

ESTIMATED RING OUZEL (*Turdus torquatus*) POPULATION IN THE NORTH YORK MOORS

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North York Moors

The North York Moors are located in north-east England, to the south-east of Middlesbrough and to the north-east of York. It is predominantly an upland area, dominated by open heather moorland that is intersected by long valleys (dales) that are largely orientated north-west to south-east. The North York Moors contain the largest continuous tract of open heather moorland in England and Wales and has SSSI and SPA status. The habitat favoured by the Ring Ouzel lies in the western half of the upland area, where land elevation rises significantly above the 250 metres contour. The moorland area covers around 490 km² of which up to 288 km² (59%) could contain suitable breeding habitat for the Ring Ouzel. The North York Moors is the most easterly breeding ground for the Ring Ouzel in Great Britain and stands isolated from the nearest population in the Yorkshire Dales some 50 km to the west.

National Population and Trend

The British breeding population of Ring Ouzels has been in decline since the early twentieth century and a 27% reduction in the British breeding range was apparent between the two national atlases of 1968-72 and 1988-91 (Sharrock 1976; Gibbons *et al.* 1993). The first national Ring Ouzel survey in 1999 estimated the UK population at 6,157-7,549 pairs (1,523-1,654 pairs in England), with further range contraction and a likely 58% decline in population numbers since the 2nd atlas (Wotton *et al.* 2002). This resulted in the Ring Ouzel being Red-listed in 2003 and made a priority Bio-diversity Action Plan species in the UK.

North York Moors Population and Trend

The national survey data indicated that there was a North York Moors decrease in distribution between the two atlases of 38% with the number of 10km squares where confirmed and probable breeding had been recorded falling from 9 to 5. Provisional data from the 2007-11 3rd atlas suggests a continuing downward trend.

There are a number of problems in trying to arrive at a reliable estimate of Ring Ouzel population and trends on the North York Moors.

There is a surprising shortage of published accounts of Ring Ouzel records from the North York Moors and no dedicated study to use as a benchmark. Survey work for the two national atlases required field workers to record data for all bird species during their visits and data was published only at the 10km square level. Whilst appropriate and the only viable approach for a national survey, this methodology provides an incomplete local picture.

The first national Ring Ouzel survey in 1999 was inevitably restricted to a random selection of squares so coverage on the North York Moors was quite limited and not all squares selected were surveyed.

An elusive upland species like the Ring Ouzel which frequently nests in remote areas, often not easy to access, is a difficult and time consuming species to monitor. A dedicated survey, preferably by a field worker with experience of the species is clearly beneficial if a reliable population estimate is to be obtained.

North York Moors Study

In view of the national decline and the paucity of data on Ring Ouzel numbers and distribution on the North York Moors a local study was commenced in 1999. Records were sought in tetrads containing suitable habitat throughout the area but a core study area was identified in Rosedale in order to monitor this discrete population more intensively over a long time period.

This approach produced extensive and detailed records for 5 tetrads but information on distribution and numbers for the remaining tetrads in the North York Moors was limited to and dependent on a smaller number of occasional records from the study members and casual records from interested contacts.

The offer of help from a volunteer seeking a sabbatical project in 2010 provided an opportunity to significantly enhance the wider records. Provided with grid references of all previous locations a detailed search was carried out across the North York Moors to identify suitable breeding sites and to record Ring Ouzel sightings and breeding status (Tyas 2010). This effort updated and added considerably to existing tetrad records and provided an excellent opportunity to produce a realistic estimate of the Ring Ouzel population on the North York Moors for the first time.

Findings of the 2010 Survey

Annex 1 shows the criteria used to assess the breeding status.

Annex 2 shows all Ring Ouzel records for the North York Moors between 1999 and 2011 combined with data from the 2010 survey.

The map at Annex 3 shows the tetrads that contain suitable breeding habitat and where Ring Ouzel sightings were recorded in 2010. From this it can be seen that in 2010 Ring Ouzels were recorded in 25 of the 72 tetrads (35%) assessed as having some suitable breeding habitat. Breeding was Confirmed in 6 (24%) of the 25 tetrads, Probable in 9 (36%) and Possible in 10 (40%). The map also shows those tetrads where nothing was found during the 2010 survey but where records show breeding had taken place over a number of years between 1999 and 2011.

Annex 4 shows the location of all the territories recorded in Rosedale between 1999 and 2011.

North York Moors Population Estimate

A total of 28 Confirmed and Probable breeding pairs were recorded in 15 tetrads during 2010 - an average breeding density of 1.86 pairs per tetrad. When the records of Possible breeding in 2010 are considered, then a further 16 pairs could be added putting the total number of breeding pairs at 44.

In the 2010 survey it was not possible to visit or conduct a thorough search of all tetrads containing suitable habitat and many tetrads only received one visit. As a consequence some breeding pairs may have escaped detection. Given the 2010 survey found nothing in 47 (65%) of the tetrads considered to have suitable breeding habitat, the population estimate is likely to be higher than the above suggests.

If those tetrads are taken into consideration where nothing was found in 2010 but where breeding has been evident for a number of years during the study period, then a further 10 occupied tetrads could be considered. At a density of 1.86 pairs per tetrad this would increase the number of breeding pairs by 19 to 63.

Combining the data obtained in 2010 with the data and experience gained over the 13 years of the study then a conservative...

population estimate for the North York Moors lies within the range 44 to 65 breeding pairs

...representing about 1% of the breeding population in Great Britain and 4% of the population in England.

Discussion

The 12 territories recorded in the Rosedale core study area in 2010 were slightly higher than the average of 11.5 recorded between 2004 and 2010.

A breeding density of 0.47 pairs/km² (1.86 pairs per tetrad) recorded in 2010 is low compared to figures given for populations in Scotland where densities of 4.2 to 6.4 pairs/km² were recorded in Glen Esk and 0.9 to 1.2 pairs/km² in the contrasting Moorfoots between 1998-2000 (Burfield 2002).

In Wales an average density of 1.2 to 1.4 pairs/km² were recorded in the more recent 2009/10 Snowdonia survey (Driver 2011).

The greatest density found in the Rosedale core study area was 3 pairs/km² recorded in 2010 and 2011; this was confined to just one 1km square in the north of the dale. Similar density levels of 2-4 pairs/km² were found in some areas of Snowdonia.

Due to the low-lying nature of the terrain when compared with other study areas, most territories in the North York Moors are confined to a narrow altitudinal band lying between the 250 and 400 metre contours. The highest point lies at 454 metres on Urra Moor. In the Rosedale study area the lowest nest was found at 245 metres and the highest at 362 metres with the mean altitude being 313 metres. Climate change is likely to pose serious problems for the North York Moors population,

Finally, it is instructive to consider the ring ouzel carrying capacity of the North York Moors based on the above data. Taking the 72 tetrads identified as having suitable breeding habitat, then at a breeding density of 1.86 pairs per tetrad the minimum number of breeding ring ouzels that the North York Moors could support is put at 134 pairs. However, if it is assumed that the 37 currently unoccupied tetrads are somewhat less suitable for breeding than the occupied tetrads then the breeding density in these squares may be less than the current average of 1.86 pairs. In that case an estimated carrying capacity of 134 pairs would be a little high. Conversely and to offset this, there is no evidence to suggest that the occupied territories have reached full capacity, even in the more densely populated tetrads found in Rosedale. Evidence from other studies suggests that there could still be additional capacity in the occupied tetrads and if the marginal outlying tetrads which have held breeding pairs in the past but were not included in the current population estimate are taken into consideration, then the potential carrying capacity could conceivably be greater than the estimated 134 pairs. To conclude, the above evidence suggests that in the North York Moors the breeding habitat is unlikely to be a restraining factor in an expanding ring ouzel population.

Acknowledgement

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ANNEX 1

BREEDING STATUS	CRITERIA
Possible	<ul style="list-style-type: none">• Single bird observed in suitable nesting habitat.• Male seen or heard singing on one survey date only.
Probable	<ul style="list-style-type: none">• 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.
Confirmed	<ul style="list-style-type: none">• Nest found with eggs or chicks.• Recently fledged young seen.• Adult seen carrying food.

ANNEX 2

RING OUZEL RECORDS FOR THE NORTH YORK MOORS BETWEEN 1999-2011

Tetrad	Grid Ref.	Place	Date	Comment
SE49V	494919	Thorodale Head	04.05.00.	Pair.
	485913	Kepwick Quarry	12.05.03.	Pair.
	486914		10.04.09.	6 males. Passage?
	486909	Clarke Scars north.	24.04.10.	Five RZs.
	486914		24.04.10.	1m & 1f.
SE49W	491928	White Gill Head	04.05.00.	Pair.
	484922	Kepwick Moor	19.05.08.	1male.
	491931		10.04.09.	Male to lure.
	487929		10.04.09.	Male to lure.
	487928	Whitestone Scar	31.03.10.	Male.
	482934	Whitestone Scar, gill NW.	24.04.10.	Single call.
	497923	West of Wild Middle.	08.05.10.	Male.
SE49Y	491971	Osmotherley Moor.	20.04.00.	Female.
SE49Z	495992	Piper Grain.	20.05.02.	Pair.
NZ50F	529015	Staindale Farm.	15.04.03.	2 pairs.
	529015	Staindale Farm.	10.05.06.	Pair.
NZ50V	591003	North Gill, sheepfold.	12.04.10.	Pair.
	593002	Tripsdale Head	12.04.10.	Pair in flight.
NZ50W	581021	Cowkill Well.	13.06.02.	Male.
	581021		01.05.10.	Male.
NZ51V	595111	Great Ayton Moor.	19.04.00.	Pair.
	599117		19.04.00.	Male.
SE59A	511915	Harker Yates.	10.04.09.	Male.
SE59B	507930	Arden Great Moor.	10.04.09.	Male.
	502931	Arden Great Moor.	10.04.09.	Male.
	503931	Gill above Locker Woods.	24.04.10.	Pair.
	502935	Arden Great Moor.	24.04.10.	Male song.
	508921	East of Harker Yates.	24.04.10.	Pair.
SE59D	520969	Proddale Sike	29.04.10.	Male.
SE59H	537955	Parci Gill mid.	30.04.10.	Male.
SE59I	535971	Head House.	14.04.00.	Pair.
	535971		19.07.00.	Pair & juvenile.
	537974		14.04.00.	Pair.
	534967		22.04.03.	Four RZs.
	538975		10.05.06.	Pair cf.
	534971		10.05.06.	Male.
	536974		11.04.09.	Male to lure.
	535973		29.04.10.	Pair & five RZs.

SE59M	553947	Wetherhouse in-bye	30.04.10.	Pair.
SE59N	554971	Crookleth Crag west.	30.04.10.	Male.
	551960	Bilsdale Mast.	2009	RZs all season.
SE59Z	582995	Middlehead	13.06.02.	Pair.
	587998	Tripsdale Head east gully.	12.04.10.	Male.
NZ60A	615009	Blowarth Gill	01.05.10.	Pair.
	616015	Blowarth Crossing.	01.05.10.	Three m. & two f.
NZ60B	618036	Armouth Wath.	01.04.00.	Pair.
	605036	Greenhow Bank.	01.05.00.	Pair.
	618036	Armouth Wath.	22.04.02.	2 pairs.
	604034	Greenhow Bank.	01.05.10.	RZ.
	606031	Greenhow Bank.	2009	RZ.
NZ60C	601048	Ingleby Moor	24.04.06.	Pair.
NZ60F	631018	Middle Head east gill.	13.04.10.	Male.
	634014		13.04.10.	Male.
	629010	Middle head Crag.	13.04.10.	Pair.
	628011	Middle head Crag.	29.04.11.	Male/Female.
	635013	East of Middle head Crag.	29.04.11.	Male singing.
NZ60K	659014	Esklets Crag.	18.04.02.	Pair.
	660014		2004	RZ.
NZ60L	649027	Westerdale High House	06.04.00.	Pair.
	649027		18.04.02.	Pair.
NZ60M	645050	Stockdale north slope.	15.04.10.	Pair.
NZ60Q	661019	Esklets Crag middle.	14.04.10.	Male song.
	662015	Esklets Crag south.	14.04.10.	Pair.
	661010	Sweet Banks Gill	14.04.10.	Male.
NZ60R	676033	Stone Rook Hill.	2009	Male song.
NZ60W	684036	High Crag St Helena.	21.04.10.	14 RZ on passage.
NZ61A	600112	Great Ayton Moor	16.04.02.	Male.
	601117		16.04.02.	Pair.
NZ61K	656108	Comondale	26.04.07.	Male - on passage?
NZ61L	646134	Tidkinhow Gully	16.04.02.	Male - on passage?
SE69B	610934	Bonfield Gill/Cinderhill Wath	1999	
			2003	
			2004	
	611931	Pockley Moor.	2005	
			04.05.10.	Male with food.
	610934	Bonfield Gill	11.04.10.	Male.
	610939	Bonfield Gill	28.04.11.	Male singing.

SE69C	609942	Bonfield Gill.	1999	
			2000	
			2002	
			29.04.09.	Pair.
			09.05.09.	Pair.
SE69E	606982	Stump Cross		
SE69H	639946	Ousegill Bridge.	1999-09.	Pair every year.
	635955	Shaw Rigg.	1999-00.	
	635955	Shaw Rigg.	2004-07.	
	639944	Ousegill Bridge south.	12.06.10.	Nest 5 eggs.
	639949	Ousegill.	12.06.10.	5 eggs, 3 pulli.
	640951	Ousegill.	03.05.10.	3 fledged.
	640947	Ousegill Bridge.	02.05.11.	4eggs, predated.
SE69I	634960	Shaw Rigg.	18.04.09.	Male, pair late Apr.
SE69L	656937	Bog House Rudland Rigg.	2005	RZ.
SE69M	650955	Rudland Rigg.	2005	RZ.
SE69P	658999	Hillhouse Nab	29.04.11.	Male.
SE69U	672997	Gill Wath.	1999	
	670999		05.05.06.	RZ.
	672997		30.04.09.	Pair.
	669996	Gill Wath SW Crag.	23.04.10.	Male.
	677992	Round Crag	23.04.10.	Male.
	677993	Round Crag	29.04.11.	Male.
	672997	Gill Wath	29.04.11.	Male.
NZ70B	708035	Danby Rigg, Raven Hill.	08.04.00.	Male.
	714028	Mark Nab.	21.04.10.	Female?
	707028	West of Mark Nab	02.05.11.	Male.
NZ70A	715015	Yew Grain Scar	09.05.09.	Pair.
	715018		05.05.10.	Male.
	713019	Trough Gill	02.05.11.	Male singing.
	705018	Trough Gill.	01.07.11.	F. with food.
NZ71K	744110	Betta Dale Slack	18.04.07.	Pair, passage?

NZ60V

680010		Dalehead North									
99		02		04				08		10	11

680008		Dalehead West.									
		02	03	04	05	06	07		09		11

686009		Dalehead East.									
			03	04							

682005		Dalehead South.									
		02									

685006		Dalehead Quarry South									
										10	11

683008		Dalehead Quarry North.									
										10	11

691007		Reeking Gill.									
99	00	02			05	06	07	08	09	10	11

688007		Reeking Gill Cutting.									
							07	08		10	

692002		Nab Scar North.									
	00		03	04	05	06	07		09	10	11

SE69Y

697963		Sherrif's Pit.									
99	00	02		04	05	06		08	09	10	11

698961		Sherrif's Pit South.									
						06					

694968		Round Hill south.									
		02	03	04	05	06	07	08	09		

694970		Round Hill Central.									
		02	03	04			07	08	09	10	11

693974		Round Hill North.									
		02					07				11

691978		Sledge Shoe.									
	00	02	03	04	05	06			09		11

SE69Z

688983		Matty Carr.		03	04	05	06	07	08	10	11
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690980		Matty Carr South.				05		07			
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681999		Lion Inn.		00	02	03		05		07	
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685998		Blakey Swang.							08		
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695999		Nab Scar South.								10	
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699000		Sturdy Bank.		99	00	02	03			08	09	10	11
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SE79B

716930		Spindle Thorn			02				07			
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715934		Loskey Ridge 1.		00	02	03			06			
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713931		Loskey Ridge 2.				03	04	05				
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SE79C

714954		Hob Crag		00	02	03	04	05	06	07	08	09	10	11
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709958		Thorgill Bank.				03			06					11
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720951		Bank Top.		99	00	02	03			06				11
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SE79E

705989		East Mine.								08			
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718996		North Dale, West Gill.		99						08			
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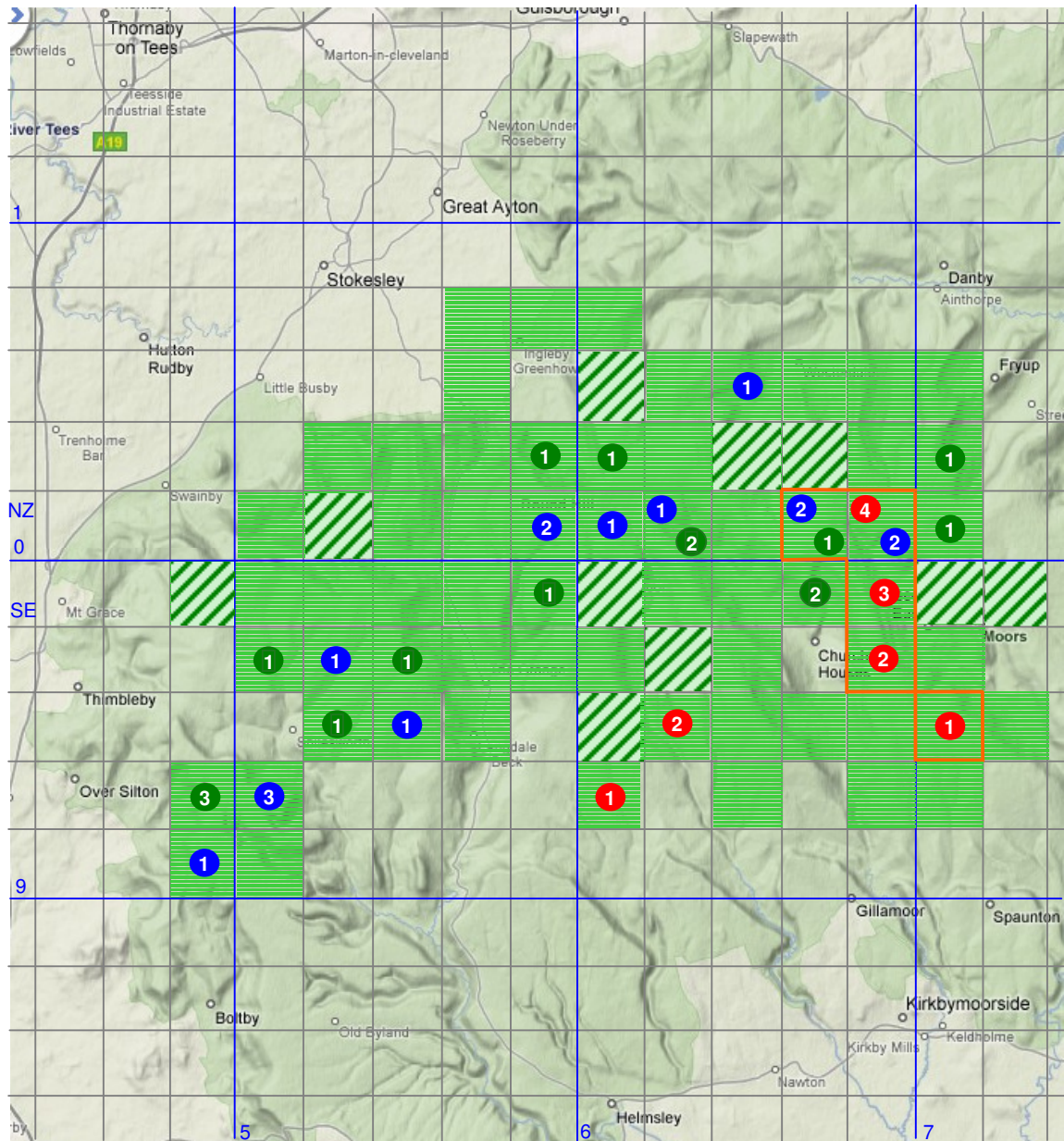
SE79H

725945		Bank Top east.				03		05					
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SE79J

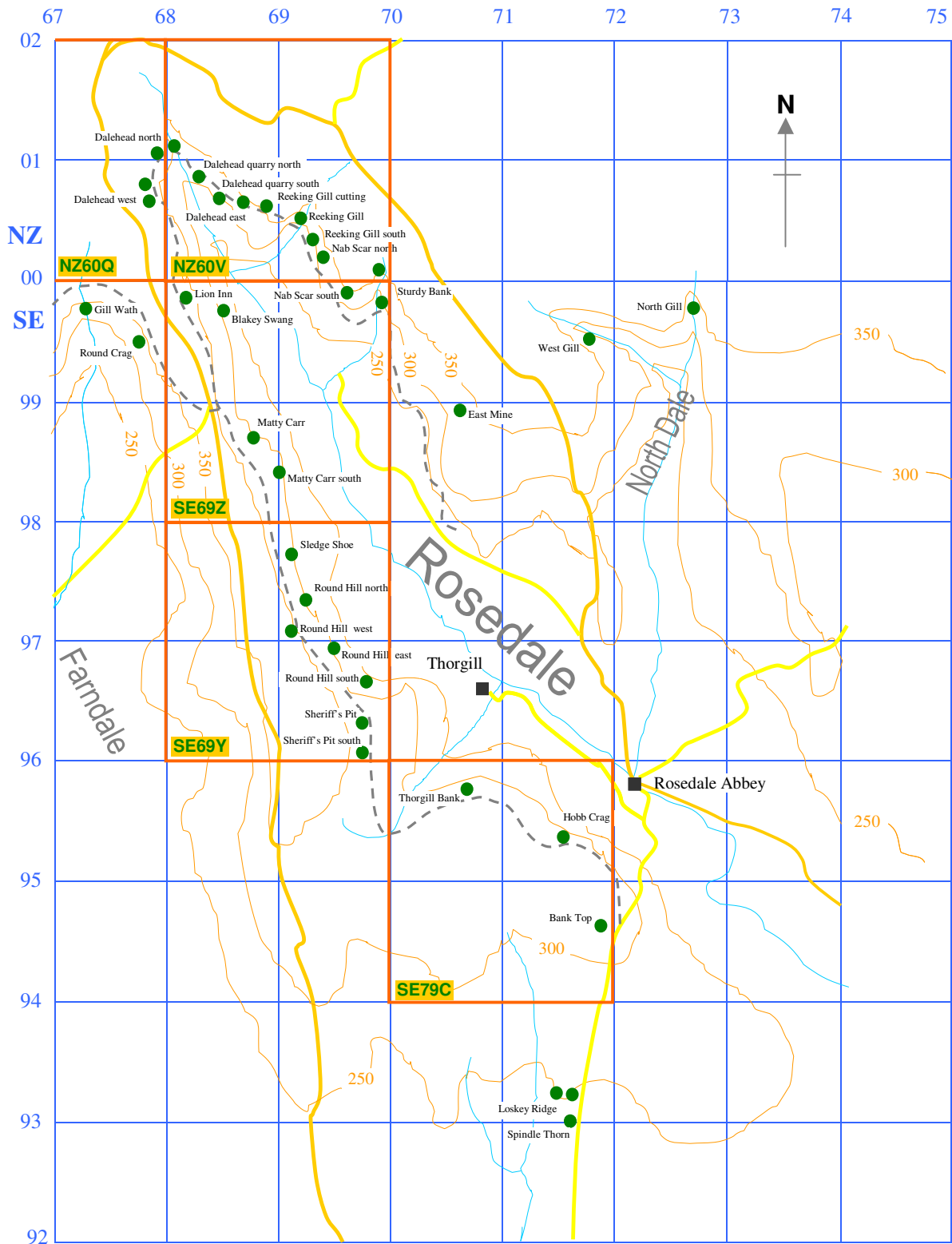
725998		North Dale, North Gill.		99						08			
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ANNEX 3



- 1 Number of Confirmed breeding pairs in tetrad recorded in 2010.
- 1 Number of Probable breeding pairs in tetrad recorded in 2010.
- 1 Number of Possible breeding pairs in tetrad recorded in 2010.
- Tetrad where some or all of the area within the tetrad contains suitable breeding habitat.
- Tetrad where nothing was found during the 2010 survey but where records show breeding had taken place over a number of years between 1999 and 2011.
- Rosedale core study area.

ANNEX 4



Location of the territories recorded in Rosedale and adjoining area between 1999 and 2011 and the five tetrads covering the core study area.