OUZEL REPORT 2015

FINDINGS OF A STUDY OF RING OUZEL *Turdus torquatus* TERRITORIES IN ROSEDALE AND OTHER AREAS OF THE NORTH YORK MOORS

Summary of 2015 Report on Page 3

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Front-page photo: First arrival in Rosedale at Nab Scar on 22nd March 2015. Vic Fairbrother.

1. SUMMARY OF 2015 RING OUZEL REPORT

1. **First-arrival at Nab Scar on 22nd March - a day later than 2014** (5.2, Pg. 15)

2. **17 territories recorded in 2015 - down from 21 in 2014 and peak of 23 in 2012** (5.3, Pg. 16)

3. **6 early nests found predated or abandoned at egg stage - highest since study began** (5.5, Pg. 25)

4. **Nest productivity significantly below long-term average** (5.5, Pg. 25)

5. **Low number of pairs holding a late territory and having a second brood** (5.6, Pg. 27)

6. **Nest aspect chart for all Rosedale nests shows a strong north-easterly trend** (5.7, Pg. 28)

2. INTRODUCTION

The 2015 survey was the 16th year in which a detailed study had been made of the Ring Ouzel *Turdus torquatus* (RZ) population in the North York Moors National Park. The findings of these studies were submitted to various bodies including the North York Moors National Park Authority, the RSPB Ring Ouzel Study Group, Natural England (York office) and the land-owners and head keepers of Spaunton and Rosedale estates.

The 2015 season marked 14 years of unbroken study in the Rosedale area, only the foot and mouth outbreak in 2001 and the subsequent closure of the moors prevented continuous study since the start of the project in 1999. As in previous years the 2015 survey concentrated mainly on the Rosedale area of the North York Moors, an area of around 25 square kilometres. Visits were also made during late summer to locate Ring Ouzels prior to migration.

The study over these years has revealed much new information about the numbers and distribution of Ring Ouzels on the North York Moors, how thinly scattered they are and how small the population is at the start of the new millennium. In the Rosedale core study area, the data gathered has provided an insight into clutch sizes and the number that successfully hatch and fledge. In addition, there is now a better understanding of the normal levels of predation as well as the pairs that build replacement nests and produce second broods. However, there is still an absence of data on first-year survival and adult return rates, and their dispersal within Rosedale and the wider North York Moors; or indeed other areas of the country. These are now known to be key factors in the survival of this isolated and most easterly population in Britain. For the first time this year, during routine monitoring of nests, a small number of chicks were fitted with colour rings in an effort to begin to answer some of these questions.

Finally, the north-west and east side of Rosedale was covered by Vic Fairbrother and the west side by Ken Hutchinson. A single visit was also made to Farndale and Esklets following last year's success when three nests were located in these areas.

3. METHODOLOGY

3.1 Breeding Status Criteria

The criteria used to determine the existence of a territory is shown in the table below using the categories defined by the British Trust for Ornithology (BTO) for determining breeding evidence.

BREEDING STATUS	CRITERIA
Possible	• Single bird observed in suitable nesting habitat. • Male seen or heard singing on one survey date only.
Probable	• Male observed singing on two different days in a week or more at the same place. • Territorial behaviour observed on two or more days. • Pair observed in suitable nesting habitat. • Nest-building activity. • Agitated behaviour.
Confirmed	• Nest found with eggs or chicks. • Recently fledged young seen. • Adult seen carrying food.

3.2 Fledging Criteria

An assessment of whether a brood fledged successfully is made using the 'outcome success' criteria of the BTO Nest Record Scheme as appropriate.

- Young fledged nest on approach.
- Fledged young near nest.
- Adult carrying food to fledged young near nest.
- Adult visibly agitated/alarming as if fledged young are near nest.
- Nest empty and undisturbed with well-trodden lining, containing feather scale and/or droppings.
- Young capable of leaving nest on penultimate visit.

Ring Ouzel chicks remain relatively settled when in the nest but can 'explode' from the nest when approached close to fledging. For that reason, nests are not generally inspected the day before the estimated fledging date in order to avoid this premature fledging.

In view of this and unless there is evidence to the contrary, such as obvious signs of predation, all nestlings present on the penultimate visit are considered to have fledged if the nest is empty on the later final visit.

The discovery of small groups of droppings in sheltered locations in the vicinity of the nest has also been noted as supporting evidence that fledglings have been hidden there for a time after leaving the nest.

3.3 Definition of Study Area

References in this report to the **Rosedale area** include the main dale (valley) of Rosedale and adjoining Spaunton Moor (Loskey Ridge, Loskey Side, Spaunton Knowl, Spindle Thorn). References to **Rosedale** refer only to the main dale of Rosedale.

4. RESULTS

4.1 Territories

4.1.1 Rosedale Area

Table 1: Breeding Ring Ouzel territories in the Rosedale area between 1999 and 2015

	Location (all territories recorded to date)	NGR	Year															
			99	00	02	03	04	05	06	07	08	09	10	11	12	13	14	15
1.	Spaunton Moor - Spindle Thorn	SE 716 930	?	×	✓	×	×	×	×	×	✓	×	×	?	✓	✓	✓	✓
2.	Spaunton Moor - Spaunton Knowl	SE 717 918	?	?	?	?	?	?	?	?	?	?	?	?	✓	×	×	×
3.	Spaunton Moor - Loskey Side	SE 708 933	?	?	?	?	?	?	?	?	?	?	?	?	?	×	✓	×
4.	Spaunton Moor - Loskey Ridge west	SE 714 934	?	✓	✓	✓	×	×	✓	×	×	×	×	?	×	×	×	×
5.	Spaunton Moor - Loskey Ridge east	SE 715 935	?	×	×	✓	✓	✓	×	×	×	×	×	?	×	×	×	×
6.	Rosedale west - Bank Top	SE 720 951	✓	✓	✓	✓	×	×	✓	×	×	×	×	✓	✓	✓	✓	✓
7.	Rosedale west - Bank Top east	SE 725 945	?	×	×	✓	×	✓	×	×	×	×	×	×	×	×	×	✓
8.	Rosedale west - Hob Crag quarry area	SE 714 954	?	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓ ✓	✓
9.	Rosedale west - Hob Crag north	SE 712 956	×	×	×	×	×	×	×	×	×	×	×	✓	×	✓	×	✓
10.	Rosedale west - Thorgill Bank quarry	SE 707 958	?	×	×	✓	×	×	✓	×	×	×	×	×	✓	✓	✓	✓
11.	Rosedale west - Thorgill Bank west	SE 705 957	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	✓
12.	Rosedale west - Thorgill Head	SE 670 956	?	×	✓	✓	✓	✓	×	×	×	×	×	×	×	×	✓	×
13.	Rosedale west - Sheriff's Pit	SE 697 963	✓	✓	✓	×	✓	✓	✓	×	✓	✓	✓	✓	✓	✓	✓	✓
14.	Rosedale west - Sheriff's Pit (south)	SE 698 961	×	×	×	×	×	×	✓	×	×	×	×	×	×	×	×	×
15.	Rosedale west - Round Hill (south)	SE 694 968	?	×	✓	✓	✓	✓	✓	✓	✓	✓	×	×	✓	✓	✓	×
16.	Rosedale west - Round Hill (west)	SE 693 971	×	×	✓	×	×	×	×	×	×	×	×	✓	✓	✓	✓	✓
17.	Rosedale west - Round Hill (north)	SE 693 974	?	×	×	×	×	×	×	✓	×	×	×	×	×	×	×	×
18.	Rosedale west - Round Hill (east)	SE 694 970	?	×	✓	✓	✓	×	×	✓	✓	✓	✓	✓	✓	×	✓	✓
19.	Rosedale west - Sledge Shoe Bents	SE 691 978	?	✓	✓	✓	✓	✓	✓	×	×	✓	×	✓	✓	✓	✓	✓
20.	Rosedale west - Matty Carr quarry	SE 688 984	?	×	×	✓	✓	✓	✓	✓	✓	×	✓	✓	✓	✓	✓	×
21.	Rosedale west - Matty Carr (south)	SE 690 980	?	×	×	×	×	✓	×	✓	×	×	×	×	✓	×	×	✓
22.	Rosedale west - Lion Inn (north)	SE 680 999	×	×	×	×	×	×	×	×	×	×	×	×	×	✓	×	×
23.	Rosedale west - Lion Inn (south)	SE 681 999	×	✓	✓	✓	×	✓	×	✓	×	×	×	×	✓	✓	✓	✓
24.	Rosedale west - Blakey Swang	SE 685 998	?	?	?	?	?	?	?	?	✓	×	×	×	×	×	×	×
25.	Rosedale west - Dalehead (north)	NZ 680 013	✓	×	✓	×	✓	×	×	×	✓	×	✓	✓	✓	×	✓	×
26.	Rosedale west - Dalehead (west)	NZ 680 008	×	×	✓	✓	✓	✓	✓	✓	×	✓	×	✓	✓	✓	×	×
27.	Rosedale east - Dalehead (east)	NZ 686 008	×	×	×	✓	✓	×	×	×	×	×	×	✓	×	×	×	×
28.	Rosedale west - Dalehead (south)	NZ 682 005	×	×	✓	×	×	×	×	×	×	×	×	×	×	×	×	×
29.	Rosedale east - Dalehead (quarry east)	NZ 685 006	×	×	×	×	×	×	×	×	×	×	✓	×	×	×	×	×
30.	Rosedale east- Dalehead (quarry west)	NZ 683 008	×	×	×	×	×	×	×	×	×	×	✓	✓	✓	✓	×	✓
31.	Rosedale east - Reeking Gill (cutting)	NZ 689 007	×	×	×	×	×	×	×	✓	✓	×	✓	×	✓	✓	×	×
32.	Rosedale east - Reeking Gill (west)	NZ 690 007	×	×	×	×	×	×	×	×	×	×	×	×	×	×	✓	×
33.	Rosedale east - Reeking Gill	NZ 691 007	✓	✓	✓	×	×	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
34.	Rosedale east - Reeking Gill quarry	NZ 692 005	×	×	×	×	×	×	×	×	×	×	×	×	×	✓	✓	×
35.	Rosedale east - Reeking Gill (south)	NZ 692 003	×	×	×	×	×	×	×	×	×	×	×	✓	✓	✓	✓	×
36.	Rosedale east - Nab Scar (north)	NZ 694 000	×	✓	×	✓	✓	✓	✓	✓	×	✓	✓	✓	✓	✓	×	✓
37.	Rosedale east - Nab Scar (south)	SE 695 999	×	×	×	×	×	×	×	×	×	×	✓	×	✓	×	✓	×
38.	Rosedale east - Sturdy Bank	NZ 699 000	✓	✓	✓	✓	×	×	×	×	✓	✓	✓	✓	✓	✓	✓	✓
39.	Rosedale east - East Mine	SE 705 989	?	?	?	?	?	?	?	?	✓	×	×	×	✓	×	×	×
	TOTAL		**5**	**9**	**16**	**16**	**12**	**13**	**12**	**11**	**12**	**9**	**12**	**16**	**23**	**20**	**21**	**17**

1). Only a partial survey was carried out in 1999. 2). Foot & mouth prevented field work in 2001.
✓ = occupied by pair × = not occupied ? = not checked

4.1.2 Other Areas of the North York Moors

The map at **Annex 2** shows the approximate location where Ring Ouzels were recorded on the North York Moors in 2015 - other than the Rosedale area and passage migrants.

4.2 Nest Sites

Table 2: Summary of Ring Ouzel nest sites monitored in 2015.

No.	Location	Grid Ref.	Outcome	Comment
1.	Rosedale west - Round Hill east	SE69419681	Predated	1st nest.
2.	Rosedale west - Blakey Lion south	SE68209960	Predated	1st nest.
3.	Rosedale west - Hob Crag quarry	SE71409537	Predated	1st nest.
4.	Rosedale west - Hob Crag north	SE71219559	Predated	1st nest
5.	Rosedale west - Thorgill Bank quarry	SE70749586	Predated	1st nest.
6.	Rosedale west - Thorgill Bank west	SE70549571	Fledged	Replacement nest for TB quarry.
7.	Rosedale west - Sheriff's Pit	SE69739627	Fledged	1st nest.
8.	Rosedale west - Bank Top	SE71799497	Predated	1st nest.
9.	Rosedale west - Bank Top	SE71749480	Fledged	Replacement nest.
10.	Rosedale west - Bank Top east	SE72--94--	Fledged	1st nest. Nest not found.
11.	Rosedale west - Spindle Thorn	SE71319320	Fledged	1st nest.
12.	Rosedale west - Round Hill west	SE69249709	Fledged	1st nest. Nest not found.
13.	Rosedale east - Reeking Gill	NZ69210076	Fledged	1st nest.
14.	Rosedale east - Reeking Gill	NZ69120066	Fledged	2nd nest.
15.	Rosedale east - Nab Scar north	SE69449997	Fledged	1st nest.

Further details of Rosedale territories and nests can be found in sections: 4.5, 4.6, 5.3 and Annex 3 and 4.

4.3 Annual Breeding Results

Table 3: Summary of annual breeding results at Ring Ouzel nest sites in Rosedale and other areas of the North York Moors between 2000 and 2015. (Detailed results are presented at **Annex 3**)

Year	Nests Monitored	Successful nests	Laying pairs (2nd clutch)	Pairs that hatched young (2nd attempt) [2nd brood]	Pairs that successful fledged young (2nd attempt/brood)	Pairs that failed to fledge young	Total young fledged	Mean fledged young per successful nest[a.]	Mean fledged young per laying pair[b.]
1	2	3	4	5	6	7	8	9	10
00	1	1	1	1	1	0	4	4.00	4.00
02	1	1	1 (1)	1 (1)	1 (1)	0	4	4.00	4.00
03	7	3	6 (1)	4 [1]	3	3	11	3.66	1.83
04	4	2	4 (1)	4 (1)	2 (1)	2	8	4.00	2.00
05	6	4	4 (2)	4 (1)[1]	4 (2)[c]	0	13	3.25	3.25
06	3	1	2	1 (1)	1 (1)[d]	1	5	5.00	2.50
07	4	3	4	3	3	1	12	4.00	3.00
08	9	6	7(3)	7[2][e]	5(1)	2	23	3.83	3.29
09	5	5	4(1)	4[1]	4(1)	0	19	3.80	4.75
10	12	9	8 (5)	7 [3]	7(2)	1	30	3.33	3.75
11	19	15	14 (8)	13 [8]	12 (5)	2	55	3.67	3.92
12	13	7	11 (5)	6 (1)[3]	6 (2)	5	23	3.28	2.09
13	16	13	10 (6)	9 (1) [6]	9 (5)[f]	1	40	3.08	4.00
14	20[g]	11	14 (3)	12 (1)[3]	9(2)	4	40	3.64	2.86
15	13	9	12 (3)	11 (2) [1]	8 (2)	4	27	3.00	2.25
							Overall Mean	**3.70[h]**	**3.17**

Note
a. Mean fledged young per successful nest (Column 9) = Column 8 ÷ Column 3
b. Mean fledged young per laying pair (Column 10) = Column 8 ÷ Column 4
c. A pair had two unsuccessful attempts before being successful at the third attempt.
d. A pair had one unsuccessful attempt before being successful at second attempt.
e. A pair had two unsuccessful attempts; 1st was predated at the chick stage, 2nd at the egg stage.
f. A pair had four nests; 1st was abandoned, 2nd was predated at egg stage, 3rd & 4th were successful.
g. The outcome of two nests located in Esklets is unknown as no final visit was made.
h. Mean for: Glen Esk (Burfield) 3.48; Moorfoots (Burfield) 3.50; Yorkshire Dales (Appleyard) 3.60; BTO Nest Records (Flegg & Glue) 3.60.

Interpreting Table 3

- Column 2 shows the total number of nests found and monitored that year.
- Column 3 shows the number of nests fledging young (i.e. successfully leaving the nest) that year.
- Column 9 shows the average number of young fledged from each nest that year (see Note h. for comparison with other study areas).
- Column 10 shows the number of young fledged per pair averaged for all the pairs that laid eggs that year and includes those pairs that abandoned their eggs, lost nests to predation or had infertile eggs. **This is a measure of productivity.**

The nests of 10 pairs were located and monitored in 2015. One pair at Reeking Gill had a second nest which was also monitored, while pairs at Bank Top and Thorgill Bank had successful second nests after their first nest were predated.

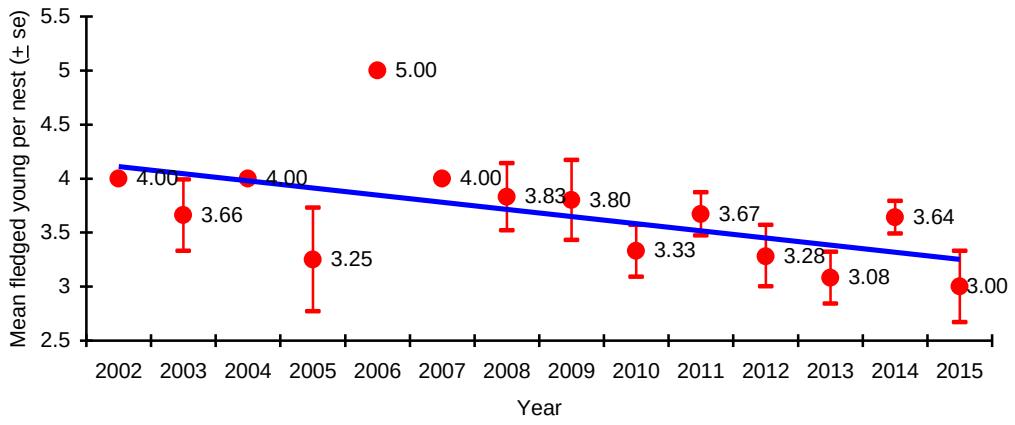

Figure 1: Annual mean fledged young per successful nest for Rosedale and other areas of the North York Moors between 2002 and 2015 showing 14-year trend.

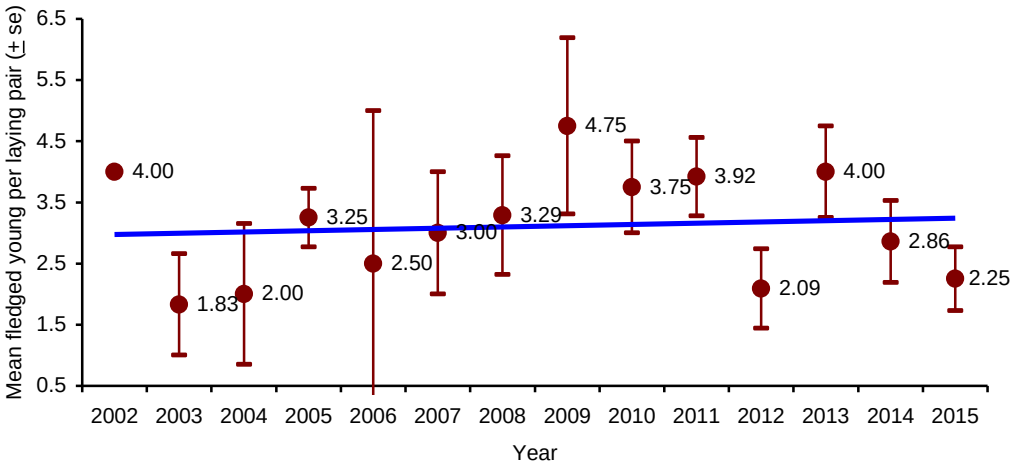

Figure 2: Annual mean fledged young per laying pair for Rosedale and other areas of the North York Moors between 2002 and 2015 showing 14-year trend.

4.4 First-egg Laying Dates

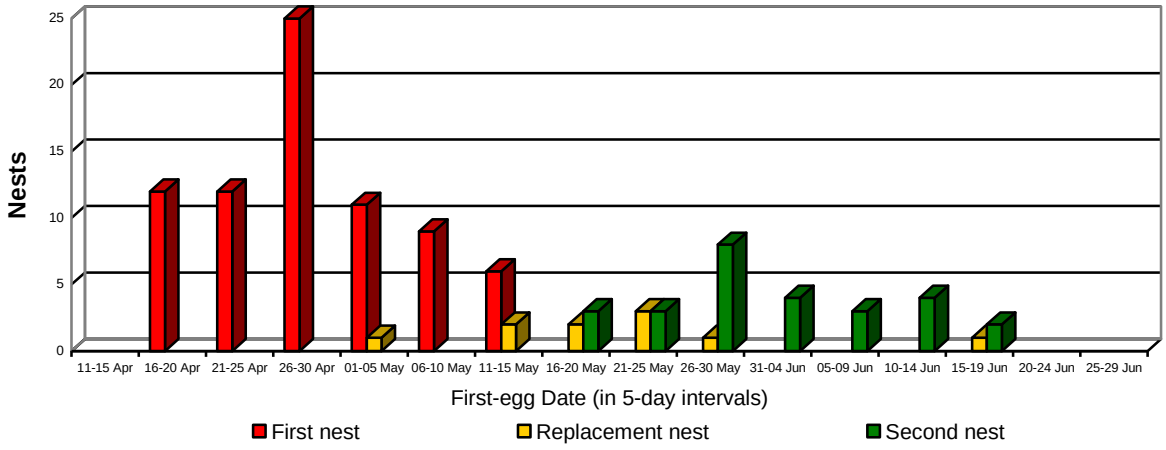

Figure 3: First-egg laying dates for Rosedale and other areas of the North York Moors between 2000 and 2015. Date points in 5-day intervals from April to June. (n=112)

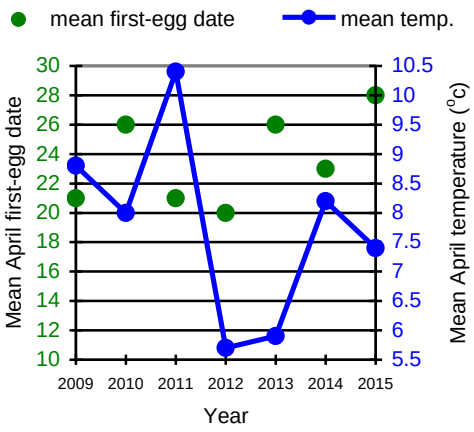

Figure 4: Mean April first-egg date and temperature for the North York Moors for the seven-year period from 2009 to 2015. (data from Fig. 7)

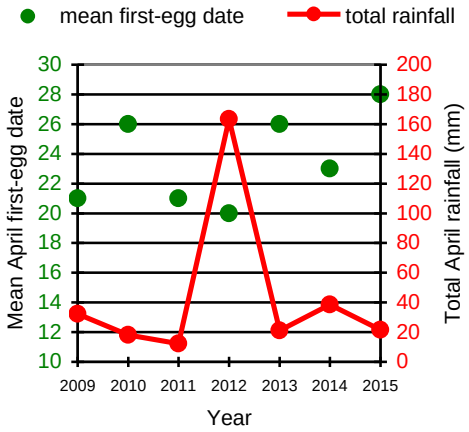

Figure 5: Mean April first-egg date and total April rainfall for the North York Moors for the seven-year period from 2009 to 2015. (data from Fig. 7)

4.5 First-egg, Hatching & Fledging Dates

Table 4: First-egg, hatching & fledging dates for Rosedale and other areas of the North York Moors.

Year	Nest location	1st Egg	Hatching	Fledging	Comments
2000	Spaunton Moor	6 May (a)	21 May (a)	3 June	
2002	Bank Top	17 May	1 June	15 June	Replacement nest/eggs.
2004	Matty Carr Hill	26 April	11 May	25 May	
	Hob Crag	10 June (a)	26 June (p)	-	2nd nest.
2006	Ousegill Bridge	10 May	25 May	7 June	
	Sheriff's Pit south	21 May	5 June	18 June	Replacement nest/eggs.
2007	Round Hill south	5 May (a)	20 May (a)	2 June (a)	
	Hob Crag	5 May (p)	-	-	
	Reeking Gill west	26 April	11 May	24 May	
	Dalehead west	29 April	14 May	27 May	
2008	Sturdy Bank 1st	29 April	14 May (a)	27 May (a)	
	Sturdy Bank 2nd	10 June	25 June (a)	9 July (a)	1st egg 14 days after 1st nest fledged.
	Round Hill south	1 May	16 May (a)	29 May	
	Reeking Gill	5 May	20 May (a)	2 June	
	West Gill	25 April	10 May	23 May	Seen copulating on 22 April.
	Hob Crag 1st	28 April	13 May (p)	-	
	Hob Crag 2nd	27 May (p)	-	-	Replacement nest/eggs.
	Sheriff's Pit	7 May	22 May	4 June	
	Dalehead north	25 May	9 June (a) (p)	-	Likely replacement nest/eggs.
2009	Reeking Gill	16 April	1 May	14 May	Pair arrived in gill on 25 March.
	Sturdy Bank	13 May (a)	29 May (a)	11 June (a)	Pair arrived in gill on 26 March.
	Round Hill south	26 April	11 May	24 May	1st nest. 2nd nest at Sheriff's Pit.
	Dalehead west	10 May	25 May	8 June	Likely to be 1st nest.
	Sheriff's Pit	26 May	10 June	23 June (a)	2nd nest. 1st nest at Round Hill south.
2010	Sturdy Bank 1st	30 April (a)	16 May (a)	29 May (a)	1st nest.
	Sturdy Bank 2nd	16 June (p)	-	-	Predated at egg stage.
	Reeking Gill	16 April	1 May	14 May (a)	1st nest.
	Reeking Gill cut. 1st	9 May	24 May (a)	6 June	1st nest.
	Reeking Gill cut. 2nd	11 June	26 June	7 July	2nd nest. Likely fledged at 11 days.
	Ousegill 1st	28 April	13 May (a)	26 May	1st nest.
	Ousegill 2nd	2 June	17 June (a)	-	2nd nest. Failed at chick stage.
	Hob Crag 1st	29 April	14 May	28 May (a)	1st nest. Fledged at 14 days.
	Hob Crag 2nd	9 June	24 June	7 July	2nd nest
	Sheriff's Pit	13 May	28 May	10 June	Likely to be 1st nest.
	Round Hill central	27 April	12 May	25 May	1st nest.
	Dalehead quarry west	22 May	6 June	19 June	Likely to be 2nd nest.

Year	Nest location	1st Egg	Hatching	Fledging	Comments
2011	Hob Crag	19 April	4 May	17 May	1st nest. In nest on 16th ready to fledge.
	Round Hill east	18 April	3 May	17 May	1st nest. In nest on 16th ready to fledge.
	Round Hill west	10 May	25 May	7 June	1st nest. In nest on 6th ready to fledge.
	Matty Carr	17 April	2 May (a)	16 May	1st nest. In nest 14. Fledged & by nest 16.
	Sturdy Bank 1st	21 April	6 May (a)	19 May (a)	1st nest.
	Sturdy Bank 2nd	28 May	12 June (a) (p)	-	2nd nest. 3 hatched on 12th. Predated.
	Nab Scar north 1st	21 April	6/7 May (a)	20 May (a)	1st nest. 2 eggs hatched on 6th & 2 on 7th
	Nab Scar north 2nd	26 May	10 June	23 June (a)	2nd nest. 3 pulli, 1 egg unhatched.
	Reeking Gill 1st	16 April	1 May	14 May (a)	1st nest.
	Reeking Gill 2nd	19 May	3 June (a)	17 June (a)	2nd nest. 3 eggs hatched on 3rd.
	Ousegill	28 April (a) (p)	-	-	1st nest. Likely predated at egg stage.
	Dalehead west 1st	23 April	8 May	21 May	1st nest.
	Dalehead west 2nd	29 May	13 June	26 June	2nd nest. In nest 24/6, out of nest 27th.
	Dalehead north	8 May	23 May	6 June (a)	1st nest.
	Dalehead quarry west 1st	28 April	13 May	27 May (a)	1st nest.
	Dalehead quarry west 2nd	?	(p)	-	2nd nest. Predated at chick stage.
	Dalehead east	25 May (a)	9 June	22 June	Likely to be 2nd nest.
	Thorgill Bank	18 May	2 June (a) (p)	-	Likely to be 2nd nest. Predated.
	Sheriff's Pit	30 May	15 June	27 June	Likely to be 2nd nest.
2012	Reeking Gill cutting	17 April	2 May (a)	16 May (a)	1st nest. 3 eggs hatched 2/5. 14 days to fledged.
	Sturdy Bank	27 April (a)	-	-	1st nest. Abandoned at egg stage.
	Nab Scar south	20 April (a)	5 May (a)	19 May (a)	1st nest. 2 hatched 5th. 14 days to fledged.
	Dalehead west	-	-	-	1st nest. Abandoned at egg stage.
	Sheriff's Pit north	21 April	6 May	19 May (a)	1st nest.
	Sheriff's Pit	28 May	12 June	25 June (a)	2nd nest.
	Round Hill south	29 April	14 May (a)	(p)	1st nest. Predated between Day 5 & 8.
	Reeking Gill	23 April	8 May (a)	22 May (a)	1st nest. 14 days to fledging.
	Blakey Lion	10 May	25 May (a)	7/8 (a) June	1st nest. 2 fledged 7/6 & 1 fledged 8/6.
	Matty Carr south	22 May	6 June	(p)	Likely 2nd nest. Predated between Day 2 & 6.
	Matty Carr quarry	19 June	4 July	(p)	Likely replacement 2nd nest from MC south pair. Predated at chick stage between Day 5 & 9.
	Round Hill west	20 May	4 June (a)	17 June	Likely 2nd nest. One pulli died naturally in nest.
	Nab Scar north	?	-	-	2nd nest. Predated at egg stage.
	Spaunton Knowl	22 April	8 May	(o)	1st nest. 3 pulli. Outcome unknown.
2013	Reeking Gill cutting	-	-	-	1st nest. 4 eggs laid. Found abandoned 19/5.
	Sheriff's Pit 1.	25 April	10 May	24 May	1st nest. 2 fledglings seen close to nest on 27/5.
	Sheriff's Pit 2.	3 June	19 June	1 July	2nd nest. 3 possibly Day 6 stage on 24/6. 1 near nest 8/7.
	Reeking Gill 1.	27 April	12 May (a)	25 May	1st nest. 3 hatched 12th & 1 on 13th. Likely fledged 25th.
	Reeking Gill 2.	28 May	12 June	24 June	2nd nest. 2 pulli 21/6 9/10 days. Fledged 24/6 12/13 days. 1 egg unhatched.
	Reeking Gill south 1.	2 May	17 May	30 May	1st nest. 2 pulli at Day 6 on 22/5. 2 eggs unhatched.
	Reeking Gill south 2.	5 June	20 June	3 July	2nd nest. 4 pulli on 21/6 at Day 2 stage.
	Hob Crag quarry 2.	25/26 April	-	-	2nd nest, 1st clutch, predated at egg stage.
	Hob Crag quarry 3.	5 May	20 May (a)	2 June (a)	3rd nest, 2nd clutch. 3 hatched 20/5. 2 pulli in nest on 1/6.
	Hob Crag quarry 4	12 June	25 June	7 July	4th nest, 3rd clutch. Day 3 27/6. Likely fledged at 12 days.
	Dalehead west	28 April	13 May (a)	26 May	1st nest. 1 hatched, 3 eggs on 13th.
	Round Hill west	14 May	29 May	11 June (a)	Likely late 1st nest. 4 pulli fledged 11/6.
	Round Hill south 1	2 May	17 May	31 May	1st nest. Possibly 14 days to fledging.
	Round Hill south 2.	16 June	1 July (a)	13 July (a)	2nd nest. Fledged at 12 days. One dead left in nest.
	Blakey Lion north	3 May	18 May	30 May	1st Nest. Likely to have fledged at 12 days.
	Sturdy Bank	2 May	17 May	30 May	1st nest. Day old fledgling found in nest area on 31/5.
	Blakey Lion south	12 May	27 June	9 June	Likely late 1st nest. Day old fledgling found on 10/6.
	Hob Crag north 1.	15 May	30 May	12 June	Likely late 1st nest. Day old fledgling found on 13/6.
	Hob Crag north 2.	19 June	4 July (a)	-	Late 2nd nest. 3 eggs on 27/6. Day 1 on 4/7. Predated.
2014	Round Hill west	16 April	1 May	15 May	1st nest. 4 eggs laid, 3 pulli seen at Day 11. Likely fledged 15/5.
	Round Hill west	30 May	14 June	-	2nd nest. 4 pulli seen at Day 6 on 19/6. Found predated on 23/6.
	Round Hill east	27 April	12 May (a)	25 May	1st nest. 4 eggs, 3 newly hatched & 1 egg on 12/5. All 4 fledged 25/5.
	Blakey Lion south	27 April	12 May (a)	25 May	1st nest. 4 eggs laid, 3 newly hatched & 1 egg on 12/5. All 4 fledged 25/5.
	Hob Crag quarry	18 April	4 May	-	1st nest. 4 pulli at Day 2 on 5/5. Found predated on 12/5.
	Thorgill Bank quarry	19 April	5 May	-	1st nest. 2 eggs 1 pullus just hatched 5/5. Found predated on 12/5.
	Thorgill Head	14 May	29 May	-	Replacement nest. Sitting on 2/6. Found predated 5/6 at 3 days. 1 egg left.
	Matty Carr quarry	1 May	16 May	28 May	1st nest. 4 eggs. 4 pulli Day 4 19/5. 3 seen on 26/5. Likely fledged 12 days.
	Sheriff's Pit	4 May	19 May	30 May	1st nest. 4 eggs. 4 seen 29/5 11 days. Nest empty & 2 dead near nest 30/5.
	Sheriff's Pit	8 June	23 June	06 July (a)	2nd nest. 3 pulli seen in nest on 30/6 at Day 8.
	Spindle Thorn	25 April	10 May	23 May (a)	1st nest. 4 pulli seen at Day 11 on 20/5. In nest on 22/5 out of nest on 23/5.
	Reeking Gill west	-	-	-	1st nest. 4 eggs on 30/4. Found predated at egg stage.
	Reeking Gill quarry	-	-	-	1st nest. 4 eggs on 30/4. Found predated at egg stage.
	Reeking Gill south	24 April	9 May	20 May (a)	1st nest. 4 eggs laid. 4 days old on 13/5. Fledged at 11 days.
	Reeking Gill	2 June	17 June (a)	29 June	2nd nest. 2 pulli & 2 eggs 17/6. 3 pulli seen in nest 28/6. 1 dead in nest.
	Nab Scar south	15 May	-	-	Replacement nest. Predated at egg stage.
	Farndale - Breckon Bank	19 April	5 May (a)	18 May (a)	1st nest. 2 eggs & 2 newly hatched on 5/5. 2 fledglings close to nest on 18/5.
	Farndale - High Blakey Moor	25 April	10 May	22 May (a)	1st nest. 4 eggs laid, 4 pulli at Day 6 on 15/5. Fledged at 12 days.
	Esklets -Esklets Crags south	26 April	11 May	(o)	1st nest. 4 eggs laid, 4 pulli at Day 5 on 15/5. Not checked after 15/5.
	Esklets -Esklets Crags north	26 April	11 May	(o)	1st nest. 4 eggs laid, 4 pulli at Day 5 on 15/5. Not checked after 15/5.

2015	Blakey Lion south	-	-	-	1st nest. 3 eggs. Found predated 27/4.
	Round Hill east	26 April (a)	12 May	-	1st nest. 4 eggs. 3 newly hatched & 1 egg on 12/5. Found predated 20/5.
	Round Hill west	-	-	25 May	1st nest. Adults feeding chicks in nest 22/5. Juveniles seen near nest 26/5.
	Hob Crag quarry	-	-	-	1st nest. 4 eggs. Found predated 20/5.
	Hob Crag north	-	-	-	1st nest. 4 eggs. Found predated 20/5.
	Thorgill Bank quarry	8 May (a)	-	-	1st nest. 4 eggs. 1 egg 8/5, 4 eggs 12/5. Found predated 22/5.
	Thorgill Bank west	20 May	6 June	19 June (a)	Replacement nest for Thorgill Bank quarry pair. 4 pulli ringed 14/6.
	Sheriff's Pit	29 April	14 May	27 May	1st nest. 3 pulli close to fledging 26/5.
	Reeking Gill	29 April	14 May	26 May	1st nest. 4 eggs on 11/5. 1 pullus & no eggs on 20/5. 1 pullus ringed 22/5.
	Reeking Gill	31 May	15 June (a)	29 June	2nd nest. 4 eggs on 9/6. 1 pullus just hatched & 3 eggs. 4 pulli ringed 23/6.
	Nab Scar north	30 April	15 May	27 May	1st nest. 3 eggs on 11/5. 2 pulli & no egg on 20/5. 2 pulli ringed 22/5.
	Bank Top	28 April (a)	12 May	-	1st nest. 4 eggs. Found predated 20/5.
	Bank Top	23 May	7 June	19 June (a)	Replacement nest. Found 16/6, 3 pulli 9 days old. 3 pulli ringed 17/6.
	Spindle Thorn	11 May	26 May	8 June	1st nest. 4 eggs. 4 newly hatched pulli 26/5. 4 pulli ringed 2/6.
	Bank Top east	6 May	21 May	4 June	1st nest. Adults feeding fledglings 9/6 & 16/6. Likely 5 days out of nest on 9/6.

(a) = actual (o) = outcome unknown (p) = predated/abandoned

Dates other than actual are based on a 29-day breeding cycle assuming female commences sitting on 3rd egg and both incubation and chick stage take 13 days.

4.6 Distance Between First & Second Nests

The distance between first and second nests is shown below in Table 5. Most built their second nest close to the first. The exception to this was the 2009 pair that moved more than half a kilometre to build their second nest - the pair were easily identified by the female's distinct white head marking. Studies by Appleyard in the Yorkshire Dales record a mean distance between first, second and third brood nests of **64** metres with a median of **55** metres (n=26). For the North York Moors the mean and median values are **99** metres and **68** metres respectively (n=27).

Table 5: Distance between 1st and 2nd nests in Rosedale and other areas of the North York Moors.

Year	Location	National Grid Reference		Distance (metres)	Comment
		First nest	Second nest		
2003	Thorgill Bank	SE7072195811	SE7073895808	17	
2005	Sheriff's Pit	SE6972196263	SE6972296271	8	
2006	Sheriffs Pit/Sheriff's Pit south	SE6972296268	SE6978496106	173	1st nest - Sheriff's Pit 2nd nest - Sheriff's Pit south
2008	Hob Crag	SE7144295395	SE7138795446	75	2nd is replacement nest
2008	Sturdy Bank	SE6989499907	SE6986599899	30	
2009	Round Hill south/Sheriff's Pit	SE6953396742	SE6972596266	513	1st nest - Round Hill south. 2nd nest - Sheriff's Pit.
2010	Bransdale, Ousegill	SE6399795110	SE6397994971	140	
2010	Hob Crag	SE7138195441	SE7131895441	0	First nest was reused.
2010	Sturdy Bank	NZ6988800004	NZ6987000054	53	
2010	Reeking Gill cutting	NZ6879000661	NZ6885600683	69	
2011	Reeking Gill	NZ6915200719	NZ6916800713	17	
2011	Dalehead west	NZ6792700814	NZ6793700793	23	
2011	Sturdy Bank	NZ6986900050	SE6986899936	114	
2011	Dalehead quarry west	NZ6829600847	NZ6829600847	0	2nd nest on top of 1st nest.
2011	Nab Scar north	SE6945099957	NZ6943800004	48	
2012	Sheriff's Pit north/Sheriff's Pit	SE6967796429	SE6972596266	168	2nd nest as used in 2011.
2013	Hob Crag quarry	SE7144095390	SE7137095430	83	1st & 2nd fledged nests.
2013	Hob Crag quarry	SE7138095420	SE7144095390	67	Predated & 1st fledged nests.
2013	Sheriff's Pit	SE6972096260	SE6971996260	1	
2013	Reeking Gill	NZ6924000790	NZ6950000830	256	
2013	Reeking Gill south	NZ6929000430	NZ6933000450	39	
2013	Round Hill south	SE6968096710	SE6959096700	98	
2014	Round Hill west	SE6926197061	SE6923897087	32	
2014	Sheriff's Pit	SE6979696247	SE6972696269	70	
2015	Bank Top	SE7179594969	SE7055395721	172	1st predated, 2nd fledged.
2015	Reeking Gill	NZ6924500793	NZ6913500649	181	1st & 2nd fledged.
2015	Thorgill Bank quarry/west	SE7074195824	SE7055395721	215	1st predated, 2nd fledged.
			Mean Distance	**98.6**	**metres**
			Median Distance	**68.0**	**metres**

5. DISCUSSION

5.1 Climate

5.1.1 Local Observations

March: Anti-cyclonic conditions to the west of the country stretching down to the Azores prevailed for much of the middle part of the month providing ideal conditions for northerly migration from south-west Europe. Over-night of the 19th/21st a low centred over Scandinavia created a strong run of north-easterly winds with gusts up to 40mph. Conditions had settled by the 22nd with calm conditions until the 26th when a deepening low brought unsettled conditions with 4cm of snow falling on higher ground and a strong north-westerly air flow. The last few days of the month remained unsettled with a deepening low over north-west Scotland that saw winds gusting to over 60mph on the 30th and continuing throughout the last day of the month.

April: The unsettled conditions continued into the first week of the month before a high pressure system became established leading to a more settled period during the middle of the month before a return to more changeable conditions for the last week. Temperatures were above the seasonal average for most of the month with the second half seeing highs of 15ºc on several days and overnight temperatures falling below freezing on just two nights, the mild conditions prompting a number of birds to start nesting. Rainfall was below the norm for the month with the middle period being mainly dry. Only during the final week, when more unsettled conditions returned, was there any significant rainfall.

May: Unsettled conditions dominated the month with strong north to north-west winds making for un-seasonally cold conditions on many days throughout the month. Temperatures remained below 15c for most of the month and on several days struggled to make double figures. Rainfall remained low during the month with the second half remaining dry for most of the time with occasional showers adding little to the month's rainfall total.

June: Un-seasonal weather at the start of the month saw strong westerly winds pounding the country on the night of the 1st. Gusts over 50mph were seen in many places, by the 3rd the low pressure system responsible for the untypical weather conditions gave way to an anti-cyclonic pattern that saw temperatures rise to the high teens. A more settled pattern remained for the remainder of the month.

Graphs of temperature and rainfall for the months April to July 2015 recorded at Westerdale, North York Moors, are shown at Annex 5. Figure 7 below charts the mean temperature and total rainfall for the month of April for the years 2009 to 2015 at Westerdale, while Figure 8 charts the regional mean temperatures and rainfall for the years 2001 to 2015.

The Westerdale weather station is about 180 metres a.s.l. near the village of Westerdale (NZ6605) on the North York Moors and is approximately five km north-west of Rosedale dalehead.

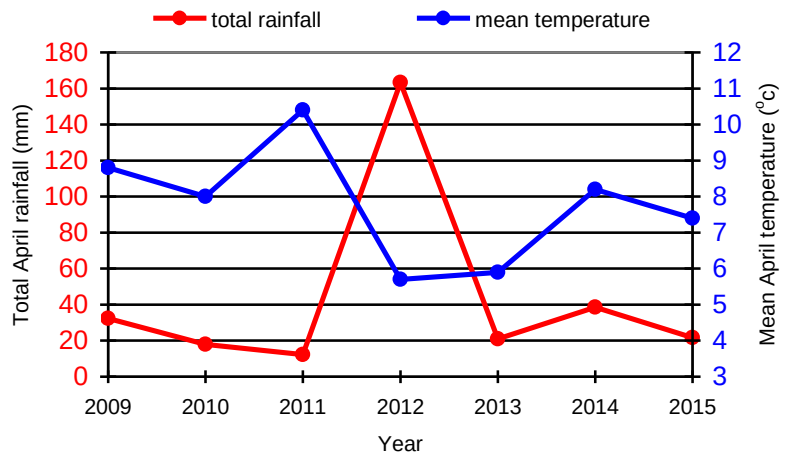

Figure 6: Mean temperature and total rainfall for the month of April recorded at Westerdale, North York Moors, between 2009 and 2015.

5.1.2 Regional Values

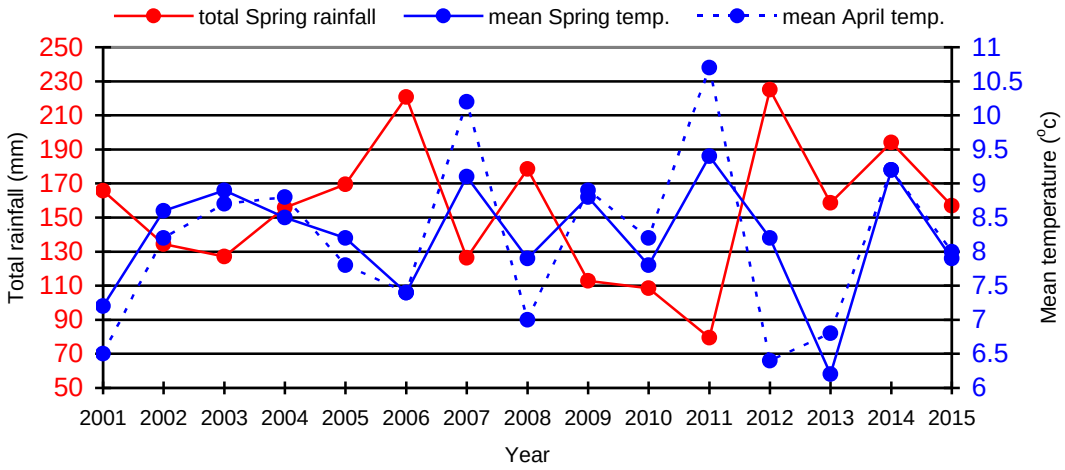

Figure 7: Spring and April mean temperatures and total rainfall between 2001 and 2015.
(Data for Met Office North-East England Region. Spring = March, April, May)

5.2 First Arrivals

Rosedale was monitored for first arrivals from March 17th; four days prior to the earliest recorded first arrival date. The first Ring Ouzel to be recorded in Rosedale in 2015 was a single male on the east side of the dale at Nab Scar on 22nd March; a day later than 2014 which was joint second earliest with 2012. By the end of March there were no more sightings other than a single male on the 30th at Nab Scar; that was assumed to be the same male recorded on the 22nd at that location. Sightings of single males were recorded at Bank Top and Round Hill south on 2nd April and at Blakey Lion on the 6th April.

By 7th April Ring Ouzels were seen at Sledge Shoe, Round Hill south, Dalehead, Dalehead quarry, Reeking Gill and Nab Scar. As April progressed, more sightings were recorded in many of the traditional Rosedale territories, including: Sturdy Bank on the 9th, Hob Crag, Bank Top and Thorgill Bank on the 17th and Sheriff's Pit on the 20th. Un-seasonally high temperatures throughout the month coupled with settled conditions during the middle part, encouraged an early start to breeding with the first nest containing three eggs recorded at Blakey Lion on 23rd April.

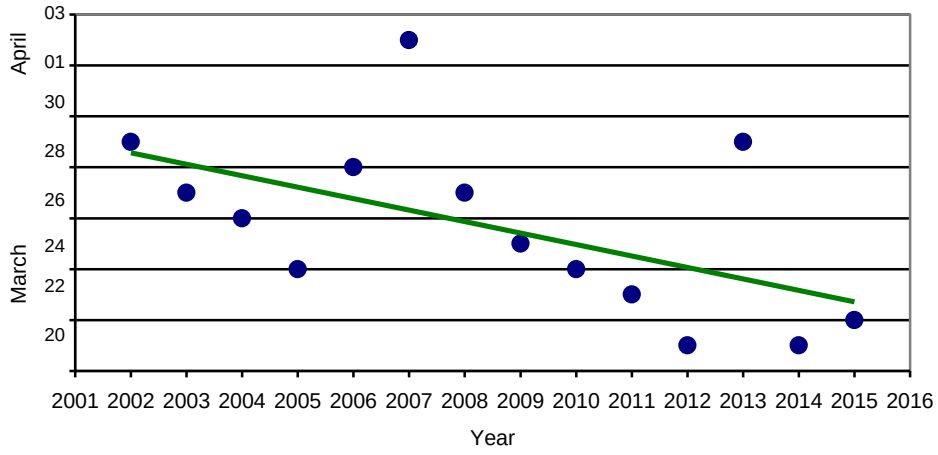

Figure 8: First-arrival date and 14-year trend for the Rosedale area of the North York Moors for the period 2002 to 2015.

5.3 Rosedale Territories and Nests

Seventeen Ring Ouzel territories were recorded in 2015 in the Rosedale area of the North York Moors; four less than 2014 and notably down on 2012 when 23 territories were recorded. Most territories had been occupied before and some, such as Hob Crag, Reeking Gill, Round Hill south and Sheriff's Pit, almost annually since 1999.

A new and previously undiscovered territory was found at Thorgill Bank west. The nest here was situated in a niche on a rock ledge about a metre above ground in what was part of a disused sheep fold. A close inspection of the nest site at the end of the season suggested this well protected site may have been used before many years ago. The nest was just over 200 metres from the pair's first nest at Thorgill Bank quarry that was predated at the egg stage. Their second attempt successfully fledged four young.

As described in the 2014 report a significant breakthrough that year was the discovery of a nest at Spindle Thorn, previously recorded as an area of Probable breeding but where all attempts up to then to locate a nest had proved unsuccessful. This territory was again used in 2015 with a pair nesting close to the previous year's nest at an elevation of just 228 metres; 10 metres higher than the 2014 nest and the second lowest recorded to date in the Rosedale area.

Thirty-nine distinct territories have been recorded in the Rosedale area between 1999-2015 (Table 1). The location of the 2015 territories is shown at **Annex 1**.

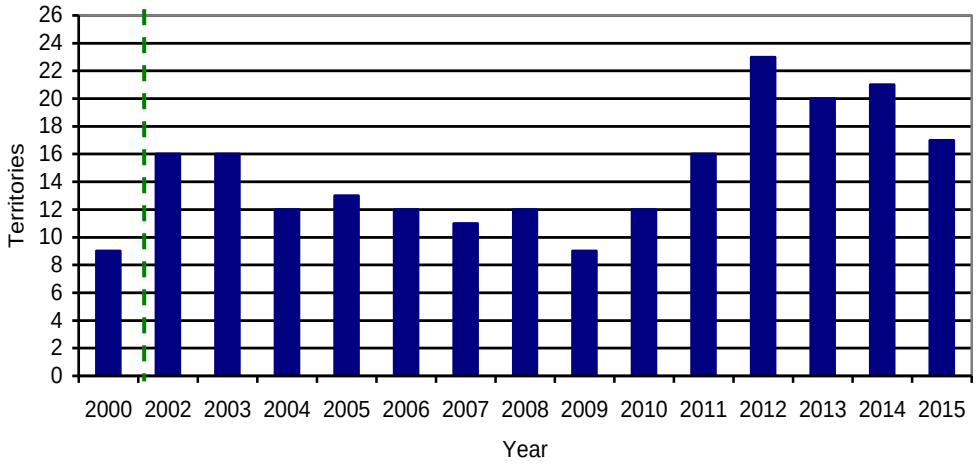

Figure 9: Territories recorded in the Rosedale area of the North York Moors between 2000 and 2015. (foot & mouth prevented field work in 2001)

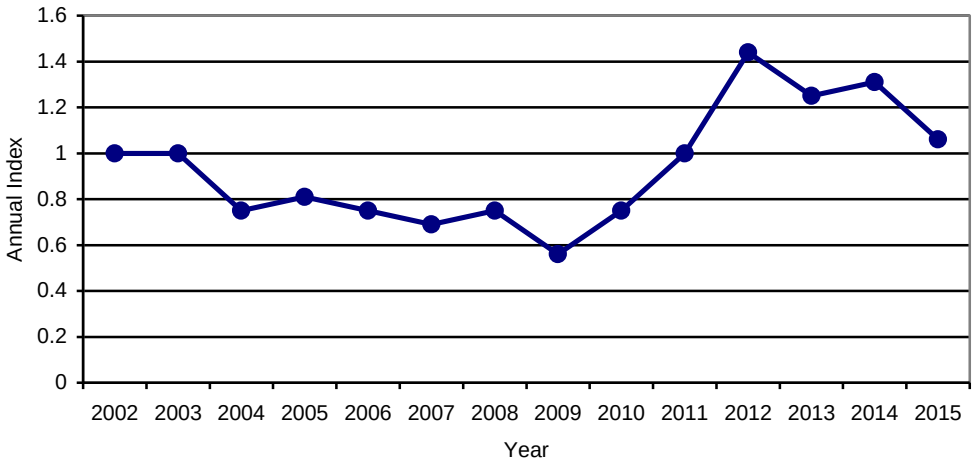

Figure 10: Annual indices of territories recorded in the Rosedale area of the North York Moors between 2002 and 2015 referenced to 2002.

5.3.1 Bank Top

The first sighting at this site was on **2nd April** when a male was seen on top of the kilns. On **10th April** a male and female were seen foraging in the grassy area just below the kilns while a short time later a lone female was seen on top of the kilns at the same time that a brief snatch of simple song was heard close by. On **17th April** a lone male was seen in the tree by the cottages singing while a male and female were being observed in the Bank Top east area (see below). Visiting the area on **24th April** a male was seen again in the tree near the cottages singing for 20 minutes or more. While checking last year's nest on the moor plateau a male and female were observed a few 100 metres away on the moor top. The female was observed carrying bents and was clearly in the process of building a nest. After some 30 minutes the pair flew towards the kilns where they were seen feeding in the grassy area at the back of the kilns before being lost from view.

Returning to the area on **30th April** where the nest building activity had been observed a week earlier, a female was flushed when within two metres of a nest containing three eggs. The nest was built on flat ground under a clump of heather and was 150 metres from a nest that was built last year in a similar situation; suggesting that this was perhaps the same female that had a successful nest then in a similar situation. A check on **8th May** found four eggs with the female being flushed when within four metres of the nest. A visit on **12th May** found three eggs and one newly hatched pullus; the female was seen close by chacking. Observing the nest area from a safe distance on **20th May** there was no sign of activity near the nest after 30 minutes of observation. On close inspection the nest was found to have been predated, there was no obvious damage to the nest and it was thought likely to have been predated by an aerial predator.

There were no further sightings of the pair until **16th June** when a male was seen collecting food in the grassy area 200 metres south of Hob Crag quarry and then flying off high over the moor in the general direction of the first nest. Observing the area around the first nest from one of the ancient burial mounds, both birds were eventually located close together on the ground standing stock still. They remained like this for half an hour or so before the female eventually stirred and disappeared into a nearby clump of heather. The pair were watched for the next hour with both birds seen taking food to the clump of heather. Waiting until they had both flown off to collect food, the area was checked and the nest quickly located. The nest was on the ground under a clump of heather and contained four pulli that looked nine, possibly 10, days old. A brief look into the nest from a few metres away on **17th June**, when both adults were absent, found four healthy but restless pulli that seemed close to fledging. On **23rd June** the nest was found empty with both adults close by chacking, the female later heard sounding a warning call to the fledglings. The behaviour of the adult birds suggested the young had fledged successfully. This

was without doubt the same pair that had their first nest predated nearby. Clearly this female preferred the moor plateau for her nests, an uncommon choice in the Rosedale area.

5.3.2 Bank Top east

Two males and a female were seen on **17th April** half way down the disused railway incline on the east side of the road leading to Rosedale Abbey. A short time later a male and female were seen going into a nearby gully running up to the moor top. A few minutes later the female was seen going into the heather bank on the side of the gully with what looked like nest material. The female remained in the heather bank for 10 minutes before flying to a nearby tree at the side of the incline. While this was going on a male was heard singing from the tree near the cottages at Bank Top (see above). A quick look at the area later in the day found no evidence of a nest being built.

There were no further sightings until **29th May** when the keeper reported seeing a male part way down the incline in a similar location to the April sighting. A longer period of observation on **9th June** located a male in a tree part way down the incline. The male stayed in the tree for 30 minutes or so before flying to a nearby grassy area. After a few minutes a juvenile came into the open and the male was seen to feed it. A few minutes later the male flew off towards the moor and out of sight with the juvenile in pursuit. On **16th June** a male and female were seen towards the bottom of the incline being pursued by two juveniles while a third juvenile was heard calling nearby. The juveniles were thought to be around two weeks out of the nest.

The ease with which a pair can make a nest and fledge young yet remain undetected for so long is testament to how elusive Ring Ouzels can be. Even after 17 years of studying the species this pair managed to avoid detection for six or so weeks.

5.3.3 Blakey Lion south

A male was singing and a female was also present near the southern signpost on **20th April.** The following day two males and a female were in the vicinity of the northern signpost and one male sang from the signpost. On **23rd April** four Ring Ouzels flew down to feed near patches of grey burn above the Swang. They appeared to be very mobile and unsettled during this period of observation so it was a pleasant surprise when a female suddenly chacked out from the nearby trackside. After a brief search a nest with three eggs was located. There were still three eggs the following day when the female was flushed 75 metres north of the nest before flying back to land trackside close to the nest.

There was no sign of the adults on **27th April** and the female was not sitting so an unscheduled check of the nest revealed that one egg had been removed and the other two were cold. This was a very depressing outcome in a territory which had held a successful nest in the previous year. The second egg had gone from nest and the remains of the third which had been eaten were still in the nest when the nest was visited on **2nd May.**

5.3.4 Dalehead quarry

A male was first seen feeding on the grassy embankment at the head of the dale on **7th April** and later that day a Ring Ouzel flushed from the plateau area began feeding close to the cliff edge above the quarry. He then flew into one of the silver birches on the rim of the quarry where he preened before dropping down into the quarry.

Two days later a pair was watched feeding on the northern embankment before flying into the trees above the quarry. The male later fed on the floor of the quarry before chacking into the cliff edge trees. Although they may have been prospecting for a nest site there were no further sightings in April or May to indicate an early nest in the territory.

The situation was more promising in **June** with much more pronounced territorial behaviour. A pair was in the quarry and the male singing on **3rd June** and they were both still present on **9th June** when the male was again singing. The final contact in this territory was on **12th June** when the male sang but there was no sign of the female. No nest was located and there was no evidence of young being fed so it seems likely that a late or second nest attempt failed or was predated.

5.3.5 Hob Crag north

One of the early arrivals in the dale was seen at this site on **24th March** when a male with a bright white gorget was seen feeding just below the disused railway track 200 metres north of the main quarry at Hob Crag. On **10th April** four Ring Ouzels were seen flying around the Hob Crag area chacking. There were no further sightings until **30th April** when a pair flew out of the small quarry at Hob Crag north where a nest was found in 2013. A cold search found no evidence of a nest though the pair gave the impression that they were prospecting for a suitable nest site**.**

On **8th May** when approaching the Hob Crag north quarry a female was seen flying out of the quarry. On inspection a nest containing four eggs was located concealed in a clump of heather on a rock ledge about a metre above the ground. Four days later on **12th May** the female was seen to come off the nest when approaching along the track. A quick inspection of the nest found four eggs still being incubated. There was no sign of the adult birds on **20th May** in over 30 minutes of observing the quarry from a distance. On inspection the eggs were found to be cold and the nest abandoned - examining the eggs at the end of the breeding season, three were found to be partially developed and the fourth infertile.

There were no further sightings in this area until **9th June** when a female was seen foraging part way down the daleside below the first nest site. On **14th June** a Ring Ouzel of undetermined sex flew from the grassy area below the nest site high over the moor top and out of sight. On **16th June** a male flew out of the quarry close to the abandoned nest and landed in the grassy area below the track before being lost from sight.

Both male and female were seen on the grassy slope below the track close to the abandoned nest on the morning of **25th June**, the female worked her way up the slope to the track before flying off over the moor top and out of sight. Returning in the afternoon a male was located in the same grassy area and again seen to fly over the track high over the moor top out of sight. An attempt to locate where the birds were going came to nothing, despite using a grouse butt high on the moor as a hide, with no further sightings of either bird after an hour of observation.

Returning on **30th June** for a more thorough search of the area, both birds were seen to fly from the grassy slope where they had been seen on previous occasions and across the track on to the moor top. Moving to several positions on the moor plateau over the next hour to get a fix on where the pair were going, the female was eventually flushed from a small area of grass situated amongst the heather chacking as she flew off daleside. Some 30 minutes later both birds were seen on the edge of a fire burn in an area of deep heather close to where the female had been flushed earlier. Both were then seen several times over the next hour flying off daleside then returning to the same spot without any evidence of food being carried or of them feeding young during this time. Despite a lengthy search later in the day along the edge of the fire burn no evidence was found of a late nest or fledglings.

There was no indication of a replacement nest to the one abandoned in the small quarry but the presence of a pair in the area from early to late June does suggest that a second nest was attempted somewhere in the Hob Crag north area. The strange behaviour on the moor top is puzzling and may be that the pair had finished breeding for the year and were just loafing around before going into moult.

5.3.6 Hob Crag quarry

A male and female were seen in the main part of the quarry near the 2014 nest site on **14th April**. The female appeared to be looking for a suitable nest site while nearby the male was heard singing. A short while later another pair flew over the quarry from the Bank Top direction and were immediately joined in the air by the two quarry birds. Both pairs circled the quarry before heading off towards Bank Top. On **17th April** a male was seen singing from the wall 200 metres east of the quarry while a male and female were seen feeding in the meadow just below the wall.

On **24th April** a female and two males were seen on the wall 200 metres or so east of the quarry. One male was seen to chase the other off before returning to the wall and singing. A short while later a male and female were seen together foraging in the grassy area close to the quarry while the single male continued to sing from the same place on the wall. On **30th April** a male and female were seen flying out of the main part of the quarry and landing on a clump of heather 50 metres on the moorside of the track; their behaviour suggested they were looking for a suitable nest site.

Approaching the quarry from the Bank Top direction on **8th May** a male was heard singing from the quarry. A few minutes later when just about to enter the quarry to take a closer look, a female flew out of the heather bank on the moorside of the track close to the Millennium seat at the east end of the quarry. Inspecting the heather bank a nest was quickly discovered containing four eggs. The nest, on a ledge under a clump of heather about a metre above the ground, could clearly be seen from the adjacent track. On **12th May** the female was seen to come off the nest when approaching along the track some 10 meters away from the nest. A quick look found four eggs that were being incubated. A visit to the site eight days later on **20th May** found the nest predated with no sign of damage to the nest structure.

Despite frequent visits to the area over the following weeks, there was no evidence of a replacement nest or any sign of the adults in the quarry area.

5.3.7 Matty Carr quarry/south

The first sighting in the Matty Carr area was on **14th April** when male was seen in the central part of the quarry close to the 2014 nest site and a while later in a tree at the south end. A short time later a male was flushed close to the track near the culvert at Matty Carr south. On **20th April** a male flew into the tree at the south end of the quarry in response to the lure being played. The male chacked for five minutes or so before flying towards the dale bottom and out of sight.

There were no further sightings until **4th May** when a male and female were seen around the quarry. The male sang from the tree at the south end and then later from the holly tree at the north end. At one point the female appeared from an area close to the 2014 nest site. A check of last year's nest found no sign of refurbishment or new nest in that area of the quarry. Walking along the track towards Sledge Shoe a pair was flushed from the dale edge at Matty Carr south close to the 2012 nest site, the male flying off towards the quarry and the female towards Sledge Shoe.

Despite frequent visits to the Matty Carr area over the following weeks, no further sightings were made until **11th June** when a female was seen part way down the daleside at Matty Carr south with a beak full of worms. A few minutes later the female was seen going into a rock crevice and coming out without the worms. This was repeated a short time later when the male appeared going into the same place with worms and then coming out and singing a brief snatch of simple song from a nearby rock before flying off. On taking a closer look a juvenile was flushed from the area flying some 10 metres before dropping to the ground chacking. The fledgling appeared to be a few days old.

The pair seen earlier in the year at Matty Carr quarry were most likely the same pair that fledged young at Matty Carr south. There was no indication of a nesting attempt in the quarry despite several searches during April and May. The distance between the south end of the quarry and Matty Carr south where the 2012 nest was found is around 200 metres.

5.3.8 Nab Scar north

Sunday **22nd March** was a sunny but cold day and only 3c. There was a flock of 20 Lapwings near the barns but the big surprise was to first hear and then see three Whooper Swans calling as they circled over Reeking Gill South before flying north. The morning became even better at 1025hrs when the first Ring Ouzel of the year was located, a beautiful male feeding below the track at Nab Scar**,** just south of the dale side cairn. He fed almost constantly as he was watched for about 45 minutes. After Sturdy Bank and East Mines had been checked he was still in the same place at 1200hrs. This was just one day later then the earliest record.

There was no sign of ouzels for 30 minutes when the upper terraces of Nab Scar north were watched from high up at the north end on **11th May.** Observation of a Wheatear visiting a nest low down beside the track dale side was interrupted when a male Ring Ouzel appeared and sang from a boulder high up at the south end. After five minutes he began to feed, occasionally singing from the ground. Sudden chacking drew attention to the female flying down to feed dale side of the track, closely followed by the male. They were watched gradually feeding out of sight. 20 minutes later she re-appeared and flew part way up the Scar before slowly making her way higher and higher, sometimes going into heather but then emerging again. She was very cautious but suddenly made a short quick flight into heather near a distinctive rock formation just below summit. After leaving her to settle for about half an hour the nest was approached and found to contain three eggs.

On **20th May** the nest was approached from the top of the Scar and all was quiet. The male flew from the general nest area but made no sound. The nest which had contained three eggs on 11th May now held two chicks about four days old and no eggs. On **22nd May** all was quiet as the nest was approached and two chicks were still present. Retreating to the top of the Nab an adult was seen returning to the nest from low down with no alarm call but a beak full of food. On **25th May** the nest was watched from the north end of the Scar. All was very quiet and there was no sign of adults for 30 minutes. With some trepidation it was decided to approach the nest but all was well and the two chicks were well snuggled down. At this point the female returned carrying food.

The nest site was watched from below near the cairn on **29th May**. Both adults flew high up the Scar to the area below the nest. The male took food behind a clump of heather and re-appeared with an empty bill. The female went to a separate location and then both adults flew down to feed near to the track. A later check found the nest empty and both chicks appeared to have fledged safely.

5.3.9 Reeking Gill

There were regular sightings of Ring Ouzels at Reeking Gill from **7th April** and a shooting butt high in the gill was a favourite song post. A long period of observation high up in the gill above the main waterfall was rewarded on **11th May**. There had been no sign of Ring Ouzels for over an hour but when a Kestrel appeared low down in the gill it was immediately chased by a male Ring Ouzel and two minutes later the female chacked up the gill and into a clump of heather on the opposite north east side of the gill. An initial search was unsuccessful but the female was watched off a nest containing four eggs later in the afternoon. The nest was very close to the site of the successful nest in 2013.

As the nest site was approached on **20th May** the female was chacking on the ground near the shooting butt opposite the nest area where she was quickly joined by the male. They were both very agitated which was typical of pairs at this site in recent years. When the nest was checked it contained not four eggs but rather puzzlingly one not very lively chick about five or six days old and no eggs.

On **22nd May** the female was again feeding in the grass near the shooting butt opposite the nest area. She immediately alarmed as the nest was approached and the male came in from lower in the gill. Both adults were present on **25th May** and the female was seen carrying food into the nest.

On **29th May** as the site was approached to check the nest three Ring Ouzels flew out of the gill. Fresh droppings were located under heather close to the nest which was empty and the lone chick was assumed to have fledged successfully.

The gill continued to be monitored in the hope of locating a second brood. During a long period of observation on **9th June** the resident Kestrels were both very active seeing off passing threats. Suddenly with much chacking the female Ring Ouzel was seen to fly in towards the 2014 nest site and then out of sight. The nest had been checked earlier in the season but was unoccupied. Later when all was quiet the embankment was crossed and on examination the old nest was found to have been newly refurbished and to contain three eggs. The agitated female encouraged a quick exit. This had been a successful site in 2014 and it was hoped that the Kestrels would keep at least some potential predators away. On **12th June** the female could be seen on the nest so it was not approached.

On **15th June a** Cuckoo was calling and the Kestrels were still present. When all was quiet the nest was approached at 1100hrs and the female chacked off at about 15 metres revealing one newly hatched chick and three eggs. This indicated a first egg date of about 31 May. On **23rd June** there was no sign of Ring Ouzels and the female did not chack off the nest as it was approached, it was therefore a relief to find four chicks now eight days old. On leaving the gill the female was watched back on to the nest where she remained for a short time before flying off again.

Three hours later at noon the nest was watched from a distance, just inside the NW edge of the gill. All was quiet for 40 minutes until the female flew off the nest into bracken close by out of view. After five minutes she returned to the nest carrying food. She flew high on the NW side of the gill to collect more food before returning to feed the chicks again. Ten minutes later the male appeared carrying food but was reluctant to approach the nest so observation was terminated.

When a brief visit was made to check the nest on **29th June** the female Ring Ouzel was located collecting food on the promontory. She was seen to fly into the gill and then quickly return to the promontory for more food. The site was watched from the NW entrance to gill until with much chacking the female returned, eventually going into bracken below the nest. Satisfied that the chicks had fledged the embankment was crossed and following a cautious approach the nest was checked and found to be empty. Both adults were very agitated in the vicinity of the nest and with fledglings obviously close by the site was quickly vacated.

5.3.10 Round Hill east

On **14th April** a male suddenly appeared chacking loudly in response to a passing Kestrel. The male flew into a tree close to the 2014 nest site and stayed there for the next five minutes occasionally singing before dropping to the ground and out of sight. Checking the 2014 nest site on **28th April** a female was flushed from a nest containing three eggs. The nest was just two metres from the previous year's nest suggesting it was perhaps the same female. A further check on **4th May** found four eggs that were warm and clearly being incubated. The female which was off the nest at the time appeared in a nearby tree chacking.

Inspecting the nest eight days later on **12th May** the female was flushed from the nest containing three newly hatched chicks and one egg. On **20th May** a check on the development of the pulli found the nest predated. The nest lining was noticeably damp from the previous day's rainfall suggesting it had been empty for a day or so. Again the culprits were most likely aerial predators, several Magpies had been seen in the area for some weeks with one pair nesting in a nearby tree a few hundred metres from the Ring Ouzel nest.

5.3.11 Round Hill west

The first sighting at this location was on **20th April** when a male and female were seen bathing in a small puddle part way down the daleside below the 2014 nest site. After a few minutes the male flew into a nearby holly tree and preened while the female flew to a nearby rocky area where she was seen going into a rock crevice before making her way up a steep heather gully. Passing by an hour later the male was seen foraging in the dale bottom by the intake wall.

There were no further sightings until **22nd May** when a male and female were seen in the dale bottom collecting worms. After 15 minutes both flew towards the disused railway track and disappeared into a heather overhang at the top of large area of scree. Both came out without worms and flew back towards the dalebottom where they were seen collecting food. The area where the nest was located was impossible to access owing to the scree being unstable.

On **26th May** both adult birds were seen collecting food and taking it to three separate locations some 25 metres or so from where the nest was thought to have been located; suggesting the young had fledged within the last two to three days. After 30 minutes or so of observation two juveniles came into the open, one pursuing the male after being fed. A third juvenile was heard a short distance away calling. From the locations the adults were seen going to with food it is likely that there was a fourth juvenile from the Round Hill west nest, though only three could be confirmed for certain.

Despite monitoring this site throughout June and into early July, there was no evidence of a second attempt at breeding in this area.

5.3.12 Sheriff's Pit

Without fail the disused pit shaft at Sheriff's Pit has been used most years since the study began back in the late 90s. This year was no exception when a pair was first seen on **20th April** flying from the direction of the shaft and landing on the moor some 200 metres north-west of the pit where they were then seen foraging.

On **28th April** a look through the security fence surrounding the shaft quickly located the female sitting on an open nest on the north-west side of the shaft. Inspecting the shaft on **4th May** found the female sitting tight on the nest, seemingly undisturbed by human presence. A brief look on **12th May** found the female still sitting. On **20th May** both adults were seen close to the shaft foraging, a look at the nest revealed three pulli, possibly four, moving around. Another check on **22nd May** found four well grown pulli and the female nearby chacking with a beak full of worms, though with no sign of the male in the short time the area was observed. On **26th May** only three

pulli could be seen with the female seen going to the nest with food; as on the previous visit there was no sign of the male.

On **1st June** a juvenile was flushed close to the disused railway track some 300 metres north of the pit shaft and flew a short distance daleside landing in an area of burnt heather. A few minutes later a female appeared and was seen weaving in and out of the heather in an apparent attempt to distract attention away from the juvenile. Again there was no sign of the male during 30 minutes or so of observation. On **6th June** a Ring Ouzel of unknown sex was seen flying into the pit shaft. A closer look at the shaft some 20 minutes later, when a party of walkers who were resting nearby left the area, found no sign of activity in the shaft. A short while later a Ring Ouzel flew from north to south daleside of the shaft and was lost from view. There was just one more sighting on **11th June** when a juvenile was flushed from just below the track near the shaft and flew off chacking in the direction of Round Hill. There were no further sightings in the pit area and no evidence of a second attempt.

5.3.13 Sledge Shoe

On **7th April** a male was seen singing in a tree at the south end of Sledge Shoe. A short while later the male flew to a tree at the north end and sang. Returning to the area two hours later the male was seen in the same tree at the north end of the territory singing. Again on **14th April** a male was observed on a rock just below the disused railway track preening before flying off towards the dale bottom and out of sight. On **20th April** a male and female were flushed from just below the track close to the public footpath that drops into the dale bottom. Both flew off towards Round Hill west where they were seen bathing in a puddle near the 2014 nest site (see 5.3.11).

On **28th April** a female was flushed from a ditch running along the moorside of the track 200 metres north of the footpath. A few minutes later the female was again flushed from the ditch nearer to the footpath and flew towards the dale bottom and out of sight. Returning later in the day a female was again flushed from the ditch in the same area as seen earlier in the day and again was seen to fly towards the dale bottom and out of view.

Two males were seen in the tree at the south end of Sledge Shoe on **4th May**. One flew on to the moor top while the second remained in the tree singing. The impression was that one male was the Sledge Shoe bird while the other was most likely the male from Round Hill west. There was a further brief sighting on **26th May** when a male flew into the dale bottom having been flushed close to the track a short distance north of the footpath. On **6th June** a male was seen again in the same location before flying off into the dale bottom where it was observed foraging.

On **11th June** a male was seen singing on a prominent rock just below the track some 200 metres north of the footpath. A few minutes later a female was seen in the dale bottom flying to a grassy area below the track close to the public footpath where she appeared to be foraging. Returning to the area later in the day a male appeared on the same prominent rock chacking and a short time later a female was seen flying out from a nearby craggy area towards the moor before being lost from view. There was just one further sighting on **23rd June** when a male was seen foraging by the track close to the footpath before flying off in the direction of the moor top and out of sight.

There were no further sightings at Sledge Shoe after this date. Though there had been a presence throughout the season of both male and female birds, with the male heard singing on several occasions, there was no sightings of juveniles or of the adults collecting or carrying food.

5.3.14 Spindle Thorn

The first reported sighting at this location was on **10th April** when the moor keeper reported a male in the old thorn tree close to the road and one of indeterminate sex in the roadside ditch. A further sighting by a local birdwatcher of a pair seen flying across the road from the east to west side of the road at Spindle Thorn was recorded on **28th April** and again on **1st May** a male was reported feeding in the grassy area close to the old thorn tree.

On **22nd May** a male was seen in a tall rowan tree alongside Loskey Beck close to the 2014 nest site. A short time later a female was seen to fly out of a bilberry bank on the west side of the beck and return 15 minutes later. After a 30 minutes wait the bank was approached cautiously flushing the female when within five metres of the nest site. A quick search of the deep bilberry found a well concealed nest containing four eggs. A checking the nest four days later on **26th May**

found four recently hatched pulli around one day old. On **2nd June** the nest was seen to contain four well fed pulli around seven days old.

Approaching the site on **9th June** both adult birds were seen going into the heather with worms in several places 100 metres downstream of the nest. Walking cautiously towards the spot where the adults had been taking food found a juvenile backed into a heather clump. At one point the male flew to a nearby tree close to the juveniles where he gave a soft rendition of simple song. On **25th June** a male was seen in a holly tree close to the nest site singing. Later the male was seen in flight with a juvenile and then returning to the same tree again singing. There were no further sightings after this date and no evidence of a second nest in the Spindle Thorn area.

5.3.15 Sturdy Bank

This territory was occupied in the early part of the season but efforts to locate a nest were unsuccessful. It is likely that an early nest in the vicinity failed or was predated. A male was singing high up in the gill on **9th April** and later was seen feeding by the track. He was still present chacking and then singing from two locations high in the gill on **21st April**. Two days later a female was present and feeding steadily as she slowly worked her way up the gill towards the male. The male was again feeding by the track just north of the gill on **27th April**.

The final sighting was on **8th May** when there was an intriguing interaction. All was quiet until 1145hrs when a Kestrel flew in and landed on a boulder high up in the gill. A male Ring Ouzel then suddenly appeared and began to sing forcefully from the hawthorn tree low down in the gill. He sang for several minutes before dropping to the ground to feed below the tree. The Kestrel remained watching the gill from his boulder. At 1155hrs the male began to sing from the ground with the Kestrel still on the boulder high in the gill. Suddenly at 1200hrs the Ring Ouzel chacked and flew out of the gill and below the track out of sight. On looking back up the gill the Kestrel had also left. It was difficult to interpret this unusual behaviour.

5.3.16 Thorgill Bank quarry

The first sighting at this site was on **10th April** when a male was seen on top of the cairn by the quarry entrance. A while later a male and female were seen foraging some 50 metres below the cairn and then flying off eastwards out of sight. On **17th April** a male was seen again on the cairn before flying a short distance eastwards and dropping into the heather. Around 30 minutes later an unseen bird was heard singing from a position between the top of the quarry and the disused railway track. There was a further sighting on **24th April** in a similar situation to the 17th when a brief chack and then a short burst of song was heard coming from the quarry area.

There were no further sightings in this area until **8th May** when two males, one singing, were seen high on the moor around 200 metres from the quarry. The singing male was seen to chase the other male off before flying towards the quarry and out of view. On approaching the quarry, the male was seen on top of the cairn chacking and then a short time later on the ground below the cairn singing. A while later when inspecting the previous year's nest sites in the quarry a female was flushed off a nest containing one egg. The nest was built in the exact same place as one in 2013 and appeared to be on top of what remained of the old nest.

A brief check on the **12th May** found four eggs that were being incubated. Approaching the site on **22nd May** the male was seen on top of the cairn singing before flying off westwards and out of sight. A look at the nest found it predated with much of the lining material pulled out and several pieces of egg shell laying nearby. Given the considerable damage done to the nest, a ground predator was thought to be the most likely suspect. Over the many years of studying Ring Ouzels in the Rosedale area, this was the first time that a nest had been found destroyed in this manner.

5.3.17 Thorgill Bank west

The replacement nest for the pair whose nest was predated at Thorgill Bank quarry (see 5.3.16) was located on **22nd May** when checking a disused sheepfold 215 metres west of Thorgill Bank quarry. The nest containing three eggs was located on a ledge under a heather overhang about a metre above the ground. Passing the area later on in the day the male was seen singing close to the sheep fold.

Given the trauma that this female had experienced with the predation of her first nest, inspections on the **26th May**, **1st** and **6th June** were done from a safe distance through binoculars where the female could clearly be seen on the nest. On **9th June** the female was seen to be on

the nest so a retreat was made to a distance to watch for her coming off. After just 10 minutes the female was seen to leave the nest and on inspection four pulli around three days old were seen moving around. A look on **14th June** when the adults were absent found four well-fed pulli.

On **16th June** both adults were seen taking food to the nest so the nest was not inspected on that occasion. A visit on **23rd June** found the nest empty with both adults seen nearby taking food to several places in the heather/bilberry, the male occasionally singing softly from near the sheepfold. This was the last date that activity was seen in the area and clearly the late fledging of this pair's replacement clutch meant that they had effectively run out of time for a further attempt.

5.4 Farndale and Westerdale Territories

Following on from the success in 2014 when three nests were located in Farndale and Westerdale, a return visit was made on **14th May** to look for Ring Ouzels and to see if last year's nests were being re-used.

Passing the 2014 nest alongside the disused railway line at High Blakey Moor, Farndale, an unseen male was heard singing close by on the daleside of the track; a brief search failed to locate him. A check on last year's nest in the heather bank along the track side found it to be in a dilapidated state and clearly not being used this season.

An inspection of the old nest at the north end of Esklets Crags, Westerdale, found it too had not been reused this season. Walking along the bottom of the crags towards the south end there was a brief view of a male on top of the crags at the north end that quickly flew off northwards and out of view.

Approaching the south end of the crags a male was seen foraging in the grassy area below the crags. After a few minutes the bird flew off out of sight, returning 15 minutes later to a tree close to the observation point where it sang for a while before eventually flying off south and out of view. A check on last year's nest showed it to have not been re-used this year. While checking the nest a male was seen singing in a tree at the extreme south end of the crags.

Dropping down from the crags on the return journey, the male seen earlier in the tree at the south end of the crags was seen singing on a wall part way down the dale side towards the dale bottom. At the same time a second male was heard, but not seen, singing from a position close to the track in the dale bottom.

Although no nests were found this time, the three territories located in 2014 appeared to be occupied in 2015. On the Esklets Crags it seems likely that there was a third territory at the extreme south end of the crags in 2015. The length of Esklets Crags is such that three to four territories could be supported along its length.

5.5 Breeding Productivity

Six nests were found predated or abandoned in 2015, the second highest since the study began, accounting for 40% of all nests (n=15) monitored and only marginally better than 2012; the previous worst year when 46% were found predated or abandoned (see Annex 3, Table 1). This is reflected in the below average figure for productivity shown in Figure 11 below for the mean number of fledged young per laying pair; 2.25 compared with a 14-year mean of 3.10.

Of the six unsuccessful nests, four were predated at the egg stage, one at the pulli stage and one abandoned at the egg stage. Those at Bank Top and Thorgill Bank had successful replacement nests within 200 metres or so of the first, while those at Hob Crag and Blakey Lion appeared to have abandoned the immediate area altogether and moved elsewhere. Likewise, there was no evidence of a second attempt at Hob Crag north where the first nest containing four eggs was abandoned (but see below).

The four abandoned eggs remained in the Hob Crag north nest until the end of the breeding season when they were then inspected. Of the four eggs, three were found to be partially developed while the fourth appeared infertile. To find a Ring Ouzel nest abandoned is fairly rare and only four or so have been found since the start of the study. The Hob Crag north nest was well hidden from view from a nearby track that is popular with walkers and its location on a rock

ledge under a heather overhang provided good protection from the elements. The fact that the female had been incubating the eggs for several days perhaps points to the female having succumbed to predation or died from natural causes while off the nest.

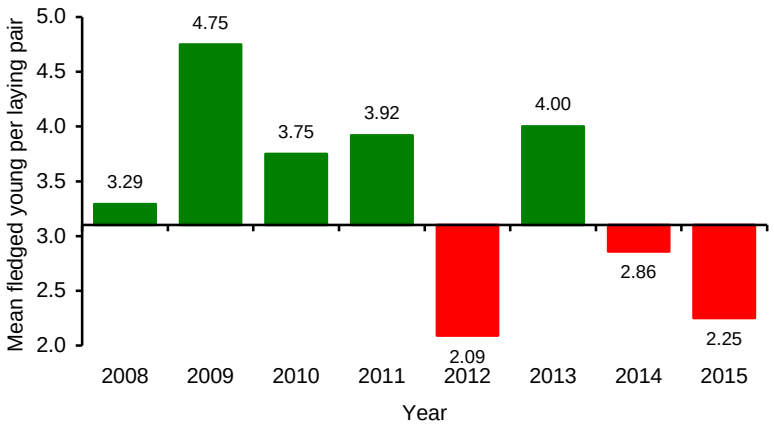

Figure 11: Mean fledged young per laying pair for Rosedale and other areas of the North York Moors between 2008 and 2015 relative to 14-year mean of 3.10

Figures 12 and 13 below show the annual hatching and fledging success for first and second nests. Hatching success looks at all the eggs laid and the percentage of these that hatched. Similarly, fledging success looks at all the eggs laid and the percentage of these that hatched and successfully fledged. A value of 1.0 would indicate 100% success whereas 0.5 would indicate 50% success - that is only half of all the eggs laid hatched or fledged. In 2015 only 39% of first nest eggs hatched with just 26% of these successfully fledging. Although only three second nests were monitored, 100% of all eggs laid hatched and fledged successfully. The loss of first nests – six in all – with the first nests at Reeking Gill and Nab Scar north fledging just one and two young respectfully, accounted for the 2015 season being one of the worst years for productivity.

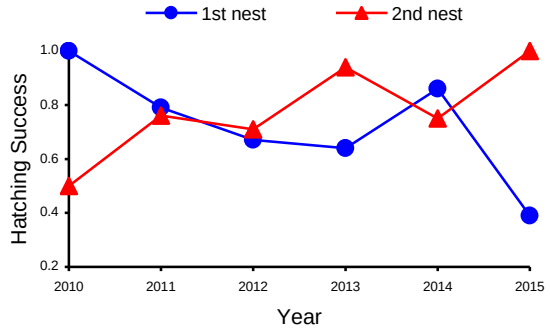

Figure 12: Annual first and second nest hatching success for the Rosedale area of the North York Moors between 2010-2015.

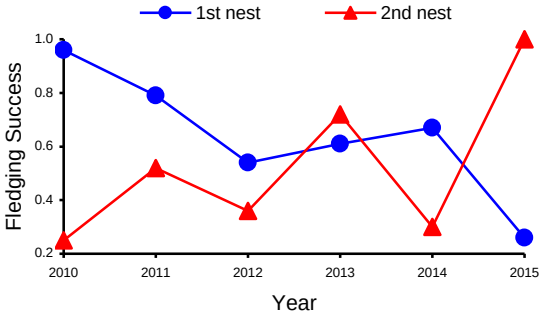

Figure 13: Annual first and second nest fledging success for the Rosedale area of the North York Moors between 2010-2015.

5.6 Late:Early Territory Occupancy

Most bird publications describe the Ring Ouzel as usually being a double brooded species. As not all pairs will have a second nest and fledge a further clutch, one of the concerns is what impact this has on population numbers. For a short lived species, three years for the average Ring Ouzel would be a good age, having a second brood may be important in sustaining or expanding the population.

The method used to determine early and late occupancy was to divide the number of territories that were occupied by pairs after late May (late territories) by the number occupied before late May (early territories) - see Annex 5. The graph at Figure 14 below shows the ratio of late to early occupancy between 2008 and 2015. Although there is some variation between years the eight-year trend is relatively flat averaging 0.57, suggesting 57 % of Rosedale birds have, on average, a second nest. It also confirms 2014 and 2015 as being poor years for 2nd nests with just 37% and 40% respectively attempting a second clutch.

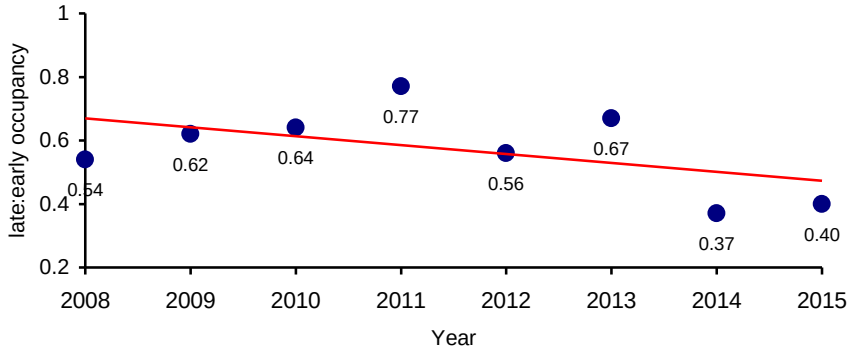

Figure 14: Annual ratio of late to early territory occupancy for the Rosedale area of the North York Moors between 2008-2015 and eight-year trend.

5.7 Nest Aspect

The aspect of a nest is the compass bearing that the nest entrance faces and is the direction the adult birds are seen to use most to enter or exit the nest. It is likely that the topography has a strong influence on nest aspect in Rosedale. The main dale runs NW to SE and on the east side, where it might be expected that more nests would face west, the two main offshoot gills of Reeking Gill and Sturdy Bank and the quarry at Dalehead seem to present fewer opportunities for nests to face this direction. Likewise, on the west side of the dale the quarries at Matty Carr and Hob Crag predominantly face east as do the heather banks at Blakey Lion, Dalehead west and Round Hill east and south. Only at Round Hill west where the disused railway cutting has ideal heather banks for nesting, with a choice of either east or west facing aspects, do Ring Ouzels prefer the side of the cutting facing east. At Sheriff's Pit where the four sides of the shaft entrance are aligned either NE, NW, SW or SE, the preferred aspect is either SE or NE; though this has probably more to do with the suitability of the shaft sides for nesting. The graph at Fig.15 for all nests in the Rosedale area clearly shows a strong bias to an easterly bearing, with the north-east quadrant being the predominant aspect. For reasons that can't be explained, the south-west quadrant seems to be equally as prominent as the north-east quadrant for second nests - see Fig. 16 and 17. However, what is clear from all three graphs is that few nests are built with an aspect in the north-west quadrant. Whether this is a deliberate move by Rosedale Ring Ouzels or not is uncertain and is an area of study that needs further work.

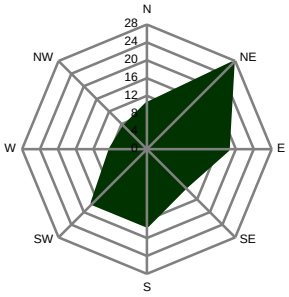

Figure 15: Nest aspect of all nests in the Rosedale area.
Data from Annex 4, Table 1. n=116

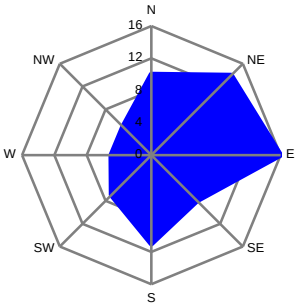

Figure 16: Nest aspect of first nests in the Rosedale area.
Data from Annex 4, Table 1. n=76

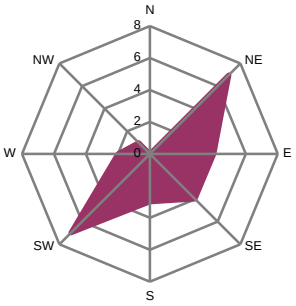

Figure 17: Nest aspect of second nests in the Rosedale area.
Data from Annex 4, Table 1. n=28

In Figures 15 to 17 above the intercardinal points NNE, ENE etc. are not shown. This is done to smooth the graphs and remove the spikes that would be generated if all 16 points were displayed. For each of the eight intercardinal points shown in Annex 4, Table 1, the value (the number of nests with that aspect) is halved and apportioned to each adjacent cardinal point. For example, if the number of nests having an intercardinal aspect of NNE was four, then two would be added to the N cardinal value and two to the NE cardinal value. If the ENE aspect had three nests, then one would be added to NE and one to E. None of the intercardinal points recording just one nest are counted.

5.8 Spring Passage Migrants

The 2015 season proved to be an exceptional year for the considerable number of Fennoscandian birds seen on passage to their breeding grounds. Numerous reports from across the south of the country and Home Counties, including central London, started appearing on the Birdguides web site around **11th April** and continued throughout the month until early May.

Across the North York Moors, six Ring Ouzels (4 male & 2 female) were seen on the west side of Rosedale at Hob Crag on **17th April**, while on **18th April** eight were seen at RAF Fylingdales and a similar number (all males) near the foot of Ingleby Incline the same day. On **20th April** a flock of between 60 and 70 birds was reported near Lower Locker Farm, Arden Great Moor, while in Rosedale on **21st April** five were seen on the east side of the dale just north of East Mines and on **24th April** five were seen foraging part way down the incline at Bank Top on the west side.

Also on the west side of the dale at Matty Carr quarry a mixed flock of 11 were seen on **28th April** feeding in the grassy area towards the dalebottom on the moorside of the intake wall.

Several sightings were reported along the Yorkshire coast during **April**; on the **10th** two males were seen in the Scarborough area at Long Nab and Castle Hill and on the **15th** two were seen at South Cliff. Further up the coast a male was recorded at Ravenscar on **15th April**. While an early sighting on **16th April** at Wilton, near Redcar, was posted on the web site of the Teesmouth Bird Club.

An unusual and rare occurrence of an over-wintering male Ring Ouzel was recorded at Roxby, 15 kilometres north-east of Whitby, between 1st February and 4th March.

5.9 Late Summer Activity

As in previous years an end of season visit was made to Rosedale specifically to locate Ring Ouzels prior to migration. A look at Blakey Swang, Matty Carr quarry and along the cam-edge to Round Hill south on **25th August** found no sign of Ring Ouzels, despite the rowan trees having a moderate to good crop of berries.

A second visit on **1st September** to the north and east side of the dale to Dalehead and Reeking Gill drew a blank with no sightings of Ring Ouzels. At the time of this visit a large shooting party was observed making its way down the west side of the dale from Dalehead as far south as Sledge Shoe in three separate drives.

On **16th September** at least five Ring Ouzels were reported feeding in the rowan trees just below the embankment at Reeking Gill on the east side of the dale.

Along the Yorkshire coast, 10 were recorded on **6th October** in the Bempton/Buckton area and again in the same area on the **8th** when four were seen. An unspecified number of Ring Ouzels arrived at Bempton Cliffs RSPB reserve the following week. Two males were seen on the **8th** at Warsett Hill near Saltburn. Further down the coast at Spurn, Ring Ouzels were recorded on most days between **3rd** and **18th October** with two distinct peaks on the **7th** and **11th** when 19 and 18 respectively were recorded at the Observatory. Apart from individual stragglers at the very end of October, the last of the Fennoscandian passage birds had departed Spurn by **19th October**.

Elsewhere in the south of the country, Ring Ouzels were seen in small numbers at Blackdown, Sussex, on **28th September**, peaking on **8th October** when 16 were seen there in the rowan and scots pine trees. Activity in this area continued through until **27th October** when the last of the passage birds left. Further east at Dungeness a fall of 90 was recorded at the bird observatory on **12th October** and a smaller flock of 19 on **16th October**.

6. ACKNOWLEDGEMENTS

The authors wish to acknowledge the support of Spaunton estate owner, George Winn-Darley, head-keeper George Thompson and under-keeper Anthony Orr. Also the head-keeper of the Rosedale estate, Jimmy Brough, and for the help of Mick Carroll, Tom Denney, Christine Howard, Geoff Myers, Wilf Norman, Jim Pewtress, Chris Tyas, Stephen Wilson and Eric Wood. Our grateful thanks to all of them.

7. REFERENCES

Appleyard, I. (1994) Ring Ouzels of the Yorkshire Dales.

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ANNEX 1 - Map of Nest Sites and Territories in the Rosedale Area in 2015

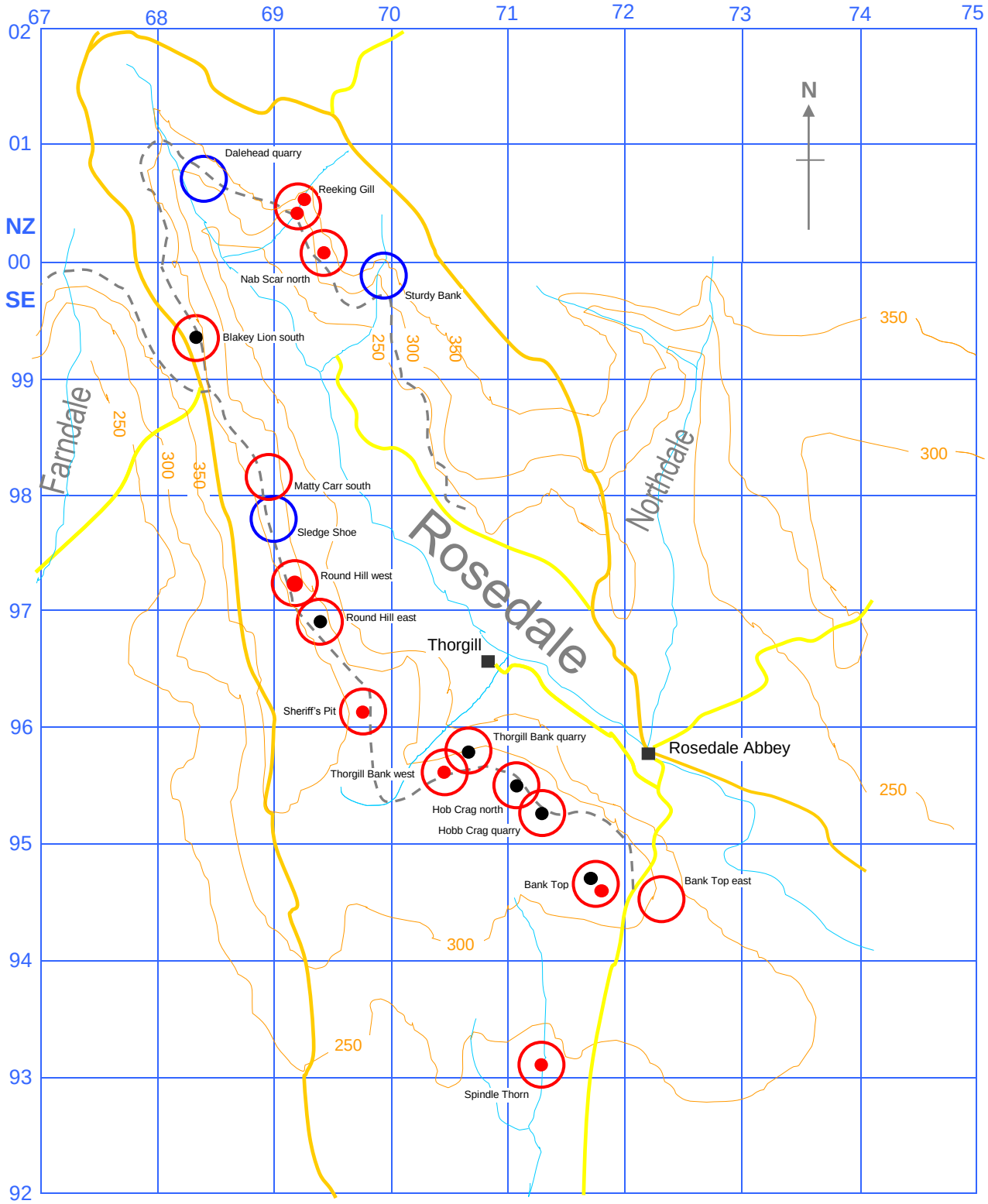


Diagram 1: Ring Ouzel nest sites and territories where Confirmed or Probable breeding was recorded in the Rosedale area of the North York Moors in 2015.

Successful nest. **Predated or abandoned nest.** **Territory where Confirmed breeding was recorded.** **Territory where Probable breeding was recorded.**

ANNEX 2 - Map of Sightings on the North York Moors in 2015
(Other than the Rosedale area & passage migrants)

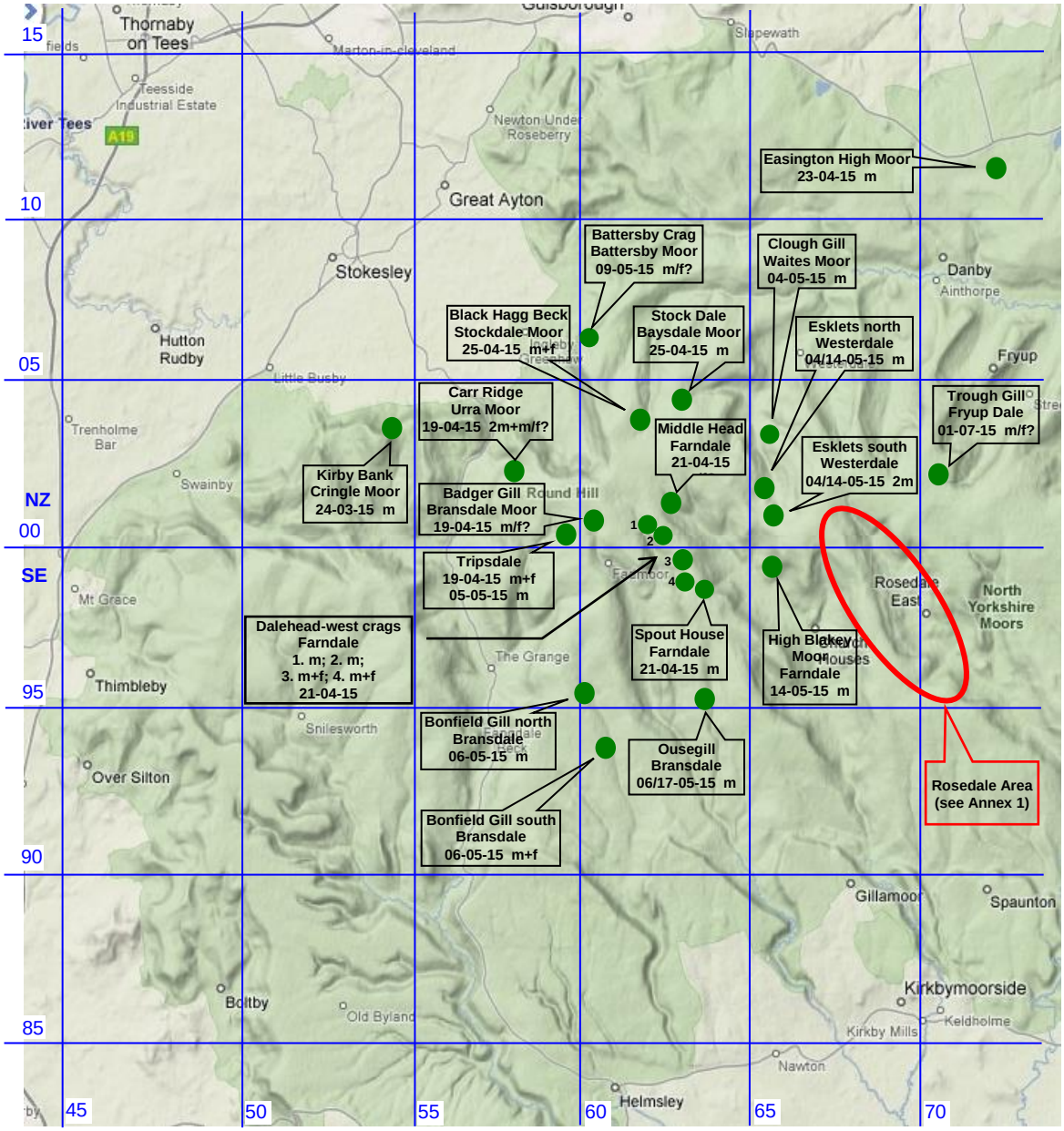


Diagram 2: Sightings of Ring Ouzels on the North York Moors in 2015 other than the Rosedale area and passage migrants.

ANNEX 3 - Table of Annual Breeding Results from 2000 to 2015

Table 1: Annual breeding results at Ring Ouzel nest sites in the Rosedale and other areas of the North York Moors. Data from 2000 to 2015.

Year	Site	Grid Ref.	Eggs	Hatched	Fledged	Comments
2000	Spaunton Moor - Pen Wash	SE71479347	4	4	4	1st brood. 4 pulli ringed.
2002	Bank Top	SE72049483	(4)	4	4	Likely to be 2nd brood.
2003	Ouzegill Bdg.	SE63709450	4	4	4	1st brood. 4 pulli ringed.
2003	Round Hill	SE69279710	4	4	4	1st brood
2003	Thorgill Head	SE69999559	4	3	0	1st brood. Nest disturbed, chicks abandoned.
2003	Thorgill Bank	SE70729582	4	3	3	1st brood. 3 pulli ringed.
2003	Thorgill Bank	SE70729582	2	1	?	2nd brood. Likely to have failed at pulli stage.
2003	Spaunton Moor - Pen Wash	SE71489347	4	+	0	1st nest. Predated at pulli stage.
2003	Hob Crag	SE71459538	4	0	0	Likely to be 1st nest. Predated at egg stage.
2004	Hob Crag	SE71459538	4	4	0	Predated at pulli stage. Refurbished 2003 nest.
2004	Matty Carr	SE68809833	4	4	4	Likely to be 1st brood.
2004	Dale Hd East	NZ68560086	4	4	4	Likely to be 2nd brood.
2004	Ouzegill Bdg.	SE63909470	2	1	?	1st brood. 1 egg vanished. 1 pulli ringed.
2005	Sheriff's Pit 1st	SE69659631	+	1	0	1st nest. Nest abandoned; reason unknown.
2005	Sheriff's Pit 2nd	SE69659631	+	0	0	2nd attempt. Predated at egg stage.
2005	Sheriff's Pit 3rd	SE69659631	+	3	2	3rd nest.
2005	Matty Carr quarry	SE68809835	4	4	4	Thought to be 1st brood.
2005	Lion Inn	SE68249954	(4)	4	4	Likely to be 2nd brood.
2005	Dale Hd West	NZ67960082	+	+	3	3 fledglings seen near nest.
2006	Sheriff's Pit 1st	SE69659631	4	0	0	Nest on NW side of pit shaft washed out by heavy rain in mid May.
2006	Sheriff's Pit 2nd	SE69779609	5	5	5	2nd attempt 185m south of pit shaft.
2006	Dale Hd West	NZ67930081	4	+	+	Likely to be 2nd brood. Not known if hatched or fledged.
2007	Hob Crag	SE71459538	3	0	0	1st nest. Predated at egg stage.
2007	Round Hill Sth	SE69819663	4	4	4	1st nest.
2007	Dale Hd West	NZ67940079	4	4	4	1st nest.
2007	Reeking Gill	NZ68920066	4	4	4	1st nest.
2008	Sturdy Bank 1st	SE69899991	4	4	4	1st nest.
2008	Sturdy Bank 2nd	SE69869990	4	4	3	2nd nest.
2008	Round Hill Sth	SE69819664	4	4	4	1st nest. Used refurbished 2007 nest.
2008	Reeking Gill	NZ69140056	5	5	5	1st nest.
2008	Northdale, West Gill	SE71799957	+	+	3	1st nest.
2008	Hobb Crag 1st	SE71449539	4	4	0	1st attempt. Predated at pulli stage. Used 2003/4 nest site.
2008	Hobb Crag 2nd	SE71399545	3	0	0	2nd attempt. Predated at egg stage.
2008	Sheriff's Pit	SE69719626	4	4	4	1st brood.
2008	Dalehead Nth.	NZ67950102	4	1	0	Likely to be 2nd attempt. Failed after 1st hatchling. 1egg left in nest.
2009	Dale Hd West	NZ67940079	4	4	4	1st nest.
2009	Sturdy Bank	SE6987 9991	4	4	3	Likely to be 1st nest.
2009	Round Hill Sth	SE69539674	4	4	4	1st nest.
2009	Reeking Gill	NZ69240076	+	+	3	1st nest.
2009	Sheriff's Pit	SE69729627	(5)	5	5	2nd nest. 1st nest at Round Hill Sth.
2010	Ouzegill 1	SE64009511	4	4	3	1st nest. 1 left early & died near nest.
2010	Ousegill 2	SE63989497	5	3	0	2nd nest 140m sth of 1st nest. Predated at pulli stage. 2 eggs left.
2010	Ousegill Bridge	SE63929444	5	0	0	Likely to be 2nd nest. Predated at egg stage.
2010	Sturdy Bank 1st	NZ69890000	3	3	3	1st nest.
2010	Sturdy Bank 2nd	NZ69870005	3	0	0	2nd nest. Predated at egg stage.
2010	Reeking Gill	NZ69080068	(4)	4	4	1st nest.
2010	Reeking Gill cut 1st	NZ68790066	4	4	4	1st nest.
2010	Reeking Gill cut 2nd	NZ68860068	(3)	3	3	2nd nest 69m east of first nest.
2010	Hob Crag 1st	SE71389544	(4)	4	4	1st nest.
2010	Hob Crag 2nd	SE71389544	(4)	4	2	2nd nest using same nest as 1st nest.
2010	Sheriff's Pit	SE69739627	+	3	3	1st nest.
2010	Round Hill (central)	SE69439690	(4)	4	4	1st nest.
2011	Hob Crag	SE71239557	(4)	4	4	1st nest.
2011	Round Hill east	SE69459685	(4)	4	4	1st nest.
2011	Round Hill west	SE69269706	4	4	4	1st nest.
2011	Matty Carr quarry	SE68809836	4	4	4	1st nest.
2011	Ousegill Bridge	SE63969475	4	0	0	1st nest. Likely to have been predated at egg stage.
2011	Sturdy Bank 1st	NZ69870005	3	3	3	1st nest.
2011	Sturdy Bank 2nd	SE69879994	4	3	0	2nd nest. Nest predated. 1 egg unsure if hatched.
2011	Nab Scar north 1st	SE69459996	4	4	4	1st nest.
2011	Nab Scar north 2nd	NZ69440000	4	3	3	2nd nest. One egg left in nest.
2011	Reeking Gill 1st	NZ69150072	4	+	+	1st nest. Fledged; assumed all 4 left nest.
2011	Reeking Gill 2nd	NZ69170071	5	5	5	2nd nest.
2011	Dalehead west 1st	NZ67930081	4	3	3	1st nest. One egg left in nest.
2011	Dalehead west 2nd	NZ67940079	4	3	3	2nd nest. One egg left in nest.
2011	Dalehead quarry west 1st	NZ68290085	4	4	4	1st nest.
2011	Dalehead quarry west 2nd	NZ68290085	4	+	0	2nd nest. Nest predated at chick stage.
2011	Dalehead east	NZ68650075	4	4	4	Likely to be 2nd nest.
2011	Dalehead north	NZ68050125	(4)	4	4	1st nest.
2011	Thorgill Bank	SE70669580	4	4	0	2nd nest. Likely to have been predated at chick stage.
2011	Sheriff's Pit	SE69739627	+	2	2	Likely to be 2nd nest.

? = Outcome unknown + = Exact value unknown (4) = Most likely value

Year	Site	Grid Ref.	Eggs	Hatched	Fledged	Comments
2012	Reeking Gill cutting	NZ68810067	4	4	4	1st nest.
2012	Nab Scar south	SE69499988	4	3	3	1st nest. 4 eggs laid, 1 removed.
2012	Sturdy Bank	SE69859996	4	-	-	1st nest. Nest abandoned at egg stage.
2012	Dalehead west	NZ67940080	4	-	-	1st nest. Nest abandoned at egg stage.
2012	Sheriff's Pit north	SE69689643	4	4	4	1st nest.
2012	Sheriff's Pit	SE69739627	+	+	2	2nd nest.
2012	Round Hill south	SE69449670	4	4	0	1st nest. Nest predated at chick stage.
2012	Reeking Gill	NZ69190066	4	4	4	1st nest.
2012	Blakey Lion	SE68239960	5	3	3	1st nest. 2 fledged 7/6 & 1 fledged 8/6.
2012	Matty Carr south	SE68889818	3	3	0	2nd nest. Nest predated at chick stage.
2012	Matty Carr quarry	SE68809835	(3)	3	0	Likely replacement 2nd nest from Matty Carr south pair.
2012	Round Hill west	SE69269706	4	4	3	Likely to be 2nd nest. One pulli died naturally in nest.
2012	Nab Scar north	NZ69430006	4	0	0	2nd nest. Nest predated at egg stage.
2012	Spaunton Knowl	SE71709180	+	3	?	1st nest. 3 naked pulli on 24/5. Outcome unknown.
2013	Reeking Gill cutting	NZ68870065	4	0	0	1st nest. 4 eggs 14/5. Found abandoned 19/5.
2013	Dalehead west	NZ67940079	4	3	3	1st nest. 1 hatched 13/5. 3 pulli 23/5. 1 egg left in nest.
2013	Reeking Gill 1.	NZ69240079	4	4	4	1st nest. 3 pulli 13/5. 4 pulli 21/5. Fledged.
2013	Reeking Gill 2.	NZ69500083	(3)	2	2	2nd nest. 2 pulli on 21/6 at Day 9/10 stage. Fledged 24/6 1 egg left.
2013	Reeking Gill south 1.	NZ69290043	4	2	2	1st nest. 2 pulli at Day 6 on 22/5. 2 eggs unhatched.
2013	Reeking Gill south 2.	NZ69330045	(4)	4	4	2nd nest. 4 pulli on 21/6 at Day 2 stage. Fledged
2013	Hob Crag quarry 2nd	SE71389542	4	0	0	2nd nest first clutch. Predated at egg stage.
2013	Hob Crag quarry 3rd	SE71449539	4	3	2	3rd nest second clutch. 3 hatched 20/5. 2 pulli in nest on 1/6.
2013	Hob Crag quarry 4th	SE71379543	4	4	4	4th nest third clutch.
2013	Hob Crag north	SE71189566	3	3	0	Late 2nd nest. 3 eggs on 27/6. Hatched 4/7. Predated.
2013	Sheriff's Pit 1.	SE69729626	+	2	2	1st nest. Look to be 2 pulli. 2 fledglings seen near nest on 27/5.
2013	Sheriff's Pit 2.	SE69729626	+	3	3	2nd nest. Look to be 3 pulli at possibly at Day 8 stage on 24/6.
2013	Round Hill west	SE69259705	4	4	4	1st nest (late). 4 pulli seen in nest 10/6. Fledged 11/6.
2013	Round Hill south 1.	SE69689671	4	3	3	1st nest. Still in nest on 30/5. Likely fledged 31/5. 1 egg broken.
2013	Round Hill south 2.	SE69599670	4	4	3	2nd nest. 1 just hatched, 1hatching, on 1/7. 1 dead left in nest.
2013	Blakey Lion north	SE68049997	(4)	4	4	1st nest. Likely to have fledged after 12 days.
2014	Round Hill west	SE69269706	4	4	3	1st nest. 3 pulli seen on 12/5. Fledged 15/5.
2014	Round Hill west	SE69249709	4	4	0	2nd nest. 4 pulli seen at Day 6 on 19/6. Predated between D6 & 10.
2014	Round Hill east	SE69419681	4	4	4	1st nest. 1 egg 3 pulli just hatched on 12/5. 4 pulli 19/5 7 days old.
2014	Blakey Lion south	SE68269954	4	4	4	1st nest.
2014	Hob Crag quarry	SE71379543	4	4	0	1st nest. Predated at chick stage.
2014	Thorgill Bank quarry	SE70739582	3	+	0	1st nest. Predated at chick stage. 2 eggs 1 pullus just hatched 5/5.
2014	Thorgill Head	SE69909568	5	4	0	Replacement nest. Found predated 7/6 4 pull1 3 days 1 egg left.
2014	Matty Carr quarry	SE68809836	4	4	3	1st nest. 4 pulli 4 days old on 19/5. Likely fledged 28/5 at 12 days.
2014	Spindle Thorn	SE71319313	4	4	4	1st nest. 4 pulli seen at Day 11 on 20/5. Fledged 23/5 at 13 days.
2014	Sheriff's Pit	SE69799625	(4)	4	4	1st nest. 4 pulli 29/5 11 days. Nest empty & 2 dead near nest 31/5.
2014	Sheriff's Pit	SE69739628	(3)	3	3	2nd nest. 3 pulli on 30/6 at Day 8/9. Fledged 6/7.
2014	Reeking Gill west	NZ69030069	4	0	0	1st nest. 4 eggs on 30/4. Predated at egg stage.
2014	Reeking Gill quarry	NZ69170053	4	0	0	1st nest. 4 eggs on 30/4. Predated at egg stage.
2014	Reeking Gill south	NZ69280044	4	4	4	1st nest. 4 days old on 13/5. Fledged at 11 days.
2014	Reeking Gill	NZ69120066	4	(4)	3	2nd nest. 2 pulli just hatched & 2 eggs on 17/6. 3 pulli on 28/6.
2014	Nab Scar south	SE69529986	4	0	0	Replacement nest? F. sitting on 4 eggs on 21/5. Predated.
2014	Farndale - Breckon Bank	SE68699508	4	4	4	1st nest. 2 eggs & 2 pulli hatched 5/5. Fledged 18/5 at 13 days.
2014	Farndale - High Blakey Moor	SE66679945	4	4	4	1st nest. Fledged 22/5 at 12 days.
2014	Esklets -Esklets Crags south	NZ66250159	4	4	?	1st nest. 4 pulli on 15/5, 4 days old. Nest not checked after 15th.
2014	Esklets -Esklets Crags north	NZ65910236	4	4	?	1st nest. 4 pulli on 15/5, 4 days old. Nest not checked after 15th.
2015	Spindle Thorn	SE71319320	4	4	4	1st nest. 4 pulli just hatched 25/5. Likely fledged 5/6.
2015	Bank Top	SE71799497	4	1	0	1st nest. 1 pullus & 3 eggs on 12/5. Found predated 20/5.
2015	Bank Top	SE71749480	(3)	3	3	Replacement nest. 3 pulli on 16/6 at 9days. Fledged 19/6.
2015	Hob Crag quarry	SE71429536	4	?	0	1st nest. 4 eggs 12/5. Found predated 20/5.
2015	Hob Crag north	SE71239558	4	0	0	1st nest. 4 eggs 12/5. 4 eggs 20/5 & nest abandoned.
2015	Thorgill Bank quarry	SE70749586	4	0	0	1st nest. 1 egg 8/5, 4 eggs 12/5. Found predated 22/5.
2015	Thorgill Bank west	SE70549571	4	4	4	Replacement nest for TB quarry. 4 pulli 3 days 6/6. Fledged 19/6.
2015	Sheriff's Pit	SE69739627	(4)	4	3	1st nest. 4 seen 22/5, 3 seen 26/5 about to fledge.
2015	Round Hill east	SE69419681	4	3	0	1st nest. 3 pulli & 1 egg on 12/5. Found predated 20/5.
2015	Blakey Lion south	SE68209960	3	0	0	1st nest. 3 eggs removed from nest. Nest predated.
2015	Reeking Gill	NZ69210076	4	1	1	1st nest. 4 eggs 11/5. 1 pullus no eggs 20/5. Likely fledged 26/5.
2015	Reeking Gill	NZ69120066	4	4	4	2nd nest. 4 eggs 9/6. 1 hatch 3 eggs 15/6. Likely fledged 29/5.
2015	Nab Scar north	SE69449997	3	2	2	1st nest. 3 eggs 11/5. 2 pulli no egg 20/5. Likely fledged 27/5.
2015	Round Hill west	SE69249709	+	+	3	1st nest. 3 juvs being fed by adults 26/5. Likely fledged 26/5.
2015	Bank Top east	SE72--94--	+	+	3	Fledglings seen being fed by Adults 9/6 & 16/6.

? = Outcome unknown + = Exact value unknown (4) = Most likely value

ANNEX 4 - Table of Nest Aspect and Elevation from 1999 to 2015

Table 1: Aspect & elevation of nest sites mainly in the Rosedale area of the North York Moors.

Year	Location	Grid Reference	Aspect	Elevation
1999	Rosedale - Sheriff's Pit	SE 6973 9627	NNW	331m
1999	Blakey Crossing	SE 6830 9900	SSW	370m
2000	Spaunton Moor - Penwash	SE 7147 9347	SSW	240m
2002	Rosedale - Bank Top	SE 7204 9483	NNW	310m
2003	Rosedale - Round Hill	SE 6927 9710	N	336m
2003	Rosedale - Hobb Crag	SE 7145 9538	NNE	313m
2003	Rosedale - Thorgill Head	SE 6999 9559	NNE	330m
2003	Rosedale - Thorgill Bank	SE 7073 9580	NE	308m
2003	Spaunton Moor - Penwash	SE 7148 9347	NE	249m
2003	Rosedale - Thorgill Bank	SE 7072 9582	ENE	309m
2004	Rosedale - Matty Carr Hill	SE 6880 9833	E	358m
2004	Rosedale - Sheriff's Pit	SE 6971 9626	SSE	331m
2004	Rosedale - DaleHead (east)	NZ 6856 0086	SW	330m
2005	Rosedale - Sheriff's Pit	SE 6971 9626	NE	339m
2005	Rosedale - Blakey Lion	SE 6824 9954	ENE	362m
2005	Rosedale - Dale Head (west)	NZ 6796 0082	E	349m
2005	Rosedale - Sheriff's Pit	SE 6971 9626	ESE	333m
2005	Rosedale - Matty Carr Hill	SE 6880 9835	SE	331m
2005	Rosedale - Sheriff's Pit	SE 6971 9626	SW	331m
2006	Rosedale - Sheriff's Pit (south)	SE 6979 9610	N	339m
2006	Rosedale - Dale Head (west)	NZ 6793 0080	E	362m
2006	Rosedale - Sheriff's Pit	SE 6971 9626	ESE	333m
2007	Rosedale - Reeking Gill (west)	NZ 6892 0066	N	321m
2007	Rosedale - Round Hill (south)	SE 6981 9664	NNE	297m
2007	Rosedale - Hob Crag	SE 7138 9546	E	313m
2007	Rosedale - Dale Head (west)	NZ 6794 0079	S	357m
2008	Rosedale - Round Hill (south)	SE 6981 9664	NNE	297m
2008	Rosedale - Hob Crag 1st	SE 7144 9539	NNE	310m
2008	Rosedale - Hob Crag 2nd	SE 7139 9545	NE	313m
2008	Northdale - West Gill	SE 7179 9957	NE	308m
2008	Rosedale - Dalehead (north)	NZ 6795 0102	NE	353m
2008	Rosedale - Sheriff's Pit	SE 6971 9626	SSE	331m
2008	Rosedale - Sturdy Bank 1st	SE 6989 9991	W	307m
2008	Rosedale - Sturdy Bank 2nd	SE 6986 9990	SSW	281m
2008	Rosedale - Reeking Gill	NZ 6914 0056	W	322m
2009	Rosedale - Reeking Gill	NZ 6924 0076	S	359m
2009	Rosedale - Sturdy Bank	SE 6987 9991	SW	282m
2009	Rosedale - Dale Head (west)	NZ 6794 0079	S	357m
2009	Rosedale - Round Hill (south)	SE 6953 9674	NE	330m
2009	Rosedale - Sheriff's Pit	SE 6972 9627	NE	345m
2010	Rosedale - Sturdy Bank	NZ 6988 0004	W	324m
2010	Rosedale - Hob Crag (1st & 2nd)	SE 7138 9544	NE	315m
2010	Rosedale - Sheriff's Pit	SE 6973 9627	NE	340m
2010	Rosedale - Round Hill (central)	SE 6943 9690	ENE	328m
2010	Rosedale - Reeking Gill	NZ 6908 0068	SE	317m
2010	Rosedale - Reeking Gill cutting 1st	NZ 6879 0066	S	328m
2010	Rosedale - Reeking Gill cutting 2nd	NZ 6886 0068	SE	329m
2010	Rosedale - Dalehead (quarry west)	NZ 6828 0082	S	281m
2010	Bransdale - Ousegill 1st	SE 6400 9511	W	250m
2010	Bransdale - Ousegill 2nd	SE 6398 9497	E	250m
2010	Bransdale - Ousegill Bridge	SE 6392 9444	W	225m
2011	Rosedale - Hob Crag (north)	SE 7123 9557	NW	313m
2011	Rosedale - Thorgill Bank	SE 7066 9580	NW	307m
2011	Rosedale - Sheriff's Pit	SE 6972 9627	SE	343m
2011	Rosedale - Round Hill (east)	SE 6945 9685	E	321m
2011	Rosedale - Round Hill (west)	SE 6926 9706	NE	352m
2011	Rosedale - Matty Carr quarry	SE 6880 9836	NW	343m
2011	Rosedale - Dalehead (north)	NZ 6805 0125	SW	341m
2011	Rosedale - Dalehead (west) 1st	NZ 6793 0081	SW	352m
2011	Rosedale - Dalehead (west) 2nd	NZ 6794 0080	SW	347m
2011	Rosedale - Dalehead (east)	NZ 6865 0076	NE	328m
2011	Rosedale - Dalehead quarry (west) 1st & 2nd	NZ 6830 0085	E	296m
2011	Rosedale - Reeking Gill 1st	NZ 6915 0072	S	333m
2011	Rosedale - Reeking Gill 2nd	NZ 6917 0071	S	319m
2011	Rosedale - Nab Scar north 1st	SE 6945 9996	SW	337m
2011	Rosedale - Nab Scar north 2nd	NZ 6944 0000	SW	339m
2011	Rosedale - Sturdy Bank 1st	NZ 6987 0005	E	343m
2011	Rosedale - Sturdy Bank 2nd	SE 6987 9994	W	288m
2011	Bransdale - Ousegill	SE 6396 9475	E	240m

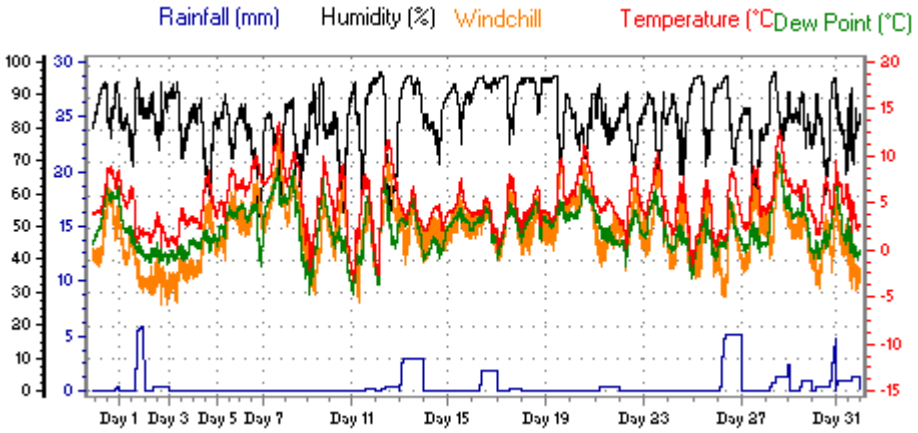
Year	Location	Grid Reference	Aspect	Elevation
2012	Rosedale - Sheriff's Pit (north)	SE 6968 9643	N	343m
2012	Rosedale – Round Hill (south)	SE 6944 9670	NW	350m
2012	Rosedale - Dalehead (west)	NZ 6794 0080	SW	347m
2012	Rosedale - Reeking Gill cutting	NZ 6881 0067	S	328m
2012	Rosedale - Reeking Gill	NZ 6919 0066	N	334m
2012	Rosedale - Nab Scar (south)	SE 6949 9988	SSW	330m
2012	Rosedale - Sturdy Bank	SE 6985 9996	SSE	300m
2012	Rosedale - Blakey Lion	SE 6823 9960	E	366m
2012	Rosedale - Matty Carr (south)	SE 6888 9819	SSE	357m
2012	Rosedale - Round Hill (west)	SE 6926 9706	NE	352m
2012	Rosedale - Nab Scar (north)	NZ 6943 0006	SSW	345m
2012	Rosedale - Sheriff's Pit	SE 6972 9627	SE	343m
2012	Rosedale - Matty Carr quarry	SE 6880 9835	SE	331m
2013	Rosedale - Hob Crag quarry 1st (abandoned)	SE 7137 9543	-	-
2013	Rosedale - Hob Crag quarry 2nd (predated)	SE 7138 9542	NW	305m
2013	Rosedale - Hob Crag quarry 3rd 1st fledged	SE 7144 9539	N	295m
2013	Rosedale - Hob Crag quarry 4th 2nd fledged	SE 7137 9543	NE	304m
2013	Rosedale - Hob Crag north	SE 7118 9566	E	314m
2013	Rosedale - Thorgill Bank	SE 7075 9584	ENE	294m
2013	Rosedale - Sheriff's Pit 1st & 2nd	SE 6972 9626	SE	343m
2013	Rosedale - Round Hill south 1st	SE 6968 9671	NNE	279m
2013	Rosedale - Round Hill south 2nd	SE 6959 9670	ENE	307m
2013	Rosedale - Round Hill west	SE 6925 9705	ENE	344m
2013	Rosedale - Blakey Lion north	SE 6804 9997	E	365m
2013	Rosedale - Dalehead west	NZ 6794 0079	E	354m
2013	Rosedale - Reeking Gill cutting	NZ 6887 0065	N	335m
2013	Rosedale - Reeking Gill 1st	NZ 6924 0079	SE	370m
2013	Rosedale - Reeking Gill 2nd	NZ 6950 0083	SSE	392m
2013	Rosedale - Reeking Gill south 1st	NZ 6929 0043	WSW	358m
2013	Rosedale - Reeking Gill south 2nd	NZ 6933 0045	WSW	367m
2014	Rosedale west - Round Hill west 1st	SE69269706	NE	350m
2014	Rosedale west - Round Hill west 2nd	SE69249709	E	351m
2014	Rosedale west - Round Hill east	SE69419681	NE	339m
2014	Rosedale west - Blakey Lion south	SE68269954	E	369m
2014	Rosedale west - Hob Crag quarry	SE71379543	NE	304m
2014	Rosedale west - Thorgill Bank	SE70739582	E	308m
2014	Rosedale west - Thorgill Head	SE69909568	WSW	331m
2014	Rosedale west - Matty Carr quarry	SE68809836	W	327m
2014	Rosedale west - Spindle Thorn	SE71319313	NW	218m
2014	Rosedale west - Sheriff's Pit 1st	SE69809625	E	337m
2014	Rosedale west - Sheriff's Pit 2nd	SE69739627	NNE	340m (ground level 343m)
2014	Rosedale east - Reeking Gill west	NZ69030069	S	318m
2014	Rosedale east - Reeking Gill quarry	NZ69170053	S	310m
2014	Rosedale east - Reeking Gill south	NZ69280044	WSW	358m
2014	Rosedale east - Reeking Gill	NZ69120066	SW	307m
2014	Rosedale east - Nab Scar south	SE69529986	SSW	332m
2014	Farndale east - Breckon Bank	SE68699508	SSW	315m
2014	Farndale east - High Blakey Moor	SE66679945	SSE	373m
2014	Esklets east - Esklets Crags south	NZ66250159	SW	309m
2014	Esklets east - Esklets Crags north	NZ65910236	SW	287m
2015	Rosedale - Thorgill Bank quarry	SE 7075 9584	ENE	294m
2015	Rosedale - Thorgill Bank west	SE 7055 9572	NNW	316m
2015	Rosedale - Sheriff's Pit 1st	SE 6972 9626	SE	343m
2015	Rosedale - Spindle Thorn	SE 7131 9320	E	228m
2015	Rosedale - Bank Top 1st	SE 7179 9497	SSE	321m
2015	Rosedale - Bank Top 2nd (replacement)	SE 7174 9480	NE	321m
2015	Rosedale - Round Hill east	SE 6941 9681	NE	339m
2015	Rosedale - Hob Crag	SE 7142 9536	NE	315m
2015	Rosedale - Hob Crag north	SE 7123 9558	SW	315m
2015	Rosedale - Blakey Lion south	SE 6823 9960	NE	363m
2015	Rosedale - Reeking Gill 1st	NZ 6924 0079	S	358m
2015	Rosedale - Reeking Gill 2nd	NZ 6913 0065	SW	304m
2015	Rosedale - Nab Scar north	SE 6944 0001	W	343m

ANNEX 5 - Table of Late:Early Territory Occupancy from 2008 to 2015

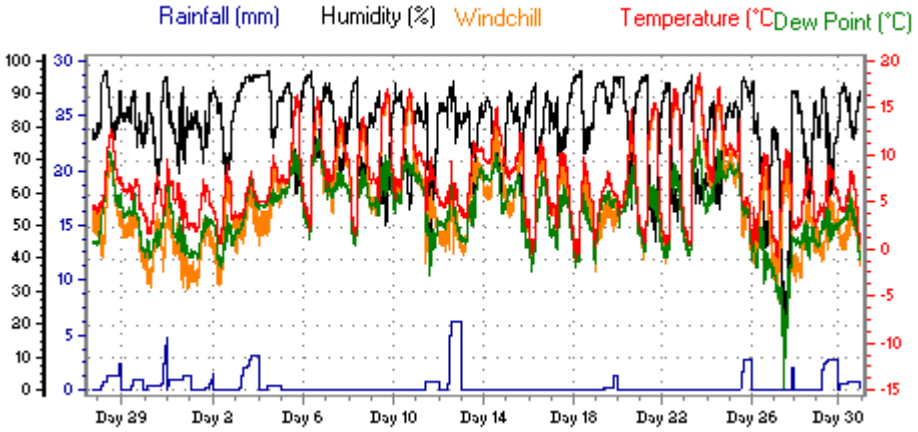
Table 1: Late and Early territory occupancy in the Rosedale area of the North York Moors between 2000 and 2015.

Territory	Occupancy															
	2008		2009		2010		2011		2012		2013		2014		2015	
	Early	Late	Early	Late	Early	Late	Early	Late	Early	Late	Early	Late	Early	Late	Early	Late
Spindle Thorn		✓							✓			✓	✓		✓	
Bank Top							✓		✓		✓		✓		✓	✓
Bank Top east															✓	
Hob Crag quarry	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓✓	✓	✓	
Hob Crag north										✓	✓	✓			✓	✓
Thorgill Bank quarry							✓	✓	✓		✓	✓	✓		✓	
Thorgill Head													✓			
Thorgill Bank west																✓
Sheriff's Pit	✓			✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	
Round Hill south	✓	✓	✓						✓		✓	✓	✓			
Round Hill east	✓	✓	✓	✓	✓		✓		✓				✓		✓	
Round Hill west							✓		✓	✓	✓		✓	✓	✓	
Sledge Shoe			✓							✓	✓	✓	✓		✓	✓
Matty Carr south										✓					✓	
Matty Carr quarry	✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Blakey Lion south									✓		✓		✓		✓	
Blakey Lion north											✓					
Blakey Swang north	✓															
Dalehead west			✓				✓	✓	✓		✓					
Dalehead north	✓	✓			✓		✓			✓			✓			
Dalehead east								✓								
Dalehead quarry east					✓	✓					✓					
Dalehead quarry west						✓	✓	✓	✓							✓
Reeking Gill cutting	✓				✓	✓			✓		✓					
Reeking Gill west													✓			
Reeking Gill	✓		✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓
Reeking Gill quarry	✓											✓	✓			
Reeking Gill south							✓				✓	✓	✓	✓		
Nab Scar north			✓		✓	✓	✓	✓		✓	✓	✓		✓	✓	
Nab Scar south					✓				✓				✓			
Sturdy Bank	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓		✓		✓	
Total	11	6	8	5	11	7	13	10	16	9	18	12	19	7	15	6
Occupancy	0.54		0.62		0.64		0.77		0.56		0.67		0.37		0.40	

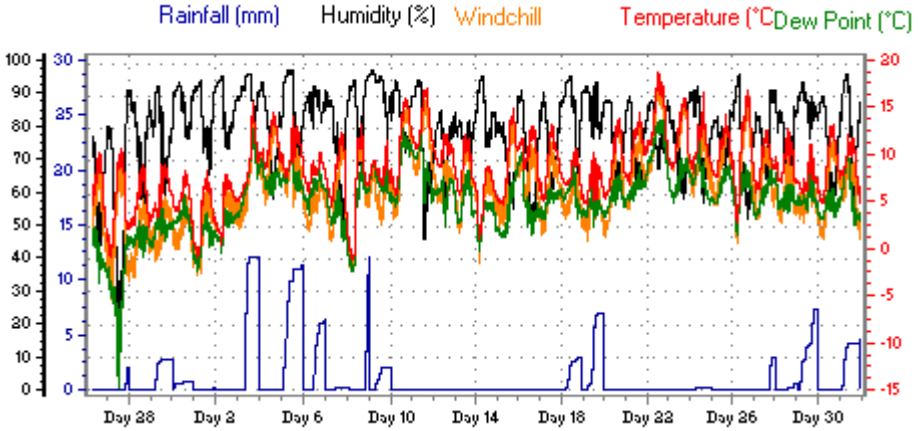
ANNEX 6 - Graphs of Daily Max/Min Temperature & Rainfall for the Months March to July



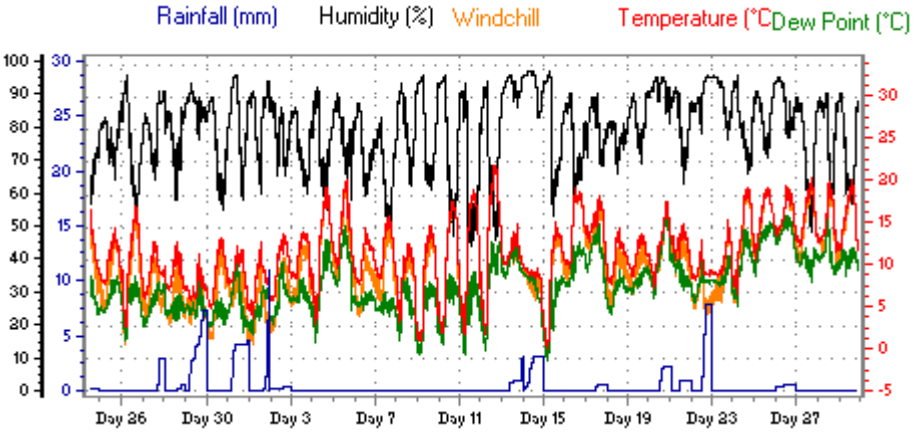
March



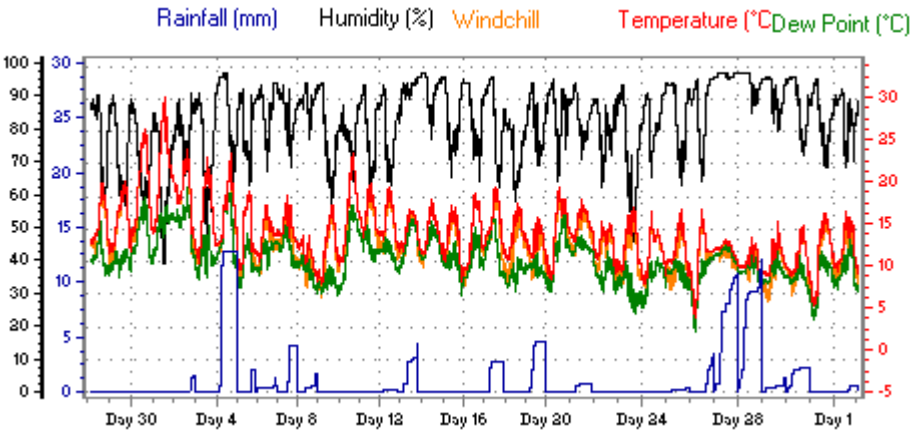
April



May



June



July

Daily max/min temperature & rainfall recorded at Westerdale, NZ665058, altitude 180m, in 2015.