Cumbria Bird Club Rookery Survey: April 1996

Introduction

The rook is a familiar sight over much of agricultural Britain and, at a time when many farmland bird populations are in alarming decline, is actually increasing in many suitable areas. In Cumbria the rook is a very successful bird, especially in the north-western half of the county where grass pasture predominates. Very dry summers as well as very cold winters pose a threat to the rook as in both situations the availability of food decreases substantially with the hardness of the ground. It would seem that climate change (e.g. global warming) could be a cause of serious decline in rook numbers in the future. Changes in numbers and distribution also depend to a large extent on the changing agricultural scene, particularly where it affects the availability of earthworms which are a very important food item. A survey carried out in 1993 in the mainly agricultural county of Dumfriesshire indicated that the rook population was at a high level and was thought to be as much as 50% higher than at any time in the first sixty years of this century. This information coupled with the last major rook survey in Cumbria (1975) and the proposed BTO national sample-tetrad survey of 1996 prompted the Cumbria Bird Club to go ahead with the organisation of a full county survey in the Spring of 1996.

It is entirely due to the interest and dedication of a large number of volunteers that the survey was such a success and the organisers would like to thank everyone who participated.

Method

It is clear that much of the high ground of the central lakes and Pennines is totally unsuitable for rooks as these areas provide few nest sites and only meagre feeding. On the other hand there are large areas of the county where land usage creates a landscape very favourable to rooks. It was decided that we should ignore these assumptions and cover the whole county during the critical period between 6th and 20th April when it was hoped that most nests would be complete and that the foliage would not yet be dense enough to make accurate counting difficult. There are about 50 complete 10km squares in Cumbria and a further 44 with varying areas of land within the county boundary. The Cumbrian part of all 94 of these squares was surveyed regardless of habitat type and regardless of their assumed suitability or otherwise for rooks. A rookery, for the purposes of this survey, was deemed to be any group of nests (or indeed single nest) separated from another group by at least 100m. The use of this standard distance, the same as that used in the last national survey in 1975 and in the BTO's 1996 sample-tetrad survey, increases the validity of any comparisons made. Generally rooks are two or three years old before they breed, therefore the counting of nests alone is not a true indication of total population as this does not include the unknown number of non-breeding one or two-year old birds. However, numerous surveys of occupied nests over a long period of time have provided a good insight into the changing fortunes of this common farmland bird. Primarily, the objective of the survey was to ascertain the total number of rooks nesting in Cumbria but it was decided that other valuable information could be gleaned at the same time. With this in mind the fieldworkers were asked to provide an accurate grid location from which the altitude of the rookery could later be obtained and to record the dominant tree species in the woodlands used by rooks. Information on tree species was thought to be a very important factor in the survey bearing in mind the loss or fragmentation of many of the larger tracts of deciduous woodland this century coupled with findings in the Dumfriesshire survey that showed coniferous trees, especially scots pine, held a significant number of rookeries.

Results: *Density of occupation*

Ninety-four 10km squares gives a total of 2350 tetrads (94 x 25) however, after consultation of the relevant maps, it was found that only 1766 of these tetrads have significant land area in Cumbria. The survey shows that of these 1766 tetrads 653 (37%) were occupied by rooks. In total 44738 nests were counted in 1325 rookeries giving an average rookery size of 34 nests. **Figure 1** shows the number of nests and rookeries found in each 10km square and **Table 1** compares these totals with the 1975 data.

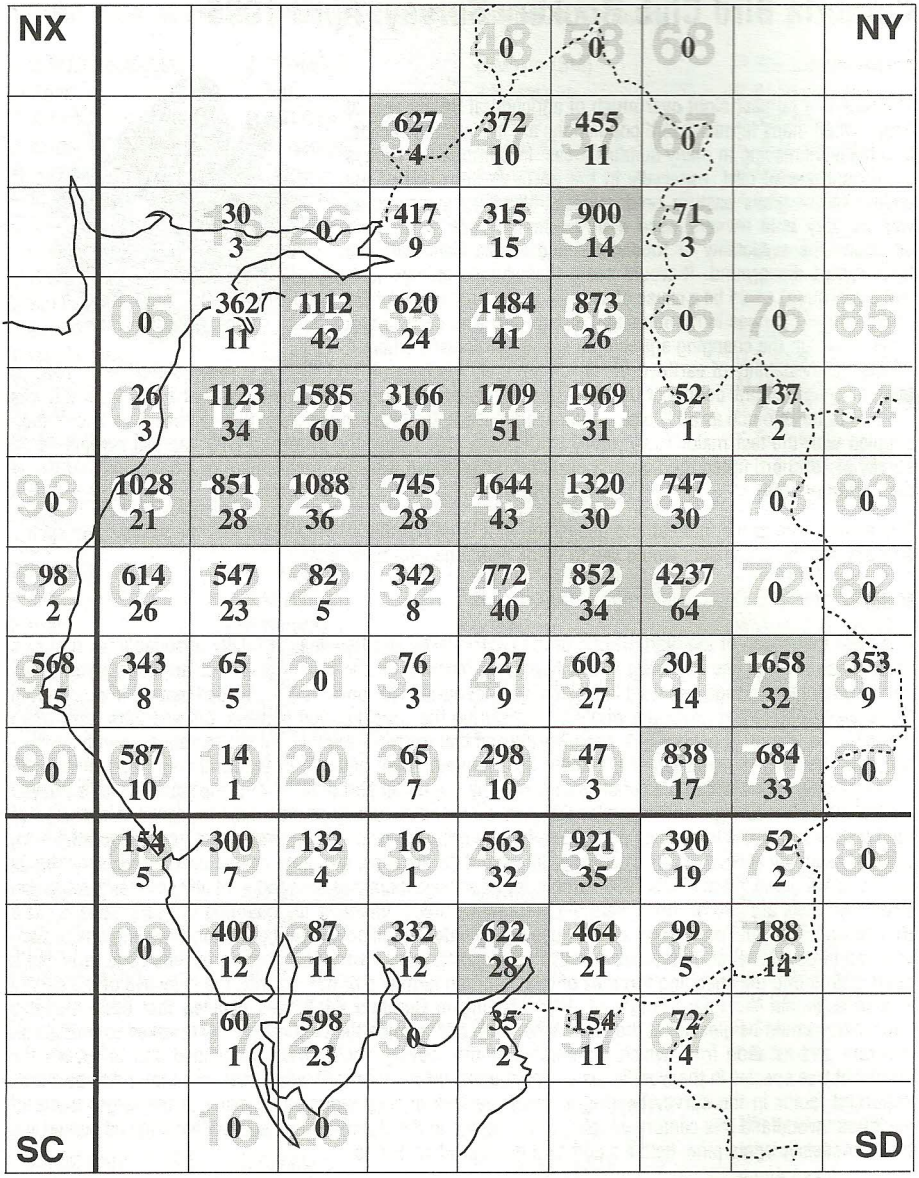

Figure 1: Number of nests (upper figure) and rookeries (lower figure) in each 10km square. Shading shows squares with above average (621 nests/occupied square) density.

Table 1: Comparison of total nests and rookeries found in the 1975 and 1996 surveys

Survey date	Number of rookeries	Number of nests	Average nests per rookery
1975*	894	32755	37
1996	1325	44738	34
difference	+431(+48%)	+11983 (+37%)	-3 (-8%)

* Cumberland and Westmorland

It will be seen from Table 1 that although there are more nests in more rookeries in 1996, the average size is down by 8%. This small reduction in rookery size may reflect a threat to rooks posed by the felling and fragmentation of woodland and could indicate that although the nesting population has increased it may, in future, be constrained as much by the availability of nest-sites as by the other factors drastically affecting farmland birds. The average number of nests in each (occupied) 10km square was 621. In Figure 1 the 10km squares where the number of nests found was greater than this average are shaded. This illustrates the bias in density of occupation and shows that the rook's stronghold is, perhaps unsurprisingly, the northern half of the county, with above average occupation also found in the south-east along the valleys of the rivers Kent, Lune and upper Eden.

Where a comparison can be made (bearing in mind that the 1975 survey covered only 64 of the total of 94 Cumbrian 10km squares.) it was found that 18 10km squares (28%) showed a significant decrease in nests recorded. Of these, six were in the south of the county (SD09, 39, 69, 28, 38 and 58); four straddling the Eden Valley (NY52, 53, 61 and 64); three in the west (NX92, NY11 and 13) and five in the north (NY15, 35, 36, 37 and 46). Forty 10km squares (63%) showed an increase of 10% or more in occupation, ten of which were up by 100% or more. Six 10km squares (9%) were more or less the same in both surveys. When the difference in the density of occupation between the 1975 and 1996 surveys is mapped, it can be seen that, broadly speaking, the county falls into three areas. The north-west has fared quite well, especially from the foothills of the fells down to the Solway Plain, with significant losses only around Moricambe Bay (NY15) and the loss of one large rookery in NX92. The south is a more complex picture, with the main losses being to the north-east of the Furness Peninsula (SD28, 38 and 39) and to the south and east of Kendal (SD58, 69). The area of most concern in the county as a whole is along the Eden Valley and down to the Solway, in particular NY52, 53, 54, 55, 64 and 74, where rooks have decreased or are, at best, just about holding their own. There is no discernible reason for this fall in occupation in such an apparently suitable area. **Figure 2** shows the percentage change from the 1975 survey in number of nests per 10km square.

Rookery size

The present survey found 367 rookeries (28%) containing ten or fewer nests and, of these, 17 were single nests. At the other end of the size scale only 190 rookeries (14%) held over sixty nests (see Table 2)

Table 2 Rookery size

Number of rookeries	Number of nests	% of total (1325)
1 to 60	1135	86
61 to 120	145	11
121 to 180	29	2
180+	16	1

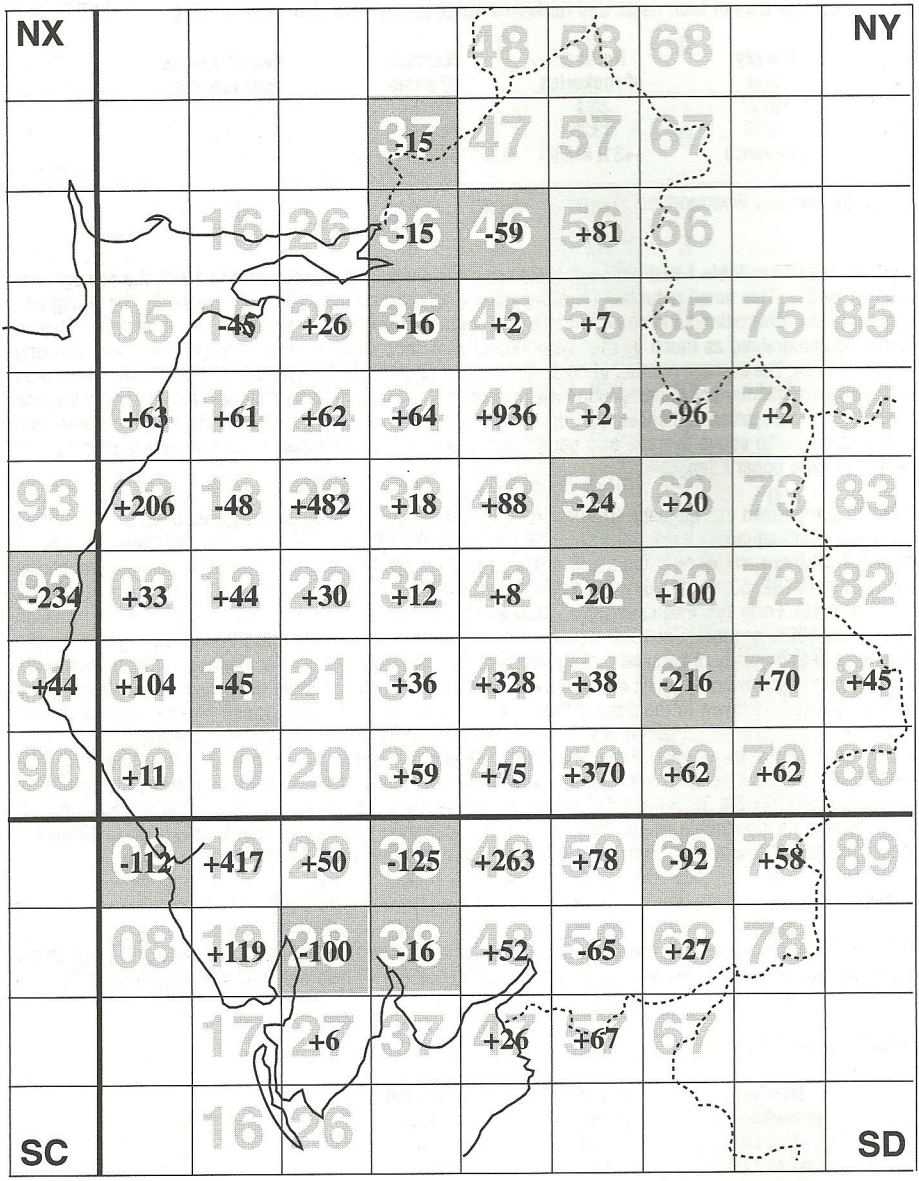

Figure 2: Percentage change in number of nests in 10km squares where 1975 data is available for comparison. For clarity, 10km squares where losses have occurred are shaded.

The six largest rookeries found in Cumbria were

634 nests	NY604243	352 nests	NY375713
519 nests	NY669217	330 nests	NY639235
393 nests	NY614283	319 nests	NY607062

Note that four of these rookeries are located in NY62, the area around Appleby, Kirkby Thore and Temple Sowerby. This 10km square was by far the most densely occupied in Cumbria, as indeed it was in the 1975 survey, although there were almost exactly twice as many nests found in 1996 as in 1975 (4237 and 2120 respectively).

Altitude

The highest rookery found (containing a healthy 67 nests) lay at the exceptional altitude of 430m on the south-west slope of Alston Moor in NY74. Another 13 rookeries were found above 300m but, not surprisingly, the vast majority were well below this level. The distribution of rookeries by altitude is reasonably steady up to 150m after which there is a sharp fall (see Figure 3)

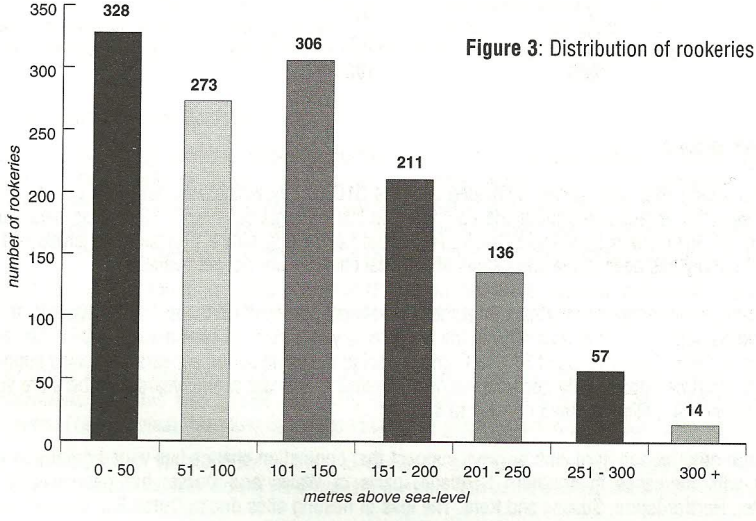

Figure 3: Distribution of rookeries by altitude

Tree species

The dominant tree species found in woods containing rookeries was identified in 1025 (78%) cases. A further 300 were defined as either mainly coniferous or mainly deciduous. Overall, 8657 nests (19%) were built in coniferous trees with the remaining 36081 (81%) in deciduous. The national survey of 1975 showed a slightly greater reliance on coniferous trees than the present survey, with 31% of nests being built in conifers and 69% in deciduous (of course, the national survey included Scotland, with its higher proportion of coniferous woodland). In only one 10km square (NY74) were nests built exclusively in conifers, whereas eight 10km squares had rookeries only in deciduous woodland. There was no discernible trend, other than availability, in the use of coniferous or deciduous trees across the county. Whilst oak was the dominant species for rookeries in a wide distribution of 10km squares all over the county, sycamore, the second most dominant species, was far more frequently used in the south. This may of course simply reflect the distribution of these two tree species throughout the county rather than the varying preference of rooks. Just four tree species account for almost 90% of all rookeries where species was determined. Amongst the more unexpected trees used by rooks, albeit in small numbers, were willow, yew and spruce. A complete breakdown of the 14 tree species used is given in **Table 3.**

Table 3 Dominant tree species in woods containing rookeries

Species	Number of rookeries	% of total (1025)
Oak	358	34.9
Sycamore	232	22.6
Beech	162	15.8
Scots Pine	150	14.6
Ash	66	6.4
Alder	15	1.5
Larch	14	1.4
Birch	10	1.0
Elm	6	0.6
Lime	4	0.4
Spruce	3	0.3
Chestnut	2	0.2
Yew	2	0.2
Willow	1	0.1
Total	**1025**	**100**

The national picture

The 1996 Cumbria Bird Club survey coincided with the BTO survey which was based on counts from 2000 randomly selected tetrads throughout the country. The last national census, in 1975, was based upon full coverage of all 3011 10km squares in Britain. At the time of writing only a provisional analysis of the most recent BTO survey has been made and details of regional changes are not yet available.

A direct comparison of the overall totals from the two national surveys (1975 and 1996) suggests an increase in the breeding population of almost 40% in the last twenty years from an estimated 911000 nests in 1975 to 1.27 million in 1996. The increase of 37% in Cumbria during the same period appears to broadly support these findings. It must be stressed that, despite national increase in the last twenty years, numbers are still below the total of over 1.4 million counted in 1944 to 46.

Figures from other county bird club surveys suggest that population change has varied greatly from region to region with increases in southern Scotland, parts of Wales and Dorset but decreases in Greater Manchester, Hertfordshire, Sussex and Kent. The loss of nesting sites due to Dutch Elm Disease appears to have been much less of a problem than was feared in the 1970s, with many rooks simply shifting to alternative sites. A reduction in persecution has also played a part in the recovery. Declining numbers in the south-eastern counties are probably due to the increase in cereal production and urbanisation in these areas, though in general it appears that the adaptability of rooks has made them less susceptible to these problems than many other farmland species.

References

Sage BL, Vernon JDR. The 1975 National Survey of Rookeries, Bird Study 25. BTO, June 1978
Marchant J. Rookeries 1996, Census News No. 7. BTO, March 1997. Also pers. comm.

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