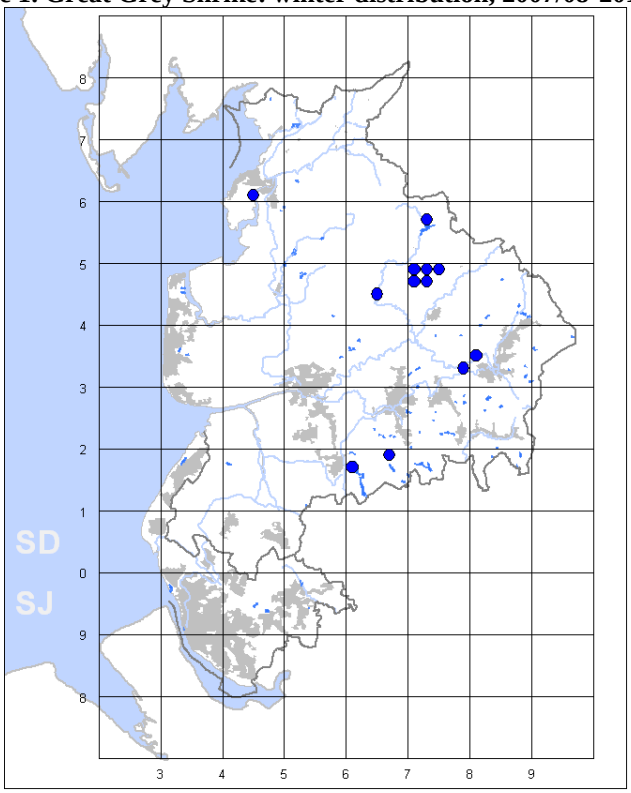
GREAT GREY SHRIKE *Lanius excubitor*

Great Grey Shrikes that breed in Fennoscandia migrate south and south-west to winter in central and western Europe. They are much more numerous both as migrants and in winter in eastern Britain than further west; in Lancashire the species is a scarce passage migrant and winter visitor. Records extend from late September to the beginning of May, but numbers recorded in the county seem to have declined since the mid-1990s. Only about a third of records since the late 1970s clearly relate to birds on passage and the historical pattern shows an annual mean of about five birds in the county between November and February.

Figure 1. Great Grey Shrike: winter distribution, 2007/08-2010/11.



Many of our Great Grey Shrikes have remained in the same location throughout the winter and several individuals have apparently returned to the same areas in successive seasons; this has probably given rise to some duplication of tetrad records during the present survey, particularly in east Lancashire. Often conspicuous, active and photogenic, our long-stay birds are popular with Lancashire birders.

The present winter survey located the species in 13 tetrads, all but one of these, at Leighton Moss in November 2007, at locations far from the coast (Fig.1). There was a noteworthy cluster of occupied tetrads in the Waddington, Newton and Bradford Fells area of east Lancashire where single birds, possibly two individuals, held territory in the 2007/08, 2009/10 and 2010/11 winters. Singles were also in the Calder Valley near Padiham in 2007/08 and again in December 2010; other records were at Stocks Reservoir in late 2007, Roddlesworth in February 2008 and Anglezarke in November 2010.

The population estimate is of fewer than five individuals in an average winter.

BM

CHOUGH *Pyrrocorax pyrrocorax*

One was at Warton Crag and surrounding areas between February and August 2008, with probably the same seen at Heysham in April that year.

SJW

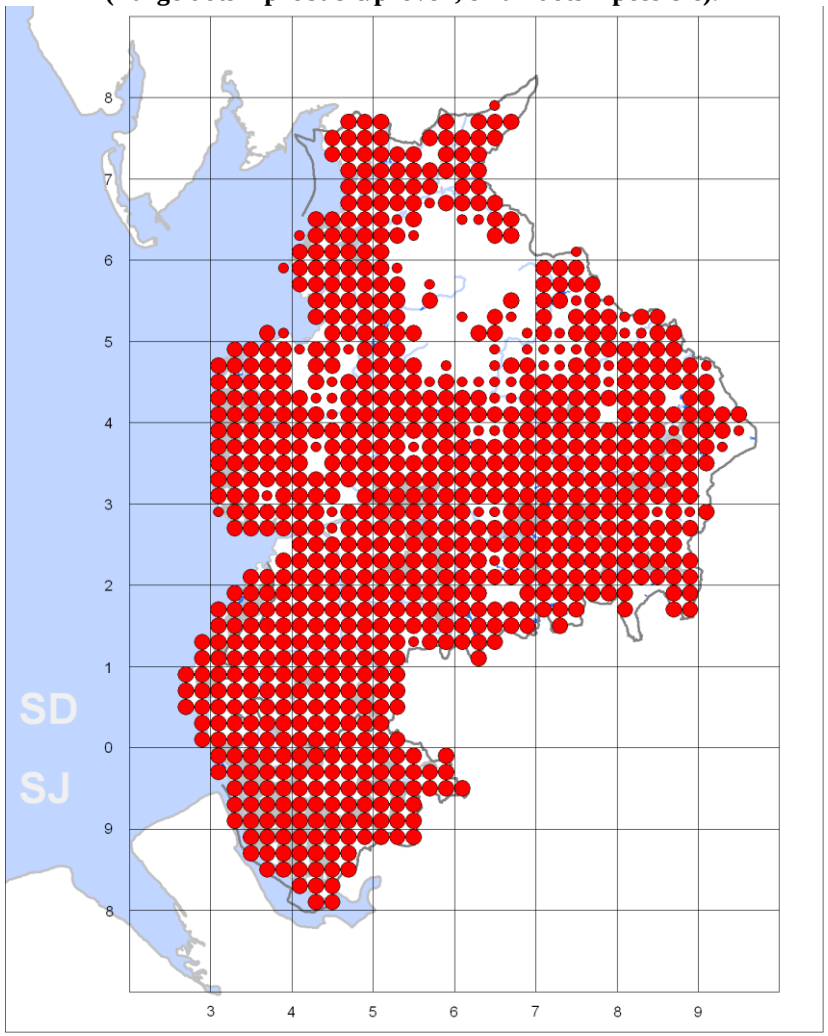
MAGPIE *Pica pica*

Breeding

Magpies were recorded in 856 tetrads during 2008-11, 91% of the county total and representing a 4% increase in range since 2000 (Fig.1). They were breeding in every lowland area of Lancashire, being absent only from the largely treeless and well-keepered moorlands, but they were apparently distributed sparsely on farmland in the Out Rawcliffe/Stalmine area. They were present in all urban tetrads throughout North Merseyside and Lancashire.

Compared with 1997-2000 there were 45 newly-occupied tetrads, mostly on the fringes of Bowland in the Slaidburn area, and 24 apparently-abandoned tetrads, most of which were in the north Lancashire uplands (Fig.2). As with other corvids Magpie numbers, particularly on grouse moors, are influenced by the extent of control measures as well as habitat quality.

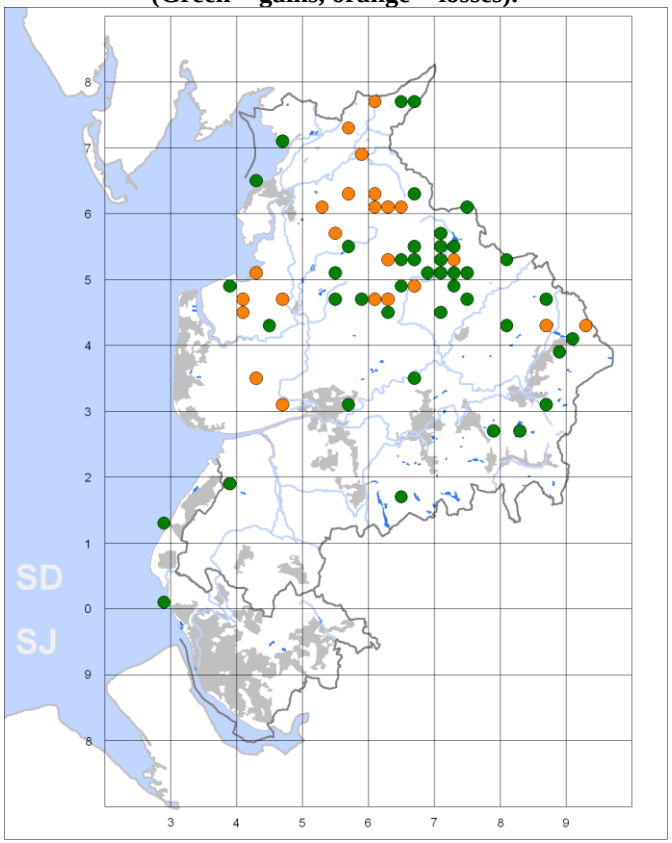
Figure 1. Magpie: breeding distribution, 2008-2011.
(Large dots = probable/proven; small dots = possible).



Numbers did not differ significantly between the east and the west of the county but were 60% higher in the south than the north and highest in the south-west.

Tetrad population estimates supplied by surveyors averaged twelve pairs per occupied tetrad throughout the county but densities were far higher in urban areas, averaging 23 per occupied tetrad in Merseyside, for example, implying a population of some 3200 pairs there, virtually a third of the county total of 10000 pairs – which is a little less than 2% of the British population.

Figure 2. Magpie: changes in breeding distribution, 1997-2000 to 2008-2011.
(Green = gains, orange = losses).



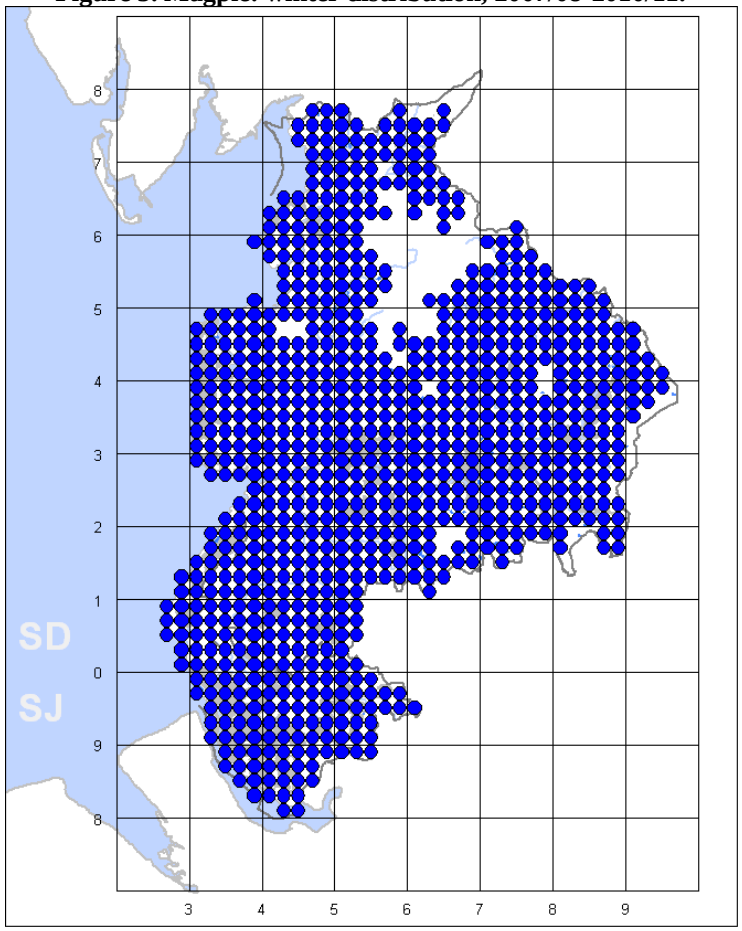
Winter

Birds wintered in 864 tetrads, 91% of the county total – the same percentage as in summer but in a few more tetrads (Fig.3). Their distribution was essentially the same as in the breeding season but was rather more solid in north-east Fylde.

Peak counts were in single or low double figures throughout most of the county but much higher in the urban areas of the Liverpool conurbation, St. Helens, Knowsley, Southport, Blackpool and Preston, although a little lower in Blackburn, Accrington and Burnley (Fig.4). The Magpie is one of

Lancashire's most urban species; the 60 tetrads holding the largest numbers were all urban and accounted for two-thirds of all birds counted. The largest

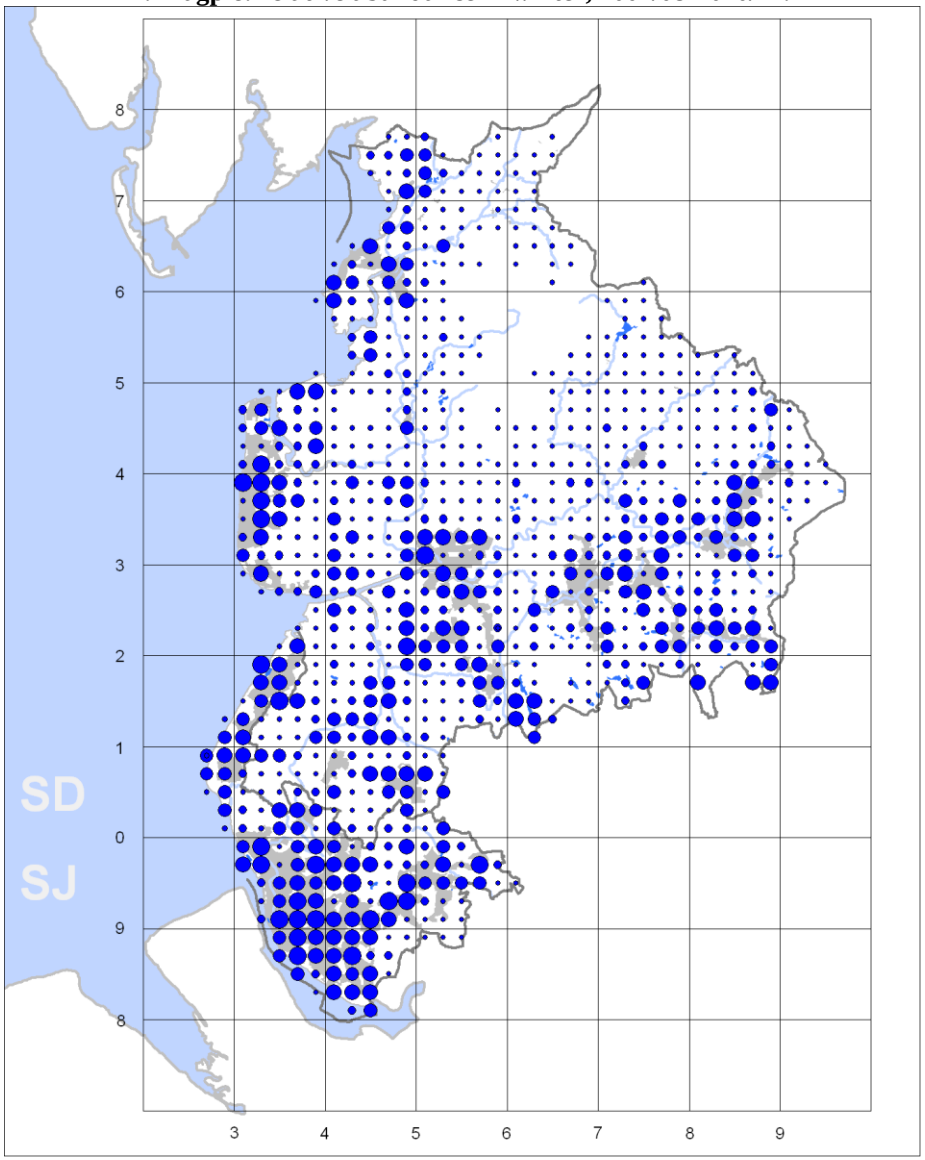
Figure 3. Magpie: winter distribution, 2007/08-2010/11.



counts were 310 in the Rimrose Valley, 297 in Blackpool's Stanley Park, 265 at Egerton and 100 in Old Swan, Liverpool. Surveyor's estimates suggested an average of 30 birds per occupied tetrad and a county population of 26000, by far the majority of them in urban areas.

SJW

4. Magpie: relative abundance in winter, 2007/08-2010/11.



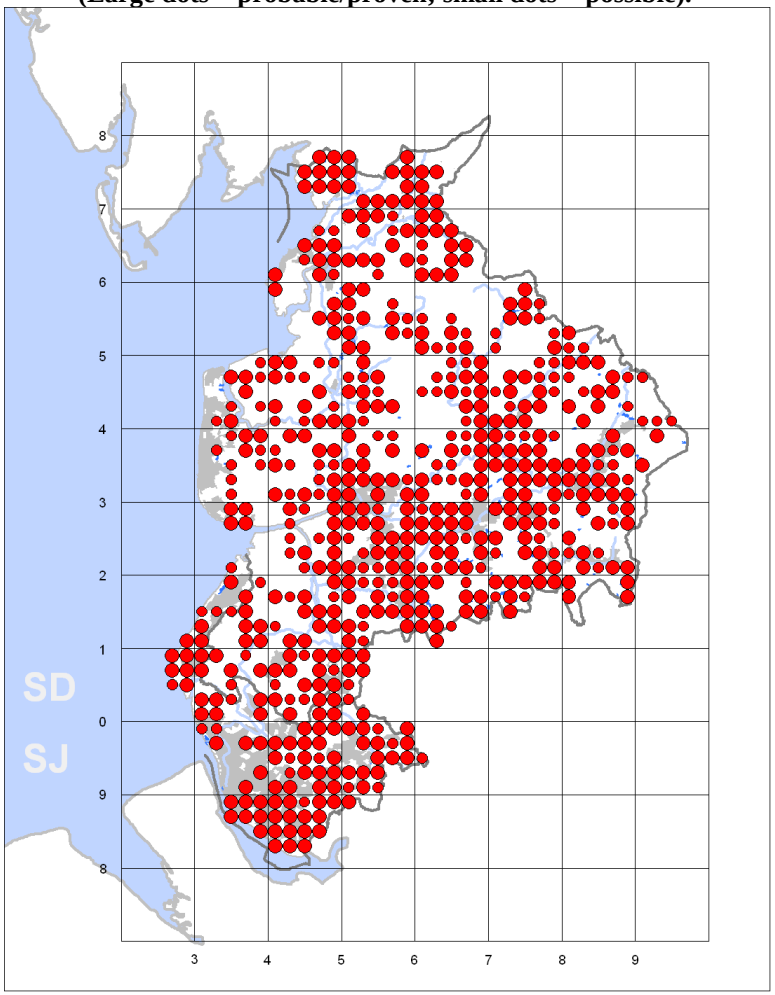
Dot size in descending order: 50-310; 25-49; 15-24; 10-14; 1-9

JAY *Garrulus glandarius*

Breeding

The Jay has been expanding its range in Lancashire since at least the early 1970s and the present survey shows a continuation of that trend. The 1968-72 Atlas recorded the species in 42 10km squares and the 1997-2000 Lancashire atlas survey found breeding or presence in 446 tetrads across 49 squares.

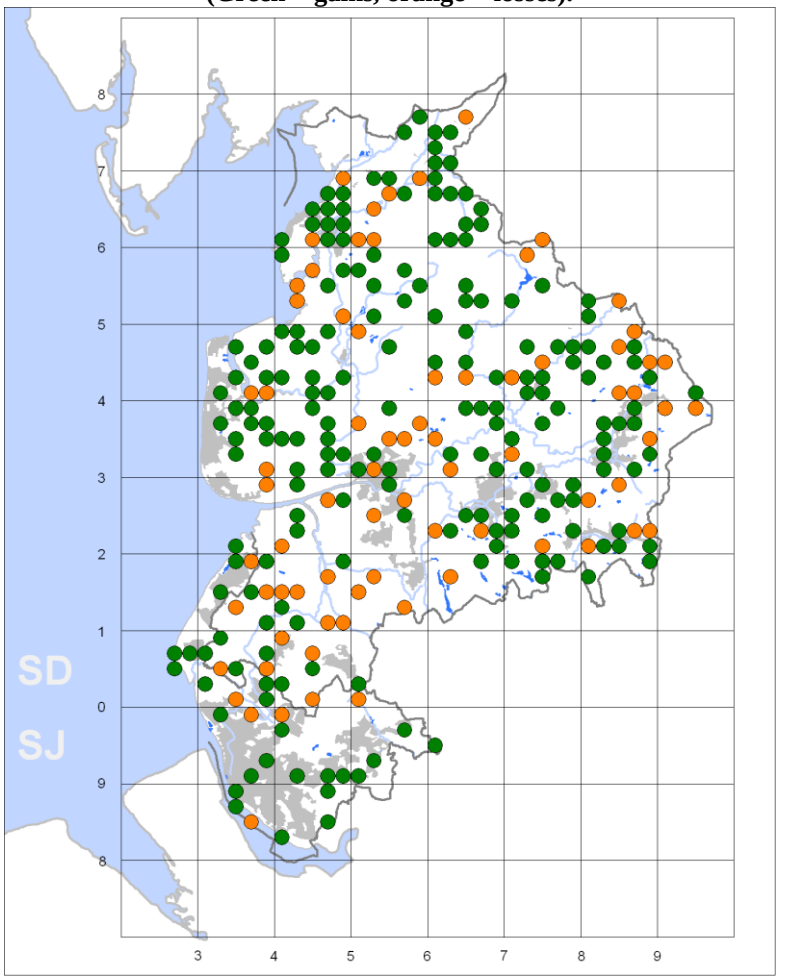
Figure 1. Jay: breeding distribution, 2008-2011.
(Large dots = probable/proven; small dots = possible).



The further expansion of the Jay's range identified by the present survey is dramatic. The species was recorded in 570 tetrads, 61.2% of the total, an increase in range of 27.13% in a decade (Fig.1).

Jays are distributed virtually throughout the county, except for the higher uplands of the east and north-east; they were, however, very local in most of the Fylde and the south-west. The main concentrations are in the centre of the county, from Preston south through Chorley to St. Helens, and also in the Silverdale area.

Figure 2. Jay: changes in breeding distribution, 1997-2000 to 2008-2011.
(Green = gains, orange = losses).

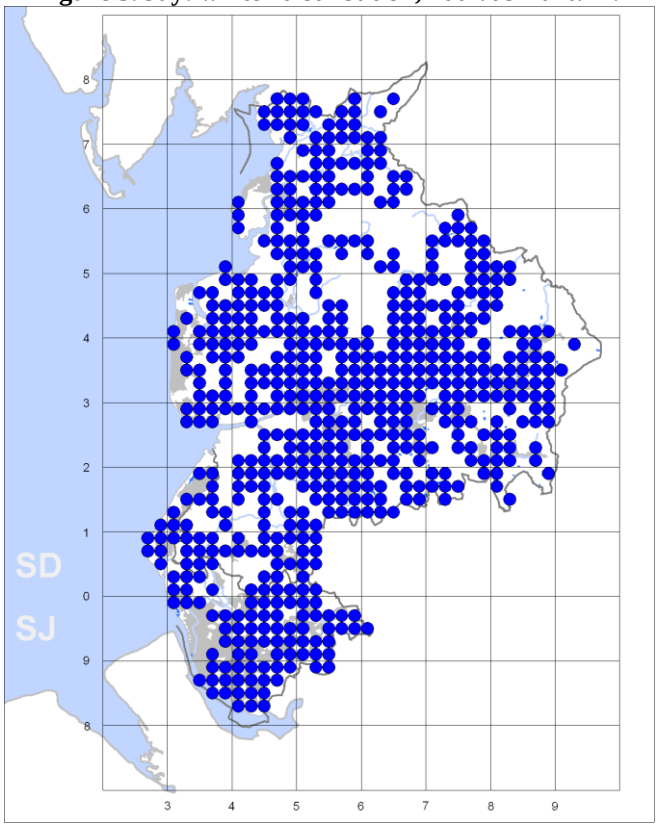


Jays colonised 196 new tetrads compared with 1997-2000, for a loss of 75. The breeding change map shows major range extensions in the Lancaster area, the Upper Lune Valley and the Fylde, with significant though less spectacular gains across the south-west (Fig.2). Possibly assisted by the provision of garden feeders this formerly very shy woodland resident has spread into suburbia in many regions of the county. The population is estimated at 1750 pairs, three per occupied tetrad, 1% of the British total.

Winter

The winter distribution map records presence in 606 tetrads, 64.1% of the total, the distribution closely matching that for breeding (Fig.3).

Figure 3. Jay: winter distribution, 2007/08-2010/11.



Substantial passage movements of Jays have occurred in several autumns in recent years; moderate numbers of migrants were recorded during September-October 2007, just prior to the beginning of the present survey period, so it is impossible to assess how many of the subsequent winter's records represent local breeding birds and their offspring or Jays from further afield. The winter population was estimated at 5000 individuals.

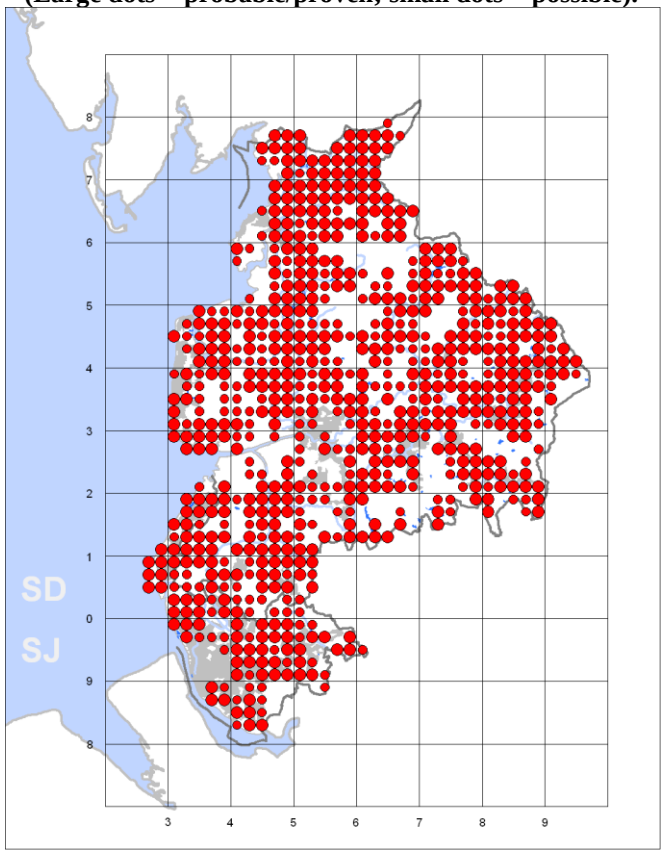
BM

JACKDAW *Corvus monedula*

Breeding

Although Jackdaws were recorded in 710 tetrads during 2008-2011, covering 76% of the county total, in 30% of these (221) they were thought only to be possibly breeding (Fig.1).

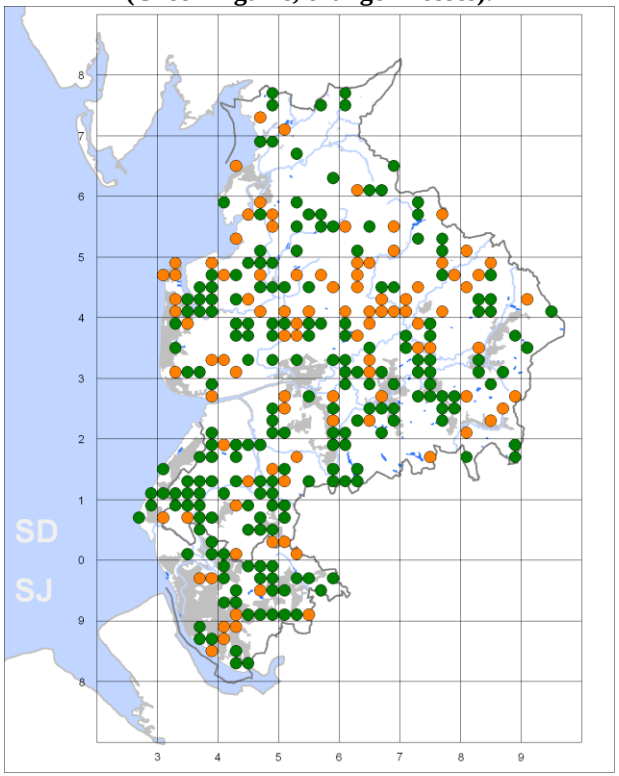
Figure 1. Jackdaw: breeding distribution, 2008-2011. (Large dots = probable/proven; small dots = possible).



However, this compares with 34% recorded as ‘possible’ during the 1997-2000 survey, so it does seem legitimate to make comparisons based upon the larger figure, concluding that Jackdaws increased their breeding range in Lancashire by 25% during the first decade of the twenty-first century.

Breeding birds were absent from the highest ground, many coastal habitats and most of the farmland in northern West Lancashire, South Ribble and southern Fylde.

Figure 2. Jackdaw: changes in breeding distribution, 1997-2000 to 2008-2011. (Green = gains, orange = losses).



Both newly-occupied and apparently-abandoned tetrads were distributed throughout the county but gains were particularly noticeable in Merseyside and neighbouring areas of West Lancashire, northern Fylde, the West Pennine Moors and east Lancashire south of the Ribble (Fig.2).

Although a few birds have encroached into suburbia, Jackdaws have not significantly penetrated the main urban areas.

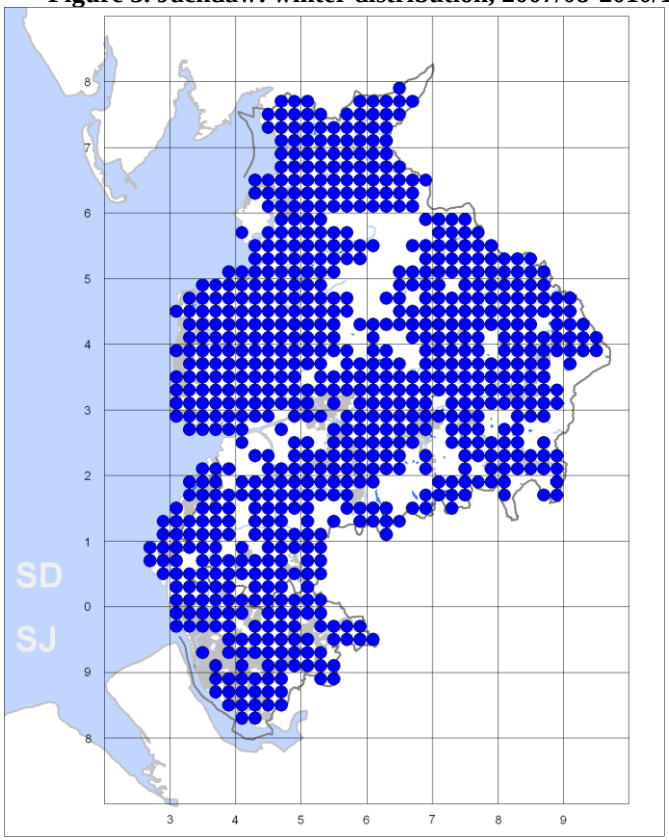
Breeding densities in occupied tetrads were 25% higher in the west than the east and 40% higher in the south than the north, so that average numbers in the south-west were the highest in the county, 70% more than in the north-west.

Given the high proportion of ‘possible-only’ tetrads, estimating the county population is somewhat hazardous but, based on surveyors’ estimates, an average of eight pairs per occupied tetrad seems reasonable, yielding a county total of 6000 pairs, roughly 0.5% of the British population.

Winter

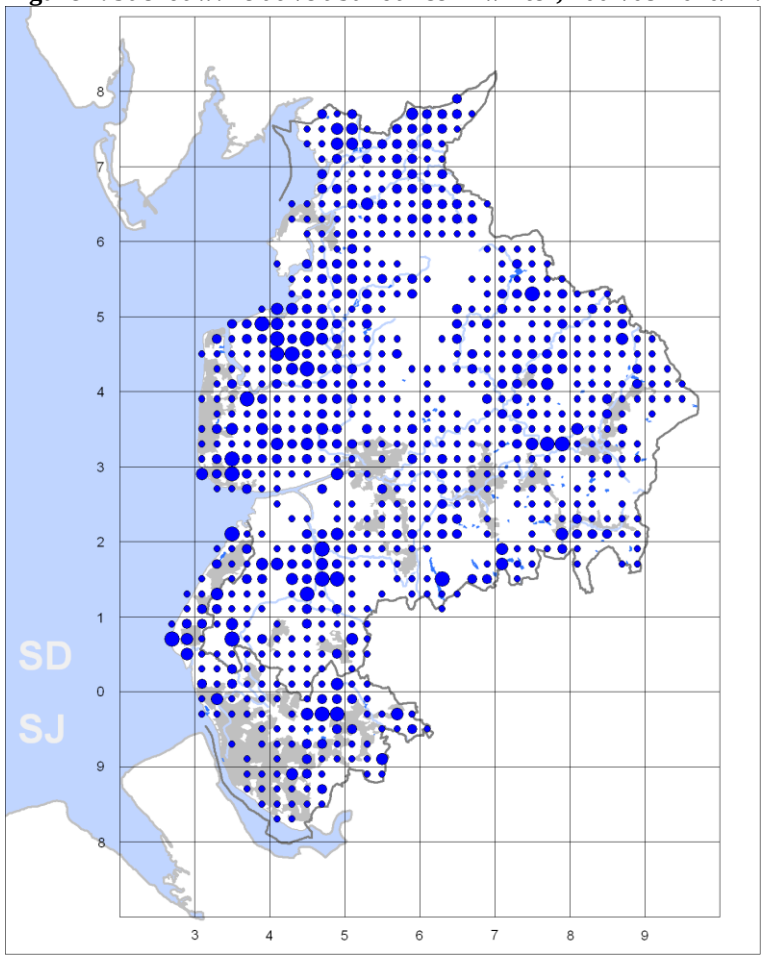
The winter range of Jackdaws was five percentage points greater than in summer: 767 tetrads or 81% of the county total (Fig.3)

Figure 3. Jackdaw: winter distribution, 2007/08-2010/11.



Their distribution was similar to that of the breeding season but more solid, producing an empty belt straddling the county from the north of West Lancashire and extending north-eastwards across Bowland. This was broken only by a number of records in Preston where, as elsewhere, small numbers of Jackdaws penetrated into urban areas.

Figure 4. Jackdaw: relative abundance in winter, 2007/08-2010/11.



Dot size in descending order: 500-1500; 200-499; 50-199; 1-49

Peak counts of 500 or more birds were recorded in 23 tetrads, mostly in the west of the county but with four in the east (Fig.4). There was a concentration of these hotspots in the Fylde and to a lesser extent in West Lancashire and Chorley. The largest counts were 1500 on Lytham Moss, 1300 at Formby Point, 1200 at Fluke Hall and Eagland Hill, and 1000 at Rivington, Mawdesley and Altham. The population was estimated at 12000.

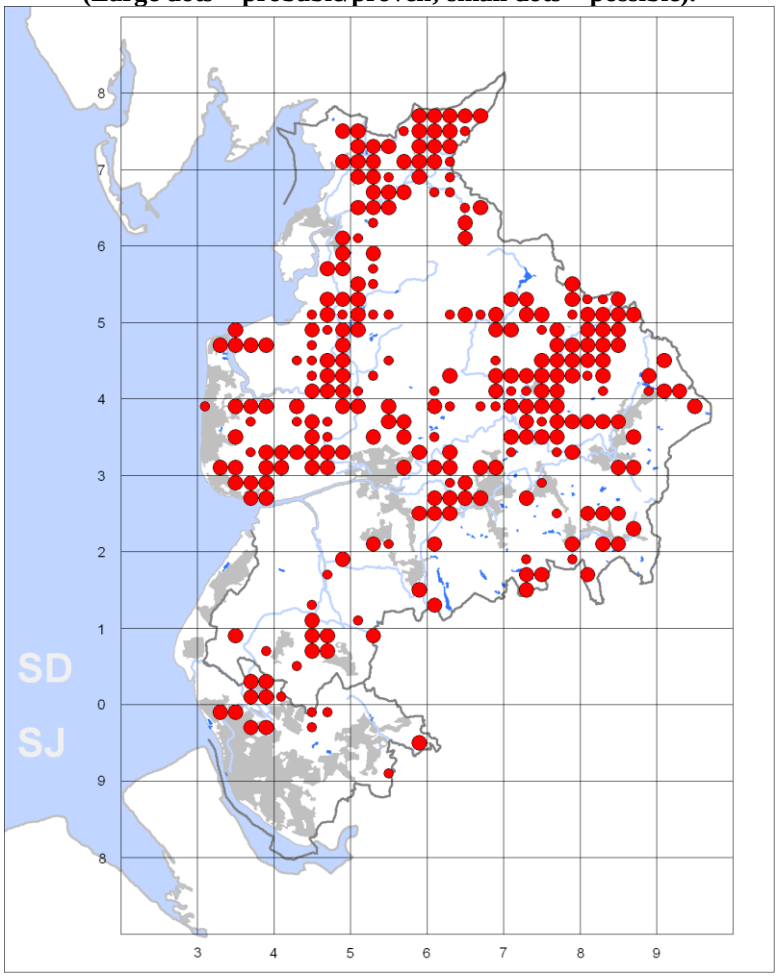
SJW

ROOK *Corvus frugilegus*

Breeding

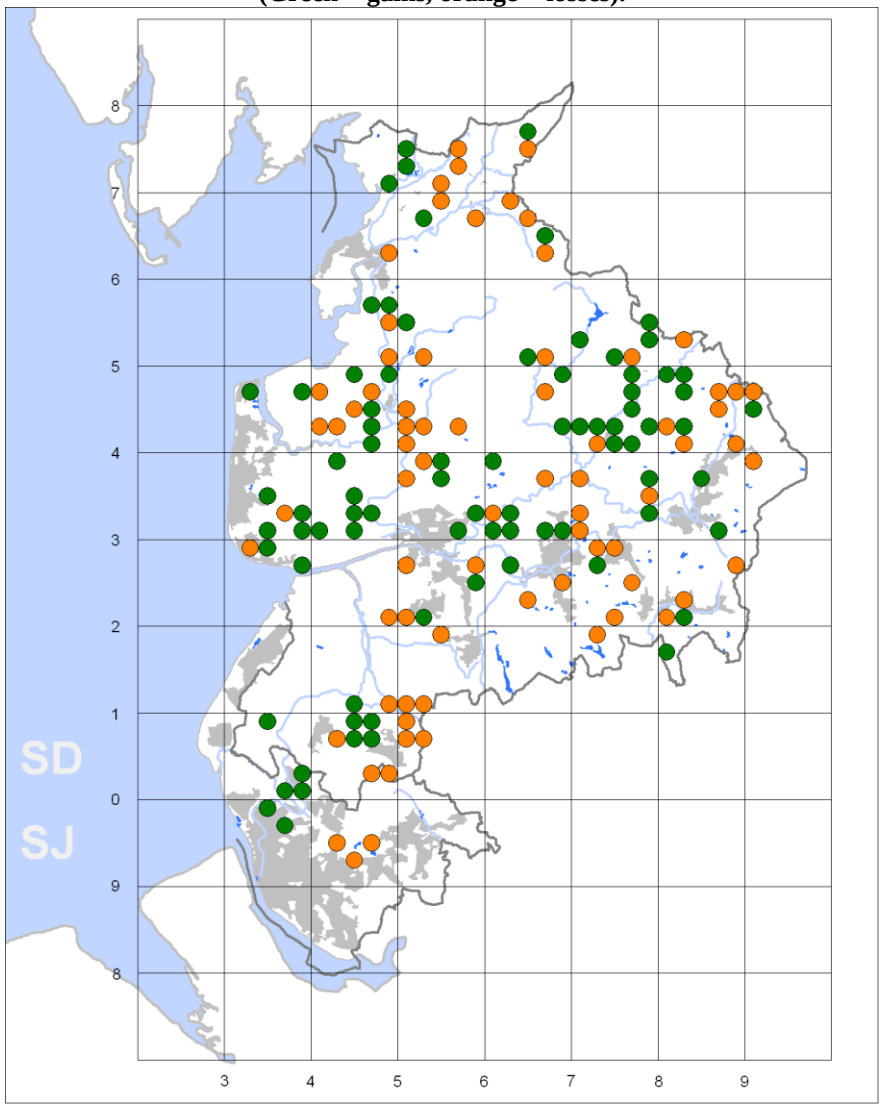
Although Rooks were seen in 271 tetrads in the breeding season during 2008-11, 67 of these were recorded as 'possible breeding' only (Fig.1).

Figure 1. Rook: breeding distribution, 2008-2011.
(Large dots = probable/proven; small dots = possible).



Since this is one the easiest species to obtain some evidence of breeding for apart from merely being seen in suitable habitat, it is safer to base any analysis of trends on the 204 probable or proven breeding records, all but 15 of which were proven. On this basis, Rooks were breeding in 21% of the county's tetrads, their range essentially the same as in 1997-2000.

Figure 2. Rook: changes in breeding distribution, 1997-2000 to 2008-2011. (Green = gains, orange = losses).



Their breeding distribution is far patchier than that of other corvids, being absent in almost all upland and upland fringe areas but also from vast swathes of farmland in Merseyside, West Lancashire, South Ribble, Chorley and much of north Fylde.

Newly-occupied tetrads were counterbalanced by apparent losses; both were distributed fairly randomly, but there was an interesting small colonisation of north Liverpool, now the only urban area supporting breeding Rooks (Fig.2).

Colony size was recorded in 104 tetrads, roughly half of the total, (some possibly having more than one rookery) and averaged 25 in the north of the county, 38 in the south, 24 in the east and 39 in the west, with the south-west supporting the highest density of 43 per tetrad. This appears somewhat paradoxical as the south-west had the lowest number of occupied tetrads; perhaps this is a sign of better feeding opportunities but fewer suitable nest sites.

The numbers of nests per tetrad reported ranged from one to 150, with seven supporting a hundred or more, all of them in the Fylde (at Little Singleton, Wesham, Lytham, Inskip and Ellel Grange) with the exception of 100 at Read in East Lancashire; 1322 nests were counted in 26 rookeries in the Fylde in 2010.

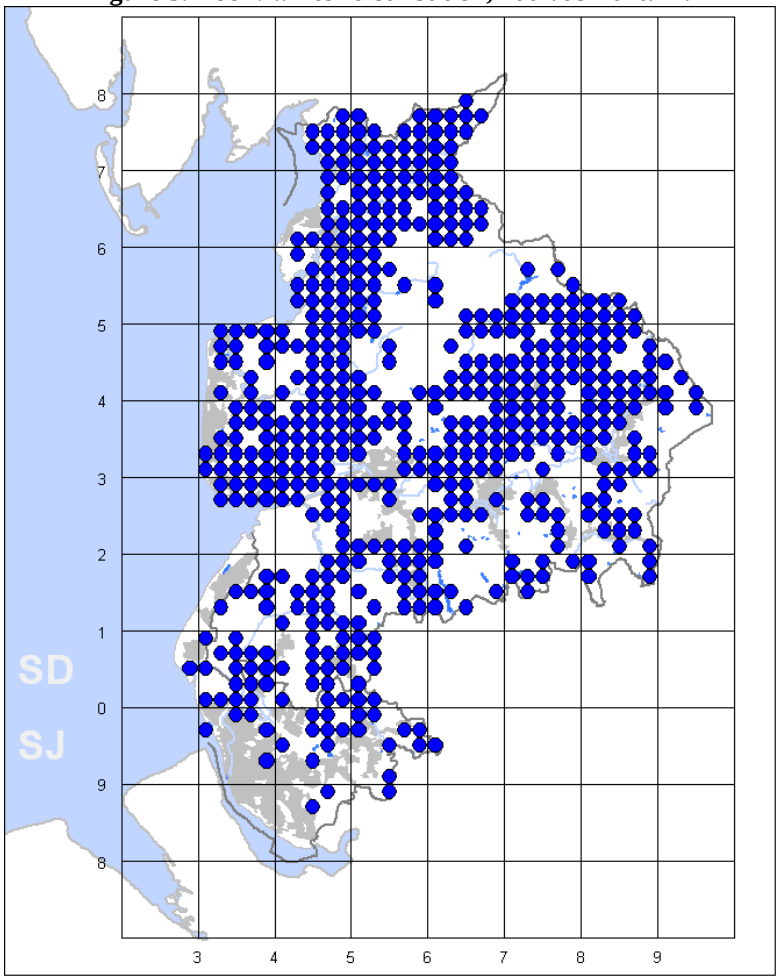
The average density in proven/probable tetrads was estimated from colony counts at 33 pairs, producing a county total of 7000 pairs, about 0.7% of the British population.

Winter

The winter range of Rooks was more than double that of breeding birds, at 543 tetrads it included 58% of the county's tetrads; many birds clearly disperse widely from their breeding site in winter.

Their distribution within that range, although broadly similar in pattern, was much more solid, particularly in north and east Lancashire, Chorley, most of the Fylde and even to some extent the south-west mosses (Fig.3).

Figure 3. Rook: winter distribution, 2007/08-2010/11.

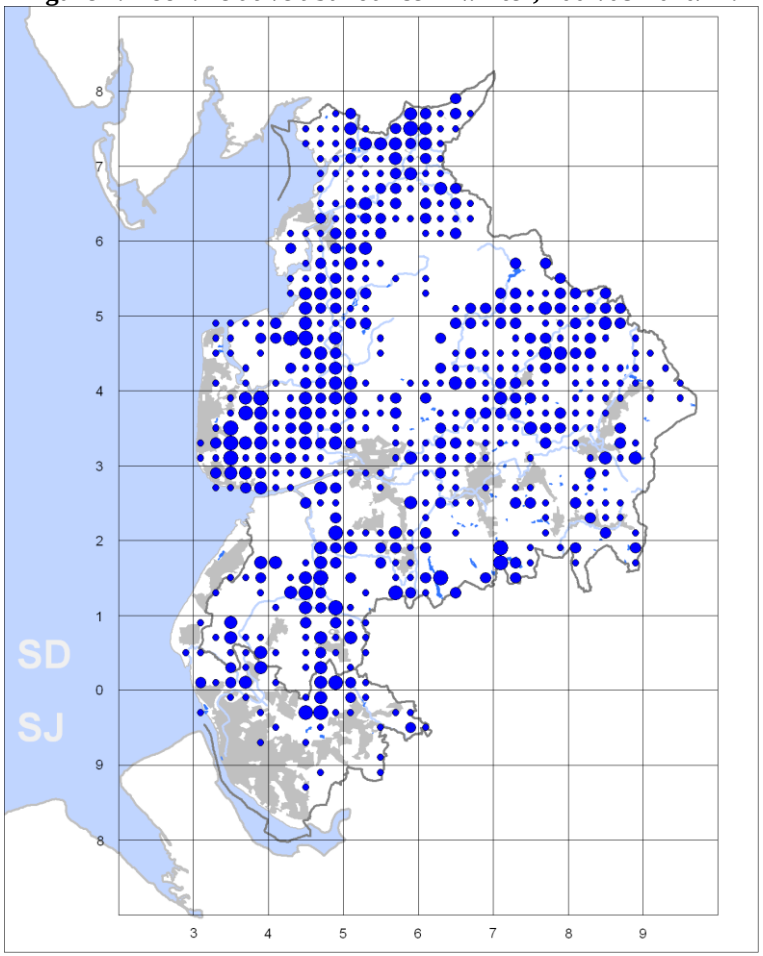


Counts of 300 or more were recorded in 19 tetrads throughout the county except east Lancashire and Rossendale, but they were heavily concentrated in south-west Fylde. The largest were 1000 on Lytham Moss, 700 at Bretherton and Holiday Moss, 630 at Marton Mere and 500 at Low Meadows.

The Lancashire population – extrapolated from the number of breeding pairs – was estimated at 21000 birds.

SJW

Figure 4. Rook: relative abundance in winter, 2007/08-2010/11.



Dot size in descending order: 300-1000; 100-299; 30-99; 1-29

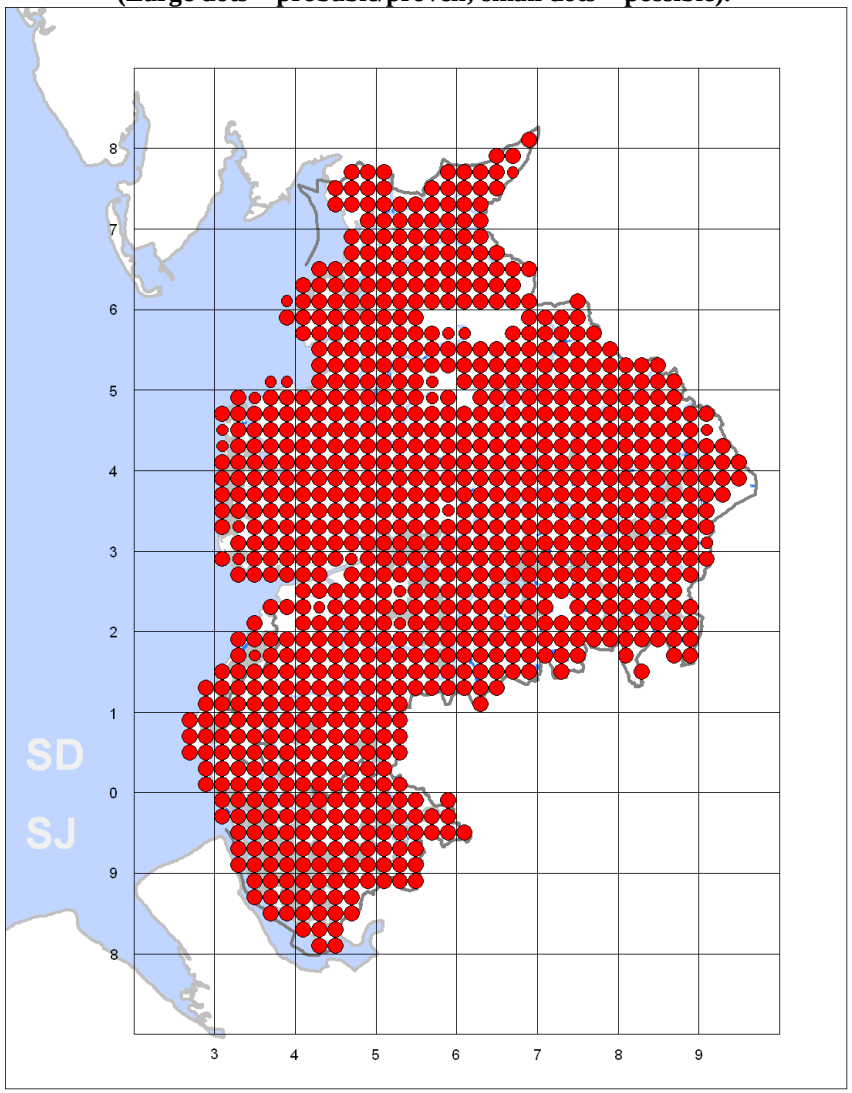
CARRION CROW *Corvus corone*

Breeding

Carrion Crows are our second most widespread breeding species; they were found in 916 tetrads during 2008-11, at 98% of the county only fractionally (and realistically probably not measurably) less than Wrens (Fig.1). This represented a 6% increase in range since the 1997-2000 survey.

They were absent only from treeless moors and saltmarshes. Most of the 48 newly-occupied tetrads were in the west of the county, notably in western areas of Bowland, and Liverpool (Fig.2). Seven tetrads were apparently abandoned.

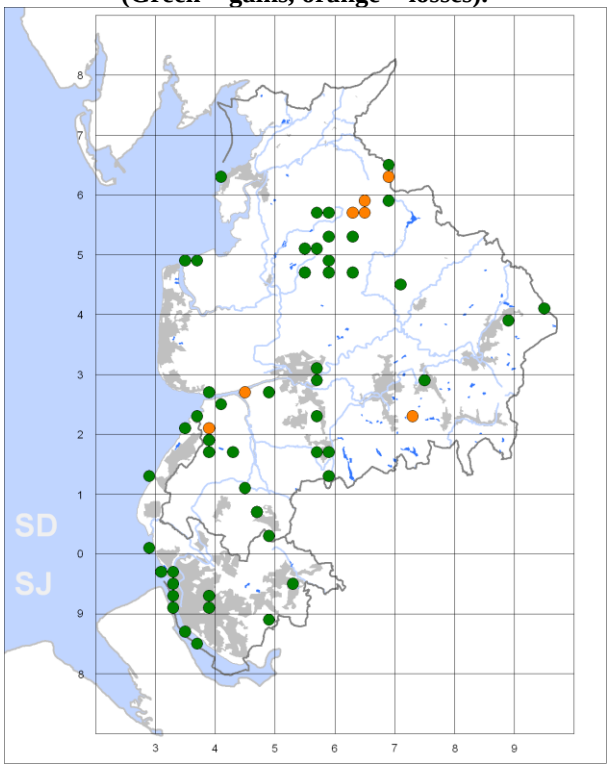
Figure 1. Carrion Crow: breeding distribution, 2008-2011.
(Large dots = probable/proven; small dots = possible).



Breeding densities did not differ between the east and west of the county but were 25% higher in the north than the south and highest in the north-west. Numbers are constrained in some areas due to high levels of persecution by game interests, notably in Bowland and the West Pennine Moors.

Densities were estimated at ten pairs per occupied tetrad, implying a county total of 9000 pairs, slightly less than 1% of the British population.

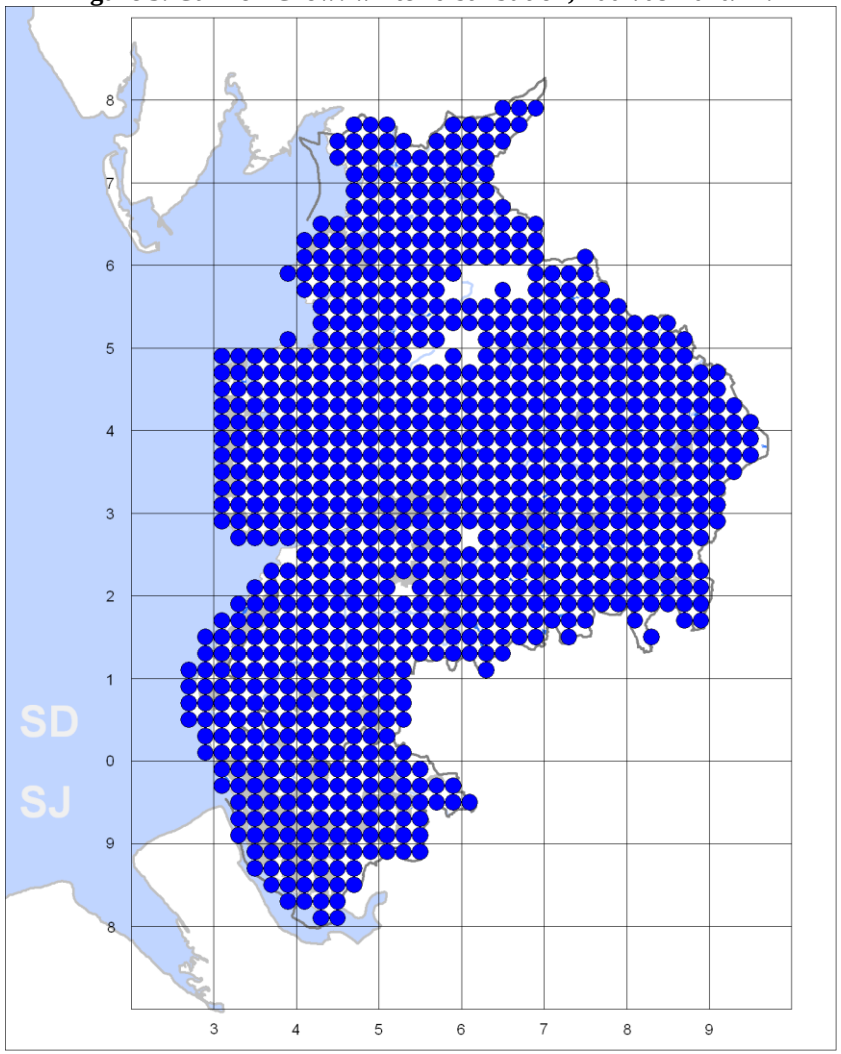
Figure 2. Carrion Crow: changes in breeding distribution, 1997-2000 to 2008-2011.
(Green = gains, orange = losses).



Winter

The winter range was essentially the same as in summer with birds recorded in 927 tetrads, 98% of the county total, while the only noticeable seasonal change in distribution was that they were present in one or two strictly coastal tetrads (Fig.3). Carrion Crows are our most widespread species in winter.

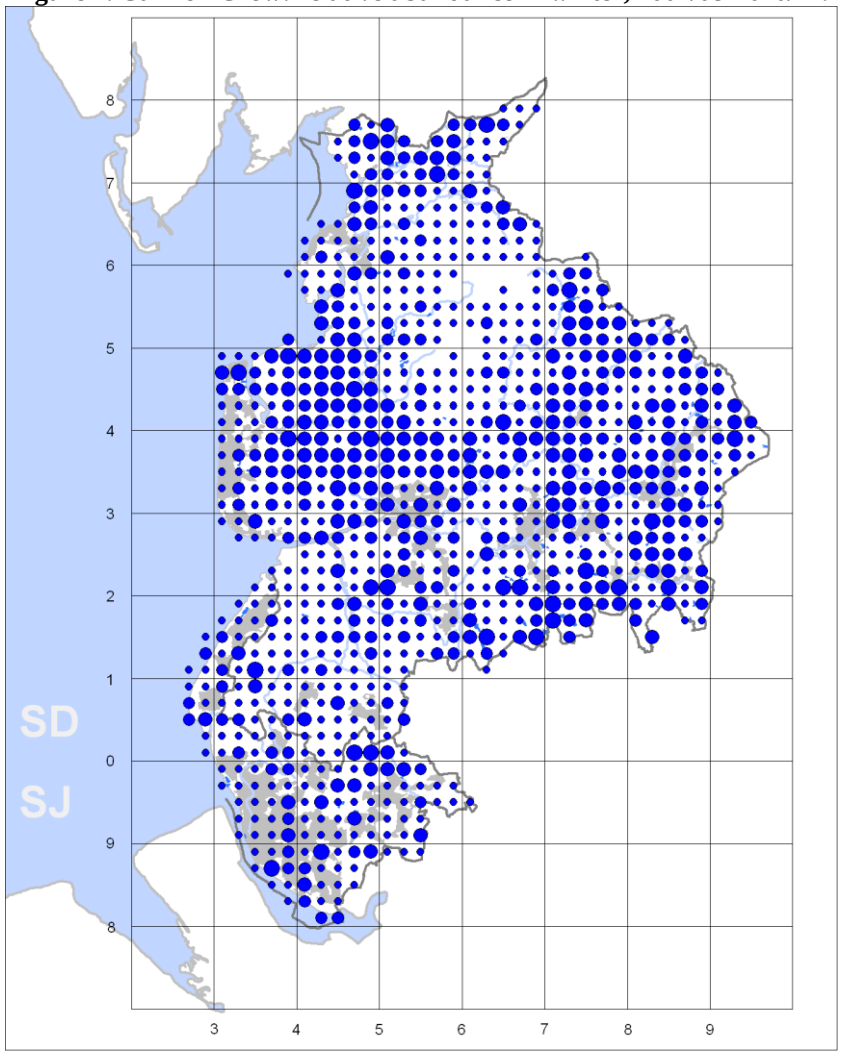
Figure 3. Carrion Crow: winter distribution, 2007/08-2010/11.



Thirty-one tetrads recorded peak counts of 100 or more, most of them in the Fylde, north Lancashire and the West Pennine Moors (Fig.4). However, four of the five largest counts were in the West Pennine Moors (700 at Delph Reservoir, 400 at Rivington Reservoir and Roddlesworth and 300 at Entwistle, the exception being 300 at Wycoller in east Lancashire) – perhaps a reflection of the presence of several large communal roosts in that area as much as overall numbers present. The largest count in Merseyside was 284 in Sefton Park in the heart of Liverpool, in Chorley 200 on Bretherton Moss, in north Lancashire 200 at Leighton Moss and in the Fylde 172 at Treales.

Average population density was estimated at 30 per occupied tetrad, producing a county total of 28000 birds.

Figure 4. Carrion Crow: relative abundance in winter, 2007/08-2010/11.



Dot size in descending order: 100-700; 30-99; 15-29; 1-14

HOODED CROW *Corvus cornix*

There are no recent proven records of pure pairs breeding in Lancashire and their scarcity suggests this is unlikely to happen, but mixed pairs have been reported several times this century.

More than 20 records of Hooded Crows or Carrion x Hooded Crow hybrids were reported in all seasons during the atlas surveys, probably involving around ten individuals and being seen with roughly the same frequency as the average of three a year between 1982 and 2005.

The majority of first sightings were in April and most of these were at coastal locations, suggesting that they had the best credentials to be regarded as migrant Hooded Crows. These coastal records were singles at Knott End from December 2007 to February 2008, Cabin Hill and Lytham in April 2008, Rossall Point in April 2009, Glasson in April 2010, Seaforth in April and May 2011, Rossall in April 2010 and Marton Mere the same month.

Inland birds were two together near Clitheroe in April 2008, one at Birk Bank and then Quernmore in October 2008 into 2009, Plex and Downholland Mosses in 2009 and 2010 and Jubilee Tower in April 2010. The two at Clitheroe were presumably hybrids and those on the south-west mosses certainly were.

SJW

RAVEN *Corvus corax*

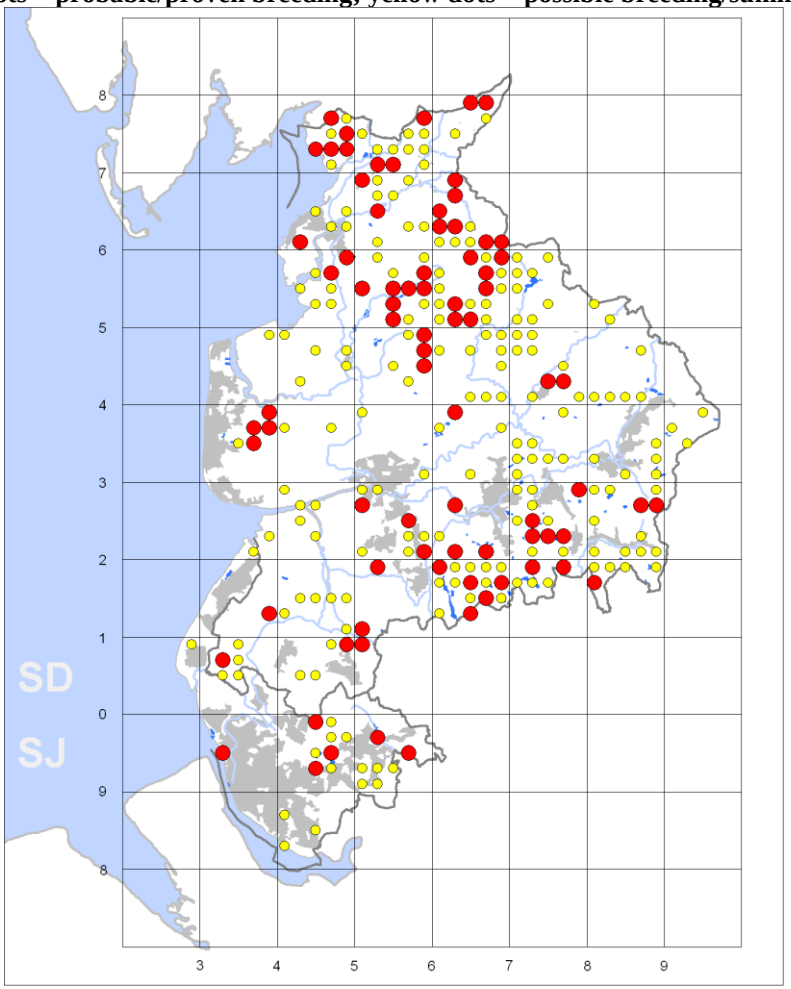
Breeding

Of all the breeding species in the county during 1997-2000, only the Buzzard has expanded its range since then to anything like the extent of the Raven. Once confined by persecution to the highest and most remote fell country, Ravens began a quite rapid westward expansion in the early 1990s. This was facilitated by the species' adaptation to nesting in quarries and on a variety of human structures, from cathedrals to gasometers and electricity pylons.

Breeding was confirmed in only one 10km square in Lancashire during the 1968-72 Atlas, with birds present in a further three squares; the 1988-91 New Atlas did not record confirmed nesting anywhere, with birds seen in only two squares. By the mid-1990s breeding had been confirmed in Bowland and on the West Pennine Moors and by the end of the decade Ravens colonising from the south had bred successfully on Liverpool's Anglican Cathedral.

The present survey located proven or probable breeding pairs in 78 tetrads, 8.4% of the county total (Fig.1). This was a staggering range increase of 500% since 1997-2000 and, as the breeding distribution map also shows, possible nesters or summering birds were recorded in another 185 widely-dispersed tetrads.

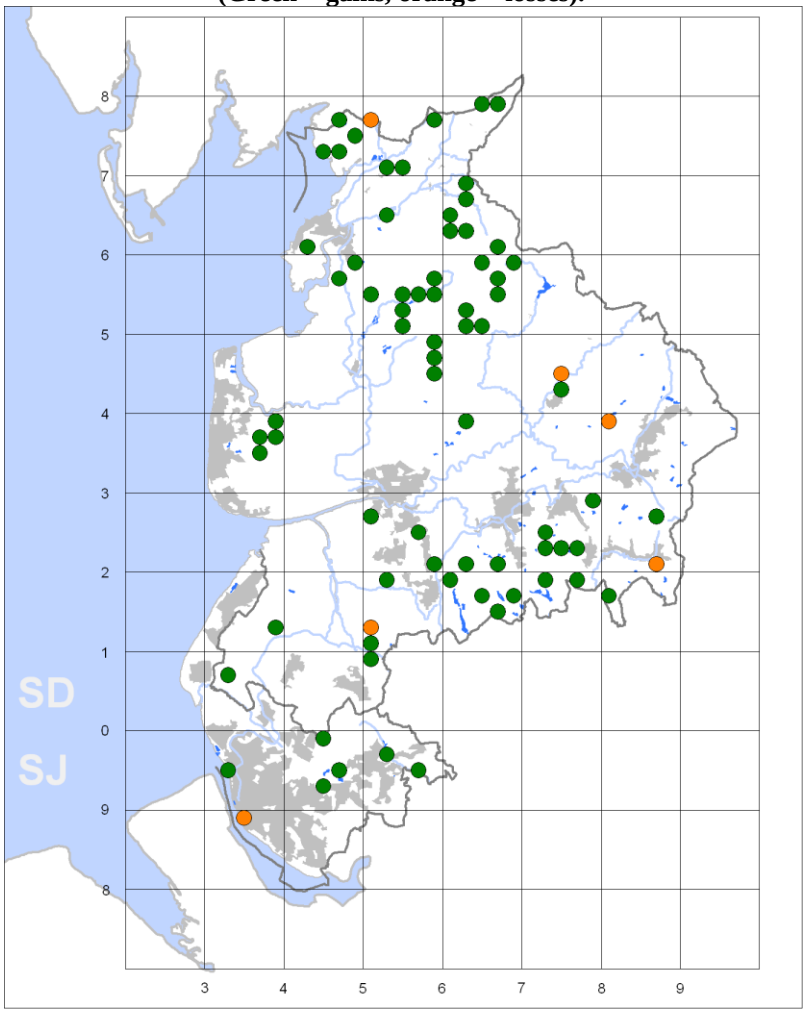
Figure 1. Raven: summer distribution, 2008-2011.
(Red dots = probable/proven breeding; yellow dots = possible breeding/summering).



The majority of proven/probable tetrads were in the uplands, primarily in Bowland and the West Pennine Moors but almost a third were in lowland areas, including five in urban Merseyside.

The Breeding Change map demonstrates that the Raven's range has expanded in all regions of the county (Fig.2). The population was estimated at 100 pairs.

Figure 2. Raven: changes in breeding distribution, 1997-2000 to 2008-2011. (Green = gains, orange = losses).

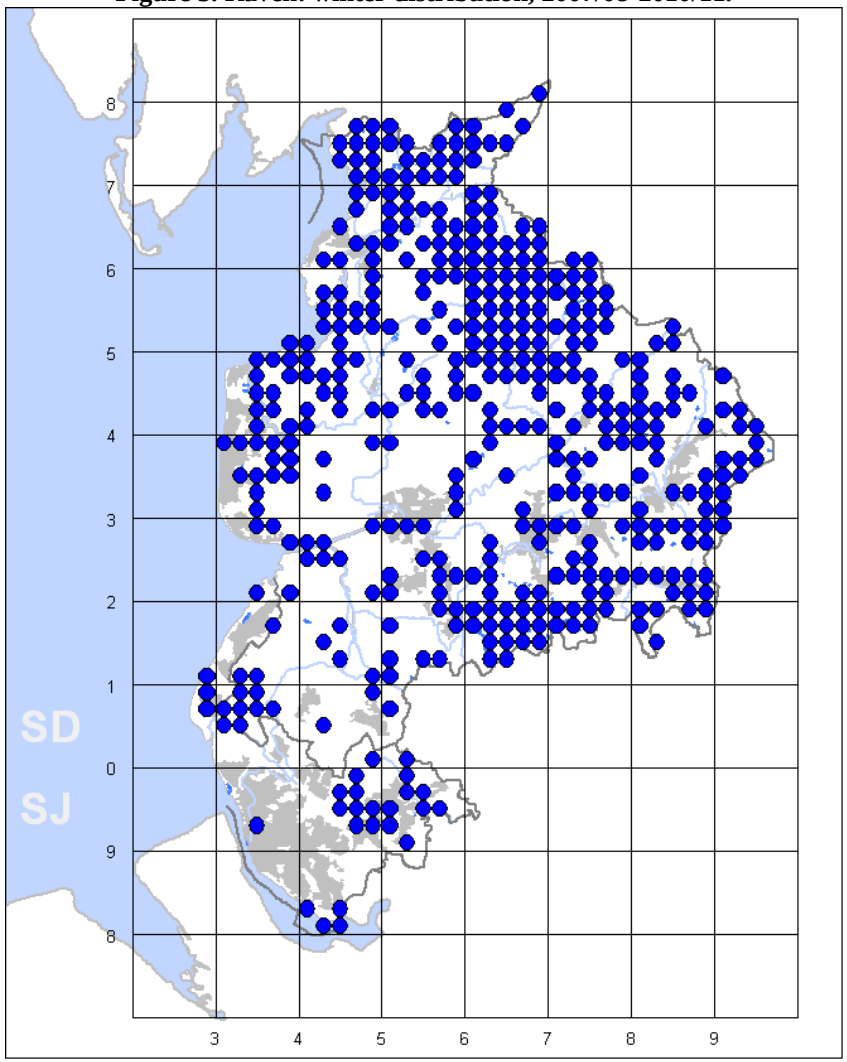


Winter

The winter distribution map shows a very wide dispersal from the breeding areas, mainly, it is assumed, by juvenile birds. Ravens were recorded in 432 tetrads, 45.7% of the total and almost 40 percentage points more than in summer (Fig.3). The winter population is estimated at 325 individuals.

SJW

Figure 3. Raven: winter distribution, 2007/08-2010/11.



GOLDCREST *Regulus regulus*

Breeding

Goldcrests bred in 464 tetrads, 50% of the county total (Fig.1), implying that their breeding range increased by some 15% in Lancashire between the two surveys of 1997-2000 and 2008-2011, but it seems likely that this overstates the current situation after the harsh winters of 2009/10 and 2010/11. Most atlas survey work was carried out before then and, as Britain's smallest bird, Goldcrests are particularly susceptible to population crashes in freezing conditions.

A high number of registrations (145) were of possible breeding only – a similar proportion to our first atlas survey – but it seems unlikely that very many of these involved migrant birds.

There were no significant differences in either the number of occupied tetrads or densities of breeding birds in occupied tetrads between any of the four quarters of the county, but their distribution was very patchy.

Breeding takes place primarily in large conifer plantations or mixed woodland and consequently most occupied tetrads were found scattered throughout much of the east and north of the county, on the West Pennine Moors and the Sefton Coast.

They were least common in most of the Fylde, around the Lune Estuary and largely absent from treeless areas of the uplands and agricultural land south of the Ribble.

Compared with 1997-2000 161 new tetrads were occupied and 100 no longer so (Fig.2). The gains were especially noticeable in south Liverpool, western Fylde and central Lancashire, often in urban areas where large parks are favoured. The losses were mainly in north and east Lancashire, which may to some extent have been a result of more surveying taking place after 2010 in some of these areas.

This high turnover of occupied tetrads in the space of ten years is difficult to account for as no equivalent changes in the amount or location of suitable habitat have taken place.

Population estimates were made by surveyors of only 90 fairly widely distributed tetrads in which breeding densities averaged 6 pairs. On that basis the county population is estimated at 2750 pairs, accounting for roughly 0.5% of the British total – with the proviso that it is likely to have been significantly lower in 2011.

Figure 1. Goldcrest: breeding distribution, 2008-2011. (Large dots = probable/proven; small dots = possible).

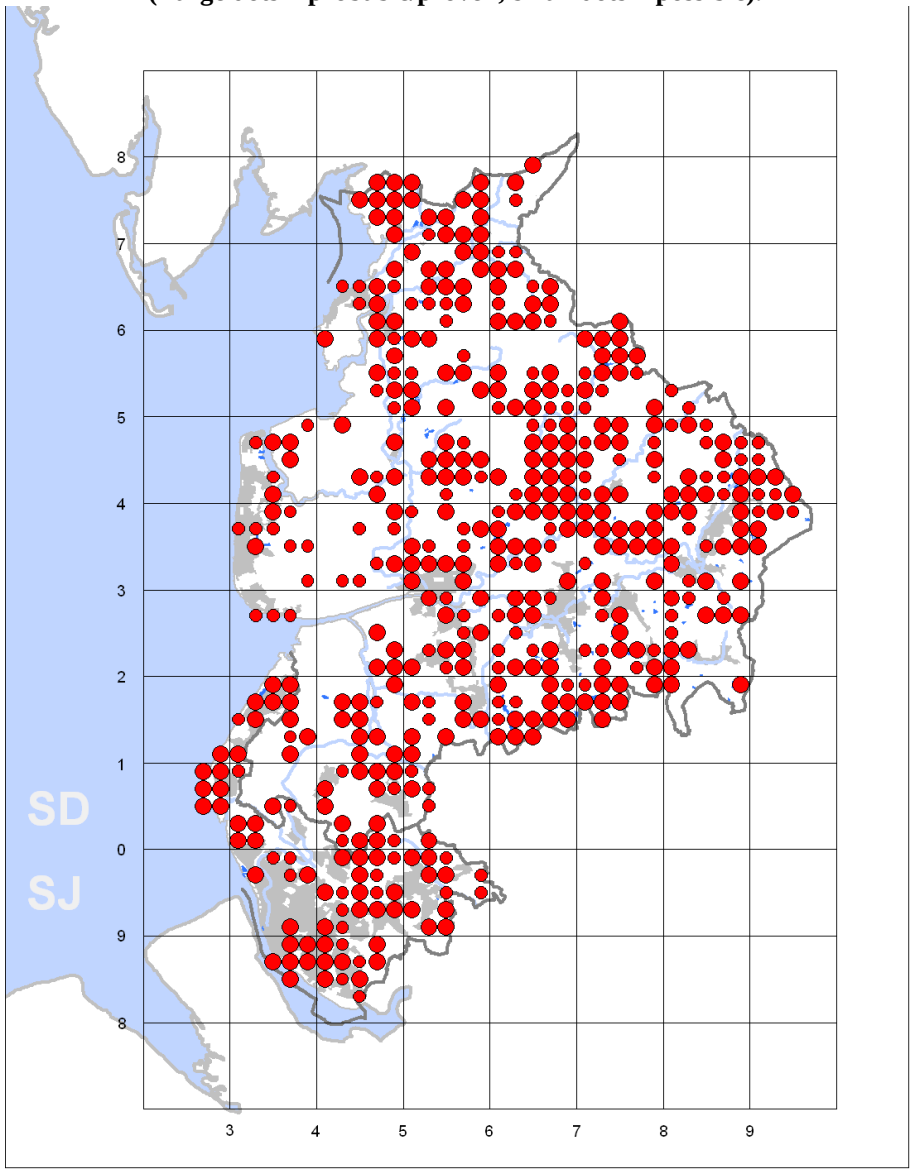
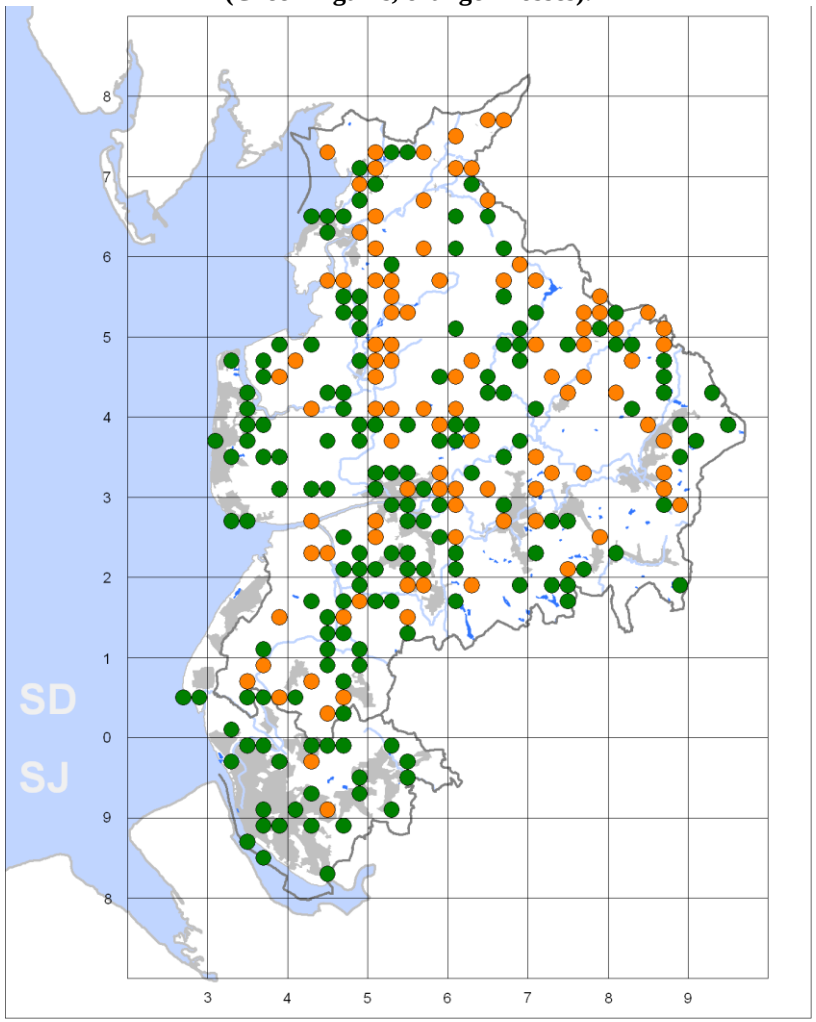


Figure 2. Goldcrest: changes in breeding distribution, 1997-2000 to 2008-2011. (Green = gains, orange = losses).

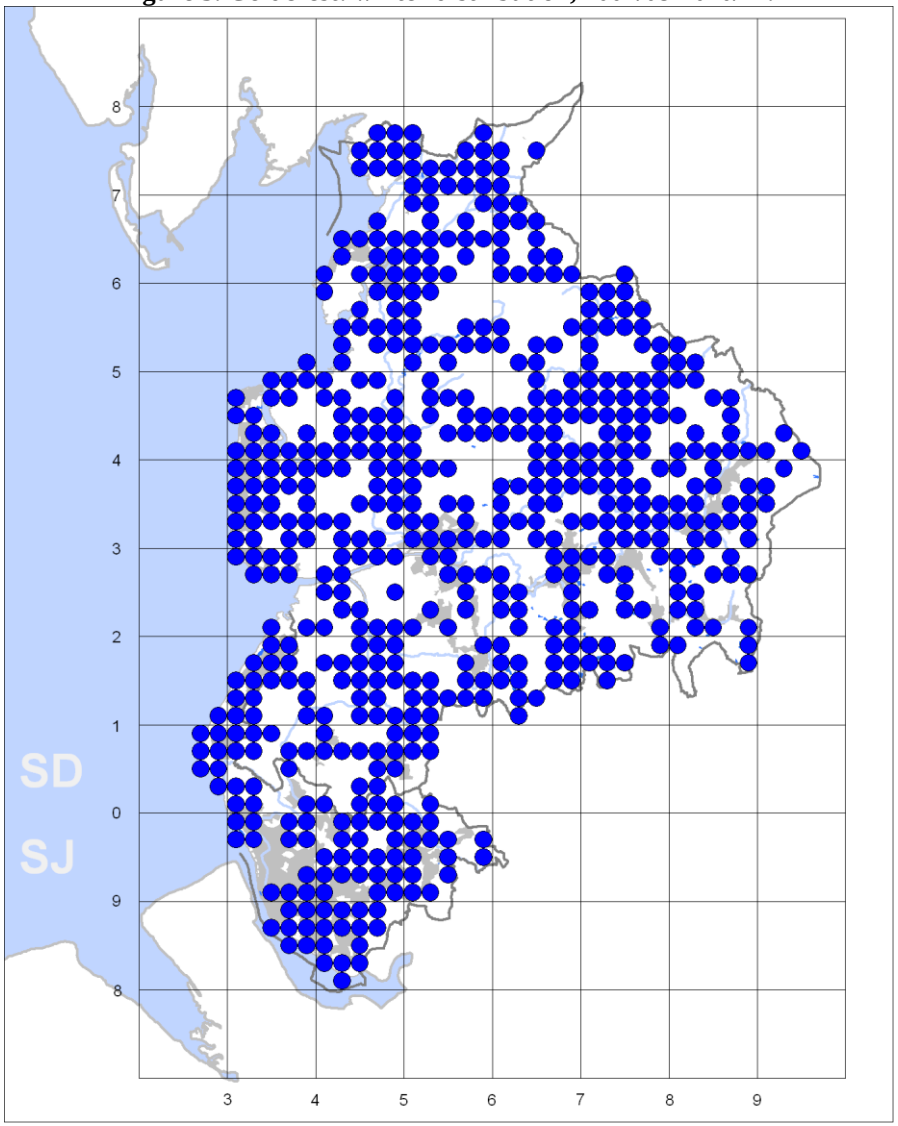


Winter

Goldcrests are much less tied to coniferous woodland in winter and were found in 591 tetrads, 63% of the county total and were thus significantly more widespread than in the breeding season – by 13 percentage points (Fig.3). Their distribution was basically similar to that of summer but many more tetrads were occupied in the Fylde, central Lancashire and Merseyside.

Almost all peak counts were in single figures and there was hardly any variation in numbers seen throughout the county, so mapping relative abundance is not appropriate. Ten or more were reported in only eleven tetrads, the largest of which were 20-30 at Plex Moss, Belmont, Hightown, Gisburn Forest, Clough Bottom Reservoir and in the Sefton Coast pinewoods.

Figure 3. Goldcrest: winter distribution, 2007/08-2010/11.



As in summer relatively few observers provided population estimates for individual tetrads (117) but in these winter densities averaged 13, producing a county population of 8000 birds. This may, however, be somewhat on the low side as the average density is barely higher than during the breeding season and implies that immigrants are roughly balanced by breeding birds wintering outside of the county.

SJW

FIRECREST *Regulus ignicapilla*

Firecrests were recorded in 15 tetrads during the official winter atlas seasons during 2007/08-2010/11; all were singles with the exception of two at Freckleton in 2010.

However, most records occurred in November, with the exception of singles at Ingol and Aldcliffe Marsh in December 2007 and Hesketh Golf Course in December 2010, and these were considered to be migrants; none of the December records lingered.

SJW

BLUE TIT *Cyanistes caeruleus*

Breeding

The range of the familiar Blue Tit has changed hardly at all since the 1997-2000 breeding atlas; that survey recorded breeding in 873 tetrads, compared with 875 in the present survey, 94% of the total (Fig.1). As in 1997-2000 the only appreciable areas without nesting Blue Tits are the highest and relatively treeless tracts of north Bowland and the south Ribble marshes.

Seventeen tetrads gained nesting Blue Tits in the period between the two surveys, compared with a loss of breeding pairs from 14 tetrads, which may partly be attributable to differences in survey effort in areas of low density (Fig.2).

The breeding population was estimated at 34000 pairs, a rather crude measure based on 1% of the national population estimate. Relative breeding density varies significantly though not dramatically from one region of the county to another and is 25% higher in the west than the east.

Figure 1. Blue Tit: breeding distribution, 2008-2011.
(Large dots = probable/proven; small dots = possible).

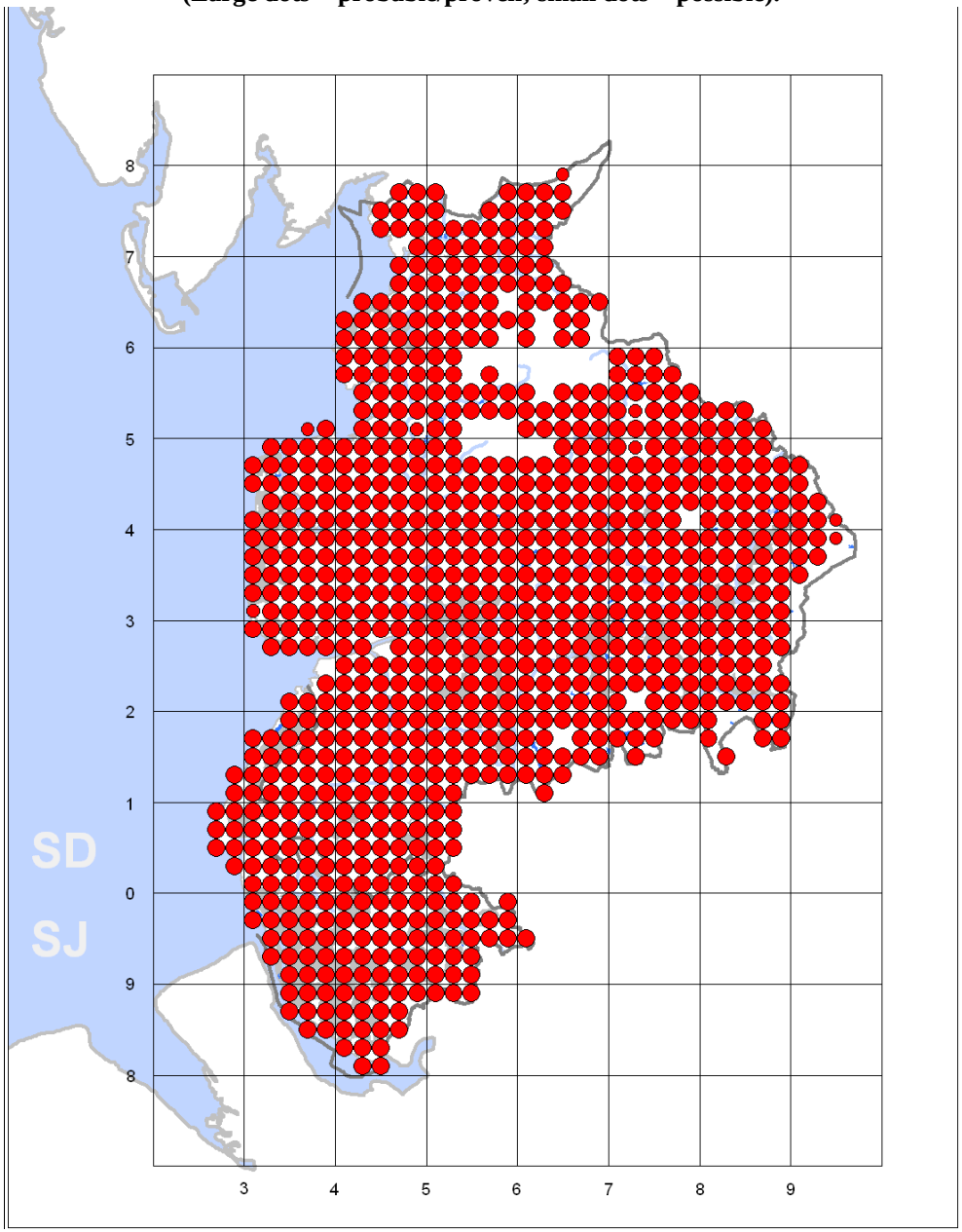


Figure 2. Blue Tit: changes in breeding distribution, 1997-2000 to 2008-2011. (Green = gains, orange = losses).

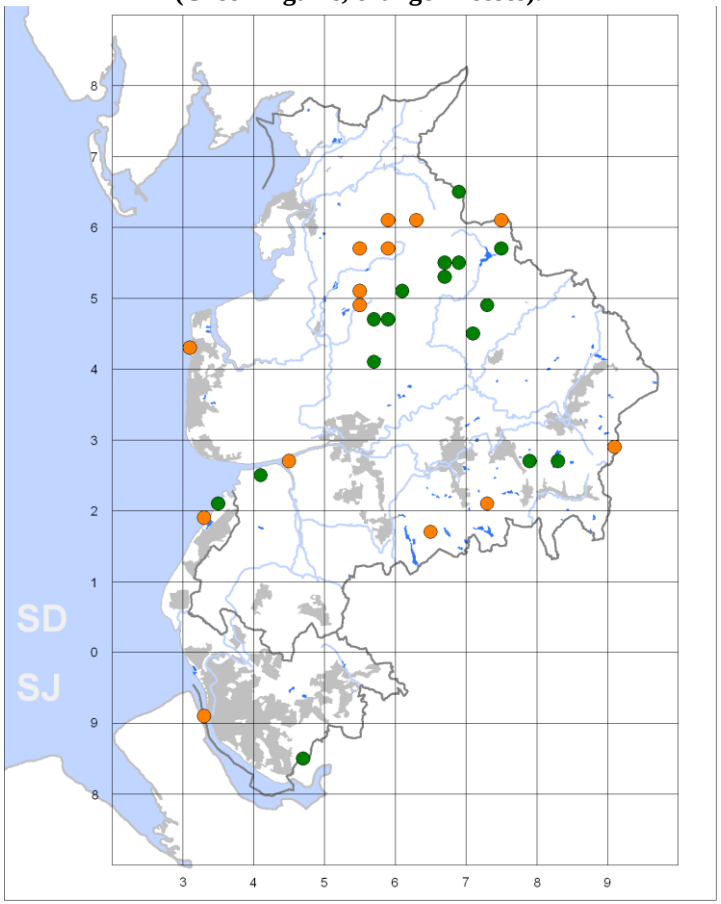
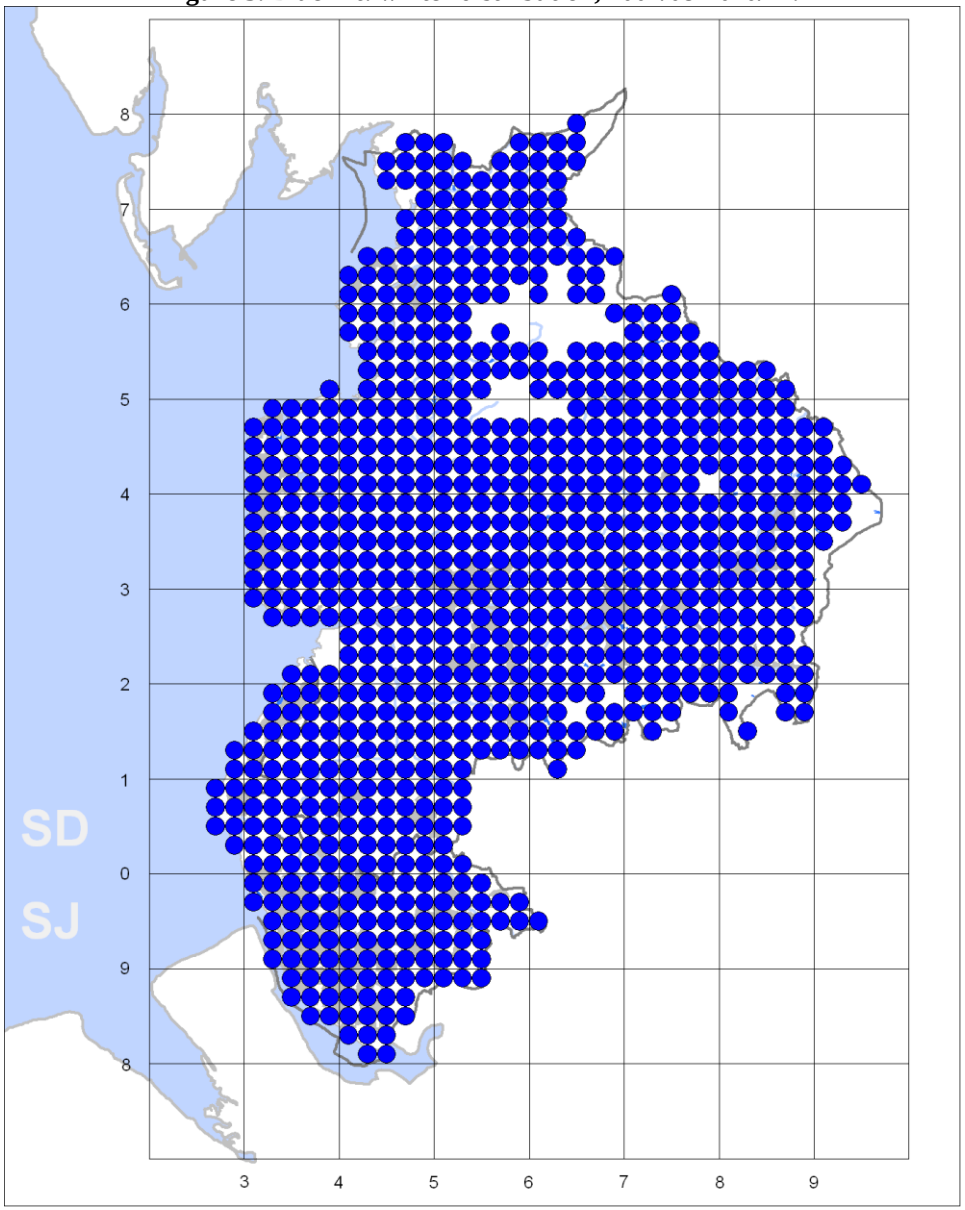


Figure 3. Blue Tit: winter distribution, 2007/08-2010/11.



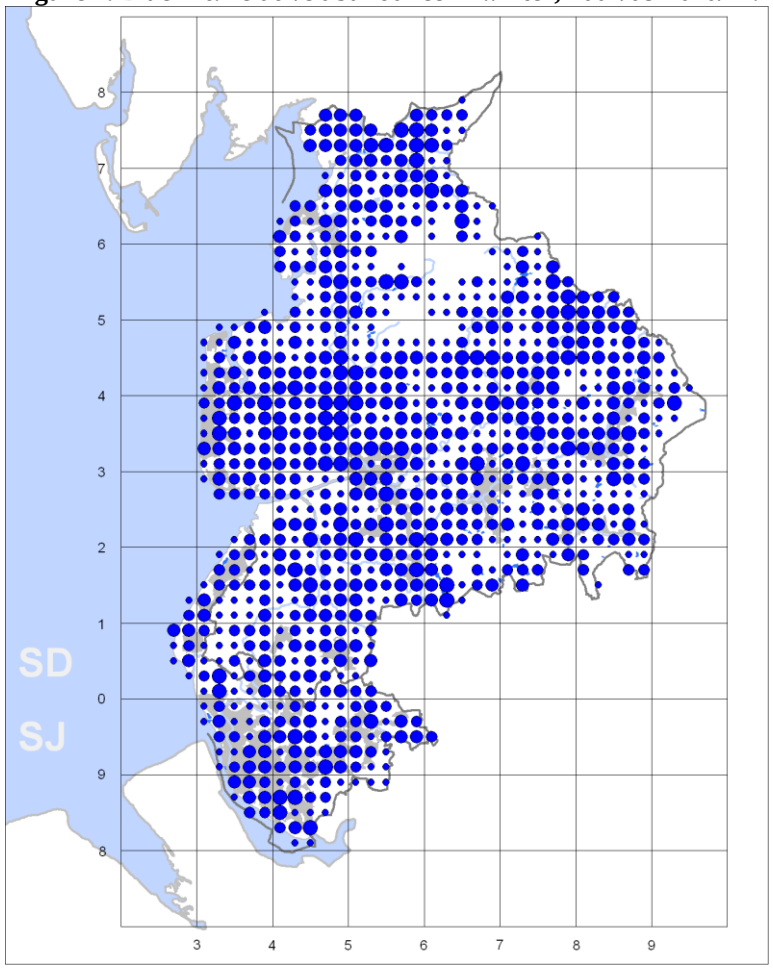
Winter

The winter distribution map is virtually identical to that of breeding distribution; Blue Tits were present in 886 tetrads, 93.9% of the total (Fig.3).

The population was estimated at roughly 100000 individuals. The relative abundance map shows high densities throughout much of the county but with a modest trend toward higher numbers of Blue Tits in a broad strip of the centre of the county from north of Lancaster south through the east Fylde to the Preston and Chorley areas (Fig.4).

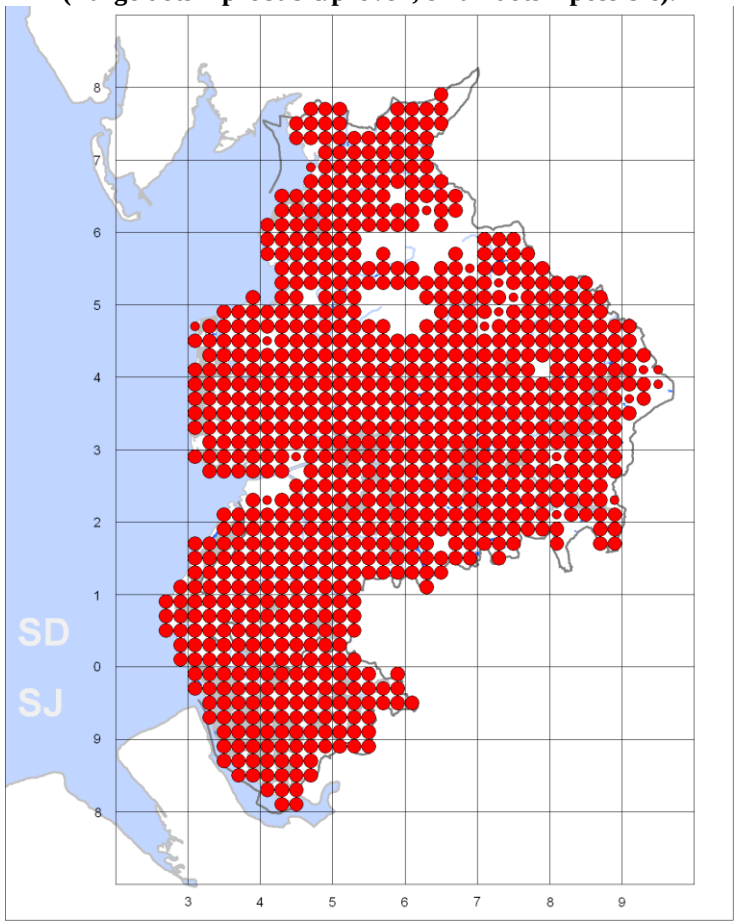
SJW

Figure 4. Blue Tit: relative abundance in winter, 2007/08-2010/11.



Dot size in descending order: 40-90; 20-39; 10-19; 1-9

Figure 1. Great Tit: breeding distribution, 2008-2011.
(Large dots = probable/proven; small dots = possible).



GREAT TIT *Parus major*

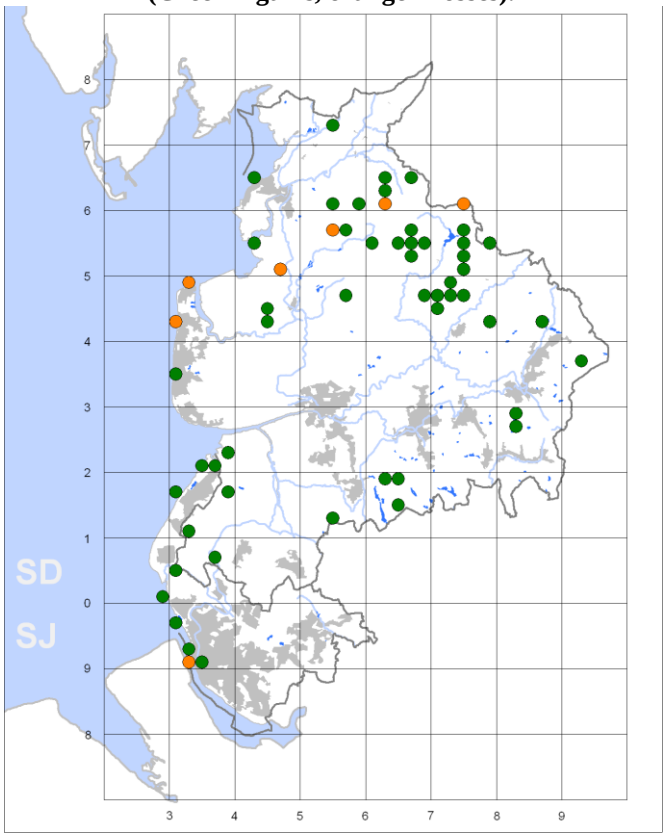
Breeding

Great Tits have been increasing in numbers nationally and locally since the 1970s and they continued to expand their breeding range during the first decade of this century, showing a 5% increase between 1997-2000 and 2008-2011, when they were found in 876 tetrads, 93% of the county total (Fig.1).

As with many other common passerines, Great Tits were absent only from the highest fells and the south Ribble saltmarshes.

During the same period the range of Blue Tits remained stable and for the first time it appears that Great Tits may now be the more widespread species, albeit by a mere three tetrads! For some years Great Tit numbers have been increasing faster – perhaps twice as fast – as those of Blue Tits, but they continue to be found at significantly lower densities. The ratio of Blue Tits to Great Tits found in Lancashire during 2008-11 was 1.5 to one, a reduction from an estimated two to one in 2000.

Figure 2. Great Tit: changes in breeding distribution, 1997-2000 to 2008-2011. (Green = gains, orange = losses).



In total 53 tetrads were newly occupied between our two breeding surveys and just seven tetrads apparently lost (Fig.2). There was some infilling on the margins of the previous range, principally in east Lancashire north of the Ribble and in urban Merseyside, while the losses were scattered mainly across the north of the county.

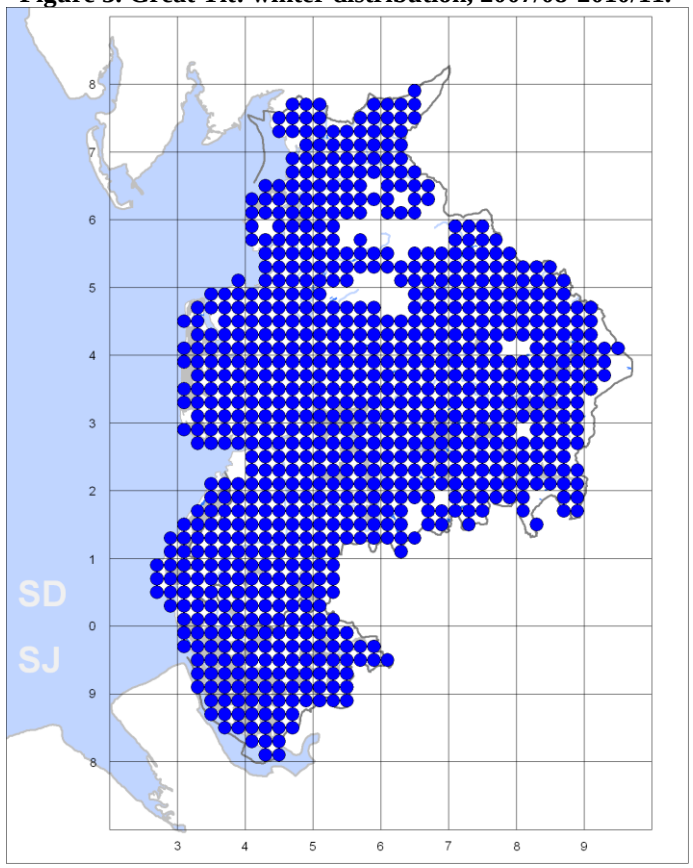
There was little variation in breeding numbers between the four quarters of the county, although densities in occupied tetrads were 18% higher in the south than the north.

Population estimates were provided by surveyors for almost a third of all occupied tetrads and these averaged 25 pairs per tetrad, producing a county population estimate of 20000 pairs, a little less than 1% of the British total.

Winter

The winter distribution of Great Tits was essentially the same as in summer; they were found in 886 tetrads, 94% of the county total (Fig.3).

Figure 3. Great Tit: winter distribution, 2007/08-2010/11.



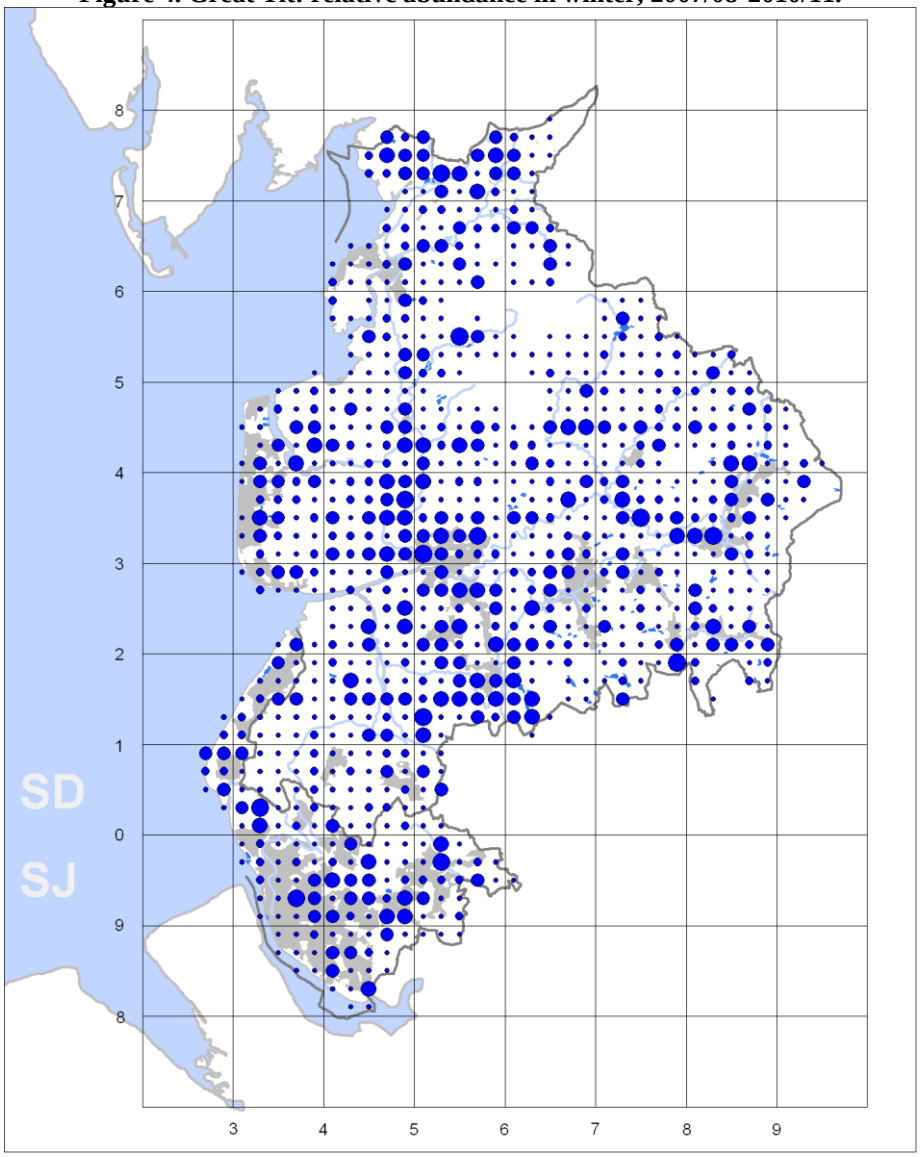
There was little variation in relative abundance in the four quarters of the county, although numbers were lowest in the north-east. Nor was there any clear-cut pattern in tetrads holding large numbers, although a broad swathe of tetrads with high densities stretches from Chorley north to Preston and eastern Fylde, with other clusters in the St. Helens and Burnley areas.

Peak counts of 30 or more were made in 38 tetrads, the largest of which were 85 in Ince Blundell, 68 at Stanley Bank, St. Helens, 54 at Cow Hill, Preston, 51 in Anfield (a surprisingly high total in this very urban tetrad) and

50 at Cuddy Hill, Fylde. The county population, scaled up from the estimate of breeding pairs, was estimated at 60000 birds.

SJW

Figure 4. Great Tit: relative abundance in winter, 2007/08-2010/11.



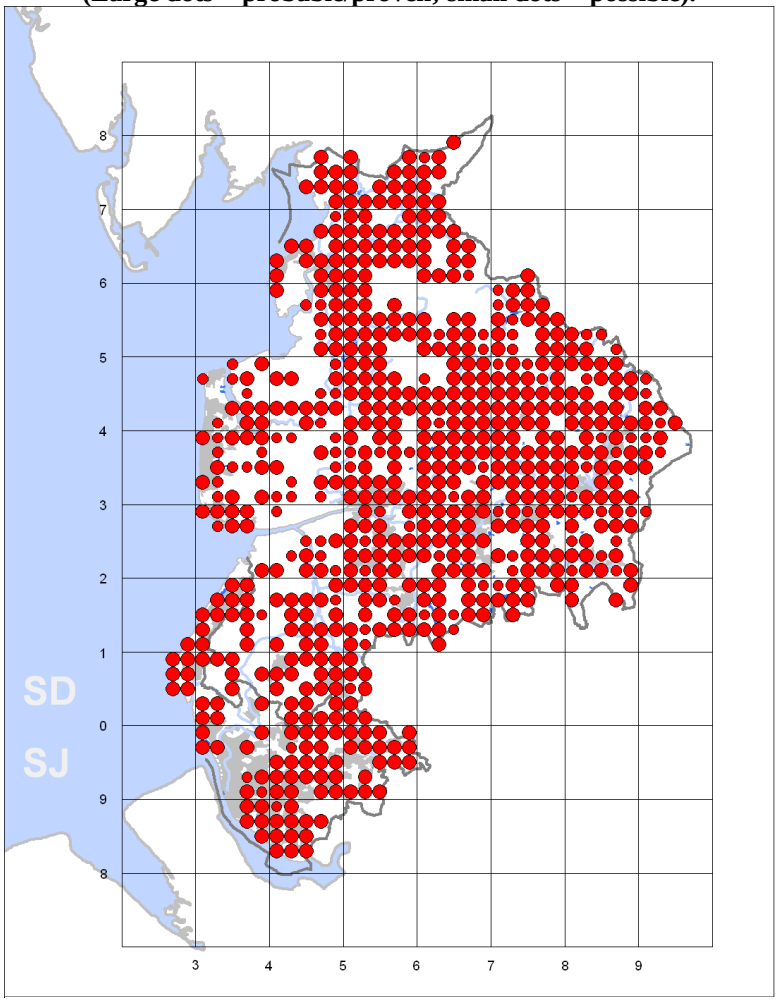
Dot size in descending order: 40-85; 25-39; 15-24; 10-14; 1-9

COAL TIT *Periparus ater*

Breeding

Probable or proven breeding was found in 576 tetrads during 2008-2011 compared with just 387 during 1997-2000; possible breeding results were similar at 103 and 96 tetrads respectively (Fig.1). Therefore 72.47% of the county's tetrads were occupied, indicating a 41% increase in range over the past ten years.

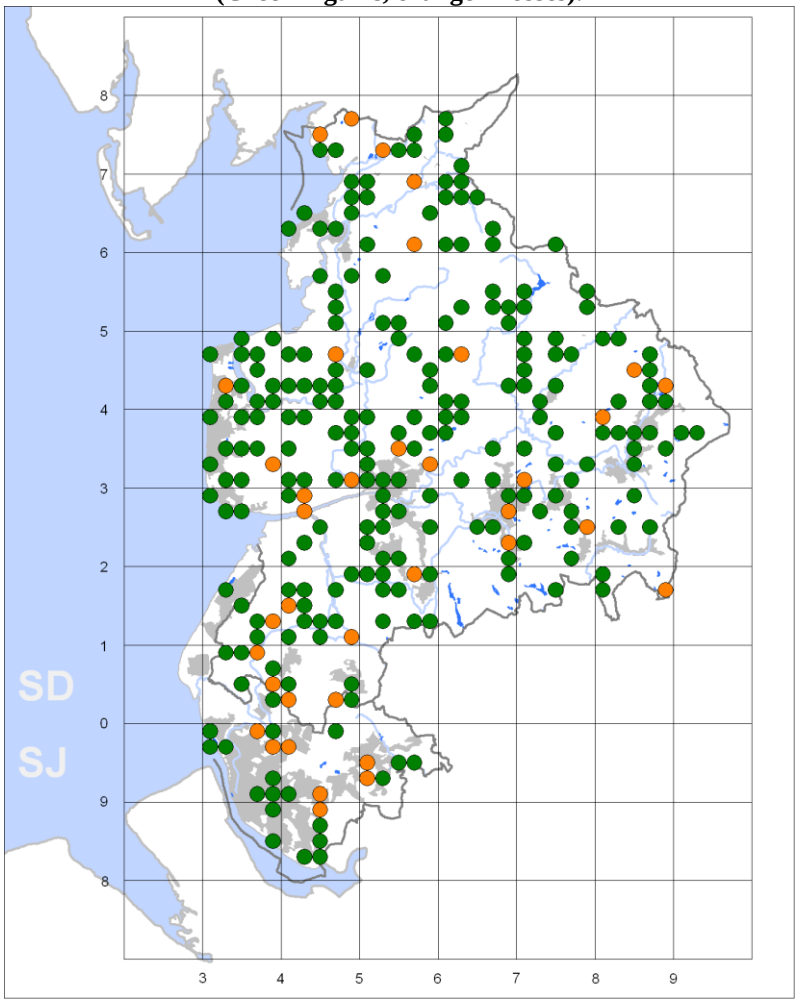
Figure 1. Coal Tit: breeding distribution, 2008-2011.
(Large dots = probable/proven; small dots = possible).



Coal Tits are found throughout the county but their distribution is most solid in the eastern two-thirds and parts of Merseyside, and sparse in many upland and farmland areas, particularly Bowland and eastern Fylde respectively. However, there were no differences in average densities in occupied tetrads between any of the four quarters of the county.

Apparently-abandoned tetrads were hugely outnumbered by newly-occupied ones (Fig.2). There was no pattern to the losses but gains were particularly noticeable in central Lancashire and the Fylde.

Figure 2. Coal Tit: changes in breeding distribution, 1997-2000 to 2008-2011. (Green = gains, orange = losses).



This massive range increase is difficult to explain as there has been little change in the amount of favoured habitat – including gardens and shelter-belts with small numbers of conifers as well as more extensive plantations and Yew woodlands on the limestone of the Silverdale and Warton area – although some maturing plantations may have become more productive. It might be due in part to increased survey effort in low-density areas but may reflect a genuinely large population increase. One untested possibility is that increased irruptive behaviour (see below) may have led to winter immigrants remaining into the breeding season.

Average density was estimated at eight pairs per occupied tetrad, indicating a county total of 5500 pairs.

Winter

Coal Tits were found in 749 tetrads during 2007/08-2010/11, 78.6% of the county total (Fig.3). Their winter range was thus marginally more extensive than in summer but covered broadly the same areas, although the Fylde and West Lancashire were more solidly occupied. This may have been in part due to the partial evacuation of some upland areas but possibly also due to increasing irruptive immigration into the county which sees annually variable autumn movements of excitable high-flying flocks at various coastal Lancashire sites.

The main gaps in distribution were in treeless areas of Bowland, the Lancashire plain and inner urban areas, although some gaps may be due to less extensive coverage.

The highest density tetrads were overwhelmingly in the northern half of the county, reflecting the relative presence of sizeable conifer plantations and Yew woodland (Fig.4). However, there were also significant populations on the Sefton Coast and other areas of Merseyside, the West Pennine Moors and the Ribble valley.

Clear-felling of conifer plantations is a major cause of population fluctuations at a local level but variable rates of winter immigration may be significant county-wide; the population was estimated at roughly 15000 birds.

PJM

Figure 3. Coal Tit: winter distribution, 2007/08-2010/11.

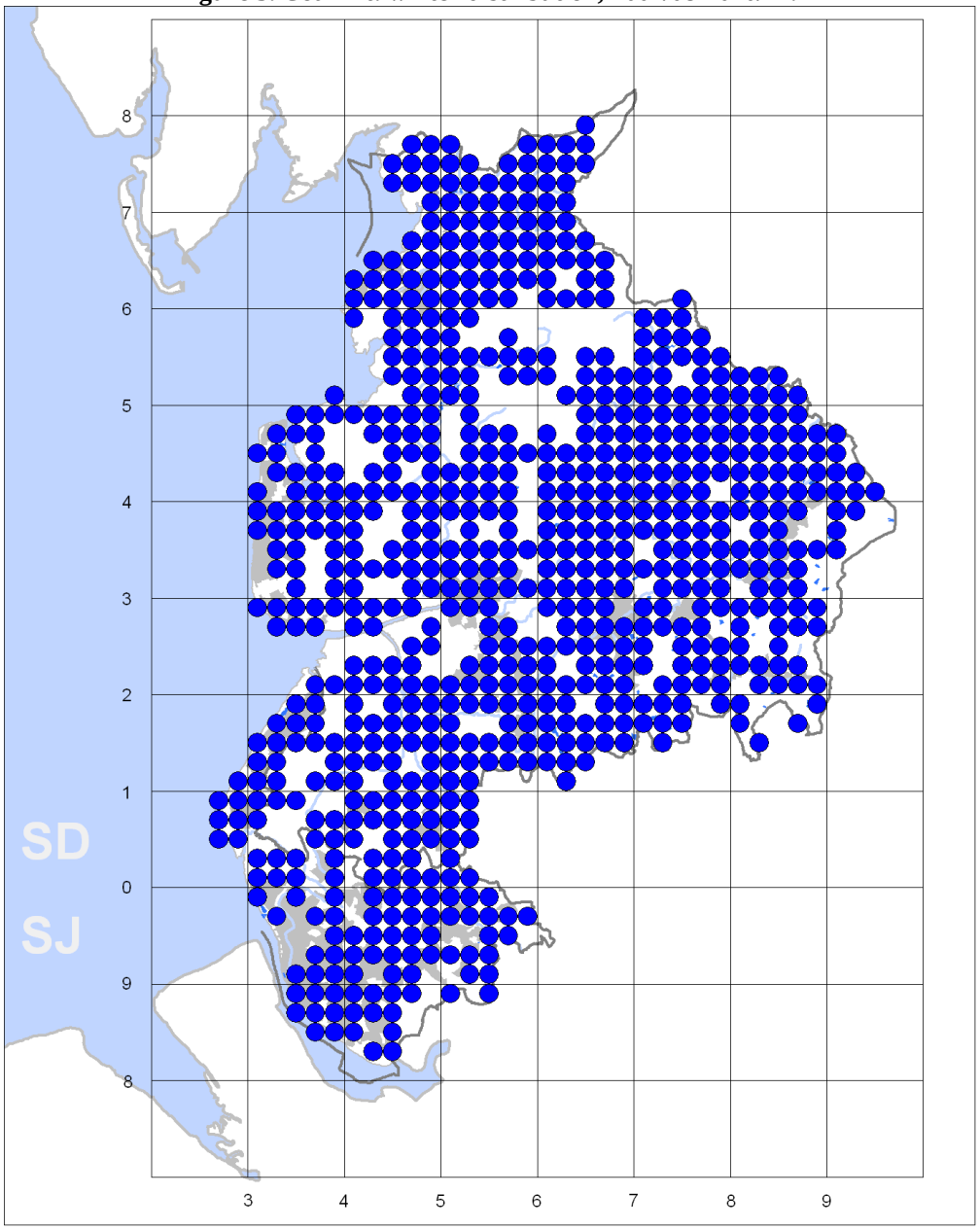
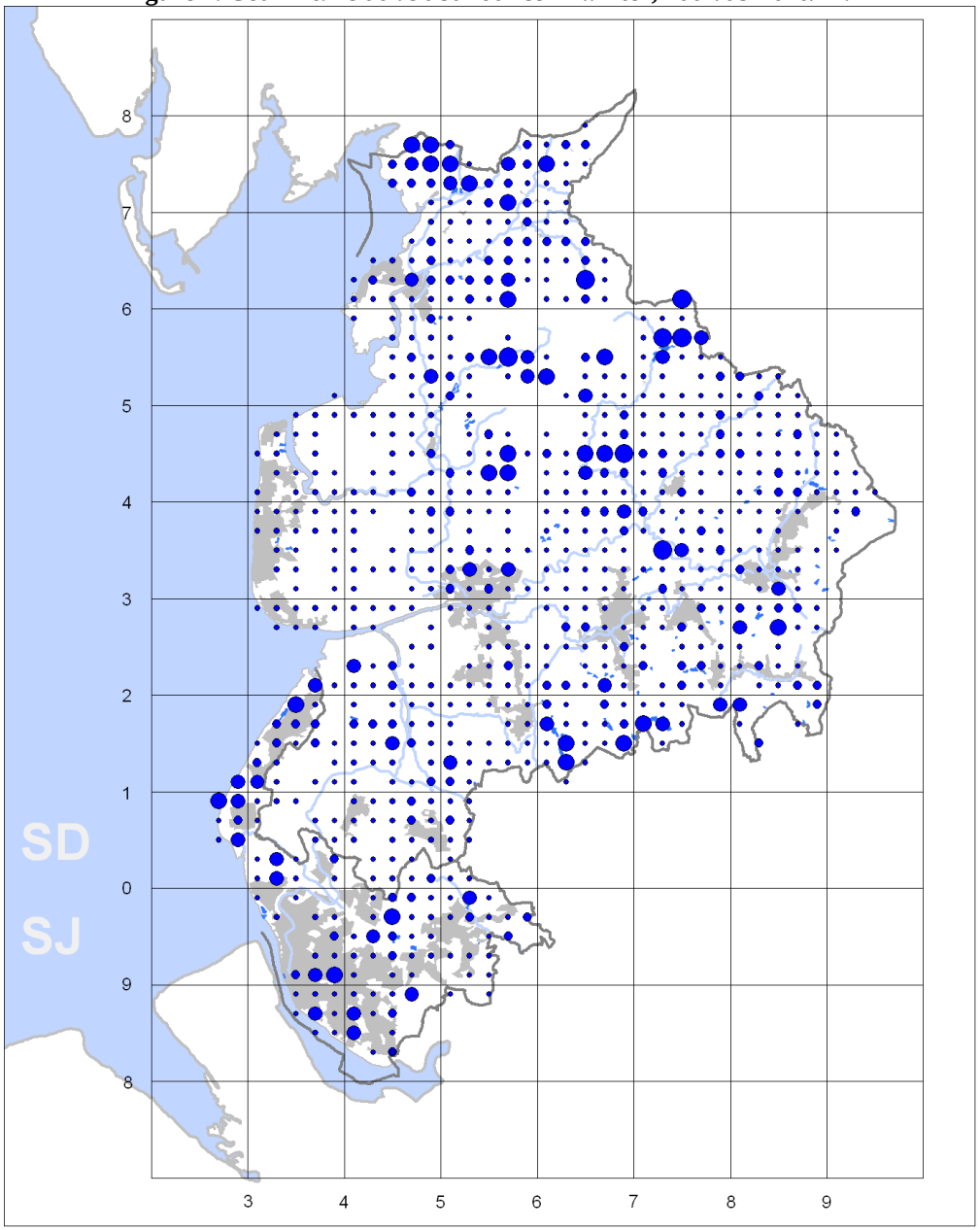


Figure 4. Coal Tit: relative abundance in winter, 2007/08-2010/11.



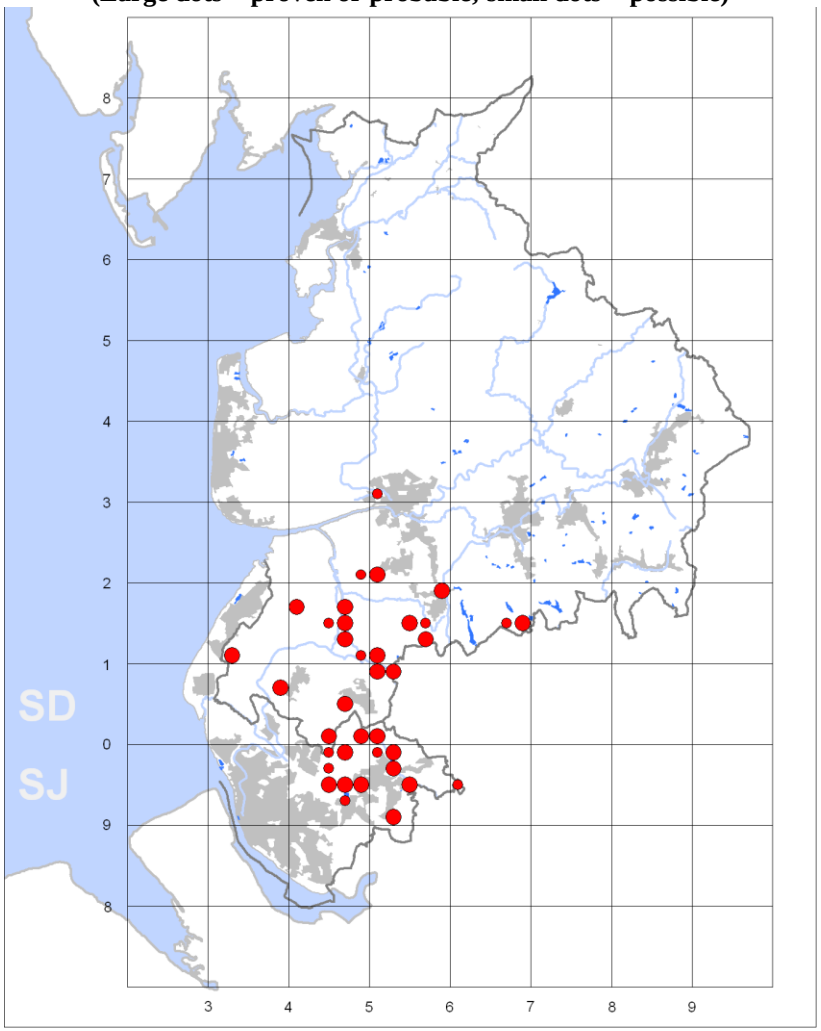
Dot size in descending order: 30-82; 15-29; 10-14; 5-9; 1-4

WILLOW TIT *Poecile montana*

Breeding

Willow Tits have been declining steeply both nationally and locally since at least the middle of the last century and it is clear that this trend continues inexorably. They were found in 37 tetrads during the breeding seasons of 2008-11, a decrease in range of 50% since 1997-2000 (Fig.1).

Figure 1. Willow Tit: breeding distribution, 2008-2011.
(Large dots = proven or probable; small dots = possible)



With the exception of a possible breeding record in April 2011 at Ingol, which has been a regular wintering site in recent years, all records were south of the Ribble as has long been the case; the three tetrads shown as abandoned since 2000 to the north of Preston were never fully verified as breeding sites.

Discounting these three, 46 tetrads were apparently abandoned between 2000 and 2011, largely within the core range of mostly wet woodland between Knowsley, St. Helens and Skelmersdale, but also in Liverpool and Sefton – both areas where Willow Tits now appear to be extinct (Fig.2).

The 17 apparently newly-occupied tetrads also fell within the core range but there was also a notable cluster in West Lancashire and Chorley – perhaps the result of increased survey effort in this area.

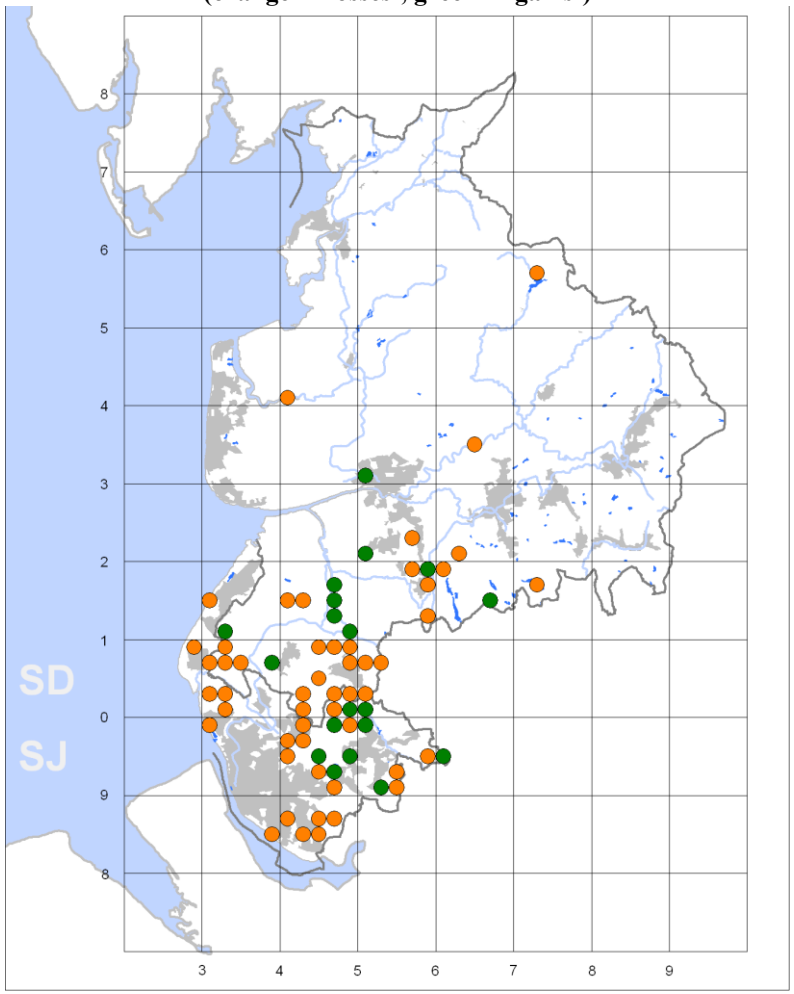
To complicate the picture, the combined winter and summer range of this essentially sedentary species covered 61 tetrads, several of which are mapped as abandoned since 2000 in Fig.2.

However, since the 1997-2000 and 2008-11 breeding surveys used the same methodology the estimated 50% decline is likely to be close to the truth, although the actual breeding range may be somewhat larger than shown in Fig.1.

Population estimates were provided by most observers and suggested an average density of 1.5 pairs per occupied tetrad, providing a county population estimate of 50 pairs (although for the reasons above it may actually be somewhat larger than this).

Small as this may seem it represents 1.5% of the British population, and it is clear that the Merseyside and Lancashire population, together with the 150 or so pairs across the Greater Manchester boundary in Wigan, represents a very important area for the species nationally.

Figure 2. Willow Tit: change in breeding distribution since 1997-2000 survey (orange = 'losses', green = 'gains')



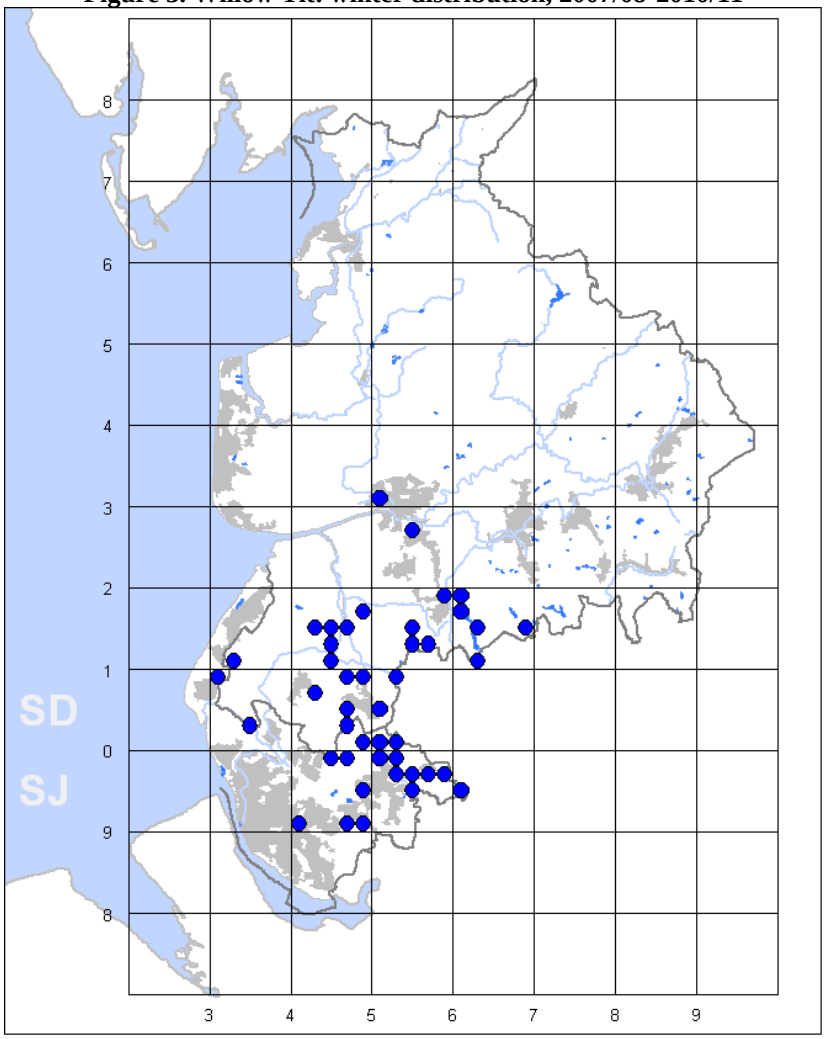
Winter

The range and distribution of Willow Tits was essentially the same as in summer; they were found in 44 tetrads (Fig.3), slightly more than during the breeding season and, as was noted above, 24 of these were potential additions to the breeding range. The majority of the latter were adjacent to known breeding tetrads and perhaps involved a mixture of dispersing juveniles and adults that had been missed in summer. However, there were at least two which appear to have involved longer distance movements: the regular bird at Ingol mentioned above, and one at Preston Junction LNR, Walton-le-Dale.

All records were of ones or twos with the exception of three at Stanley Bank in the Sankey Valley, where birds are seen regularly on the visitor centre feeders. Based on the number of breeding pairs plus one juvenile per pair surviving past midwinter, the population was estimated at 150 individuals.

SJW

Figure 3. Willow Tit: winter distribution, 2007/08-2010/11

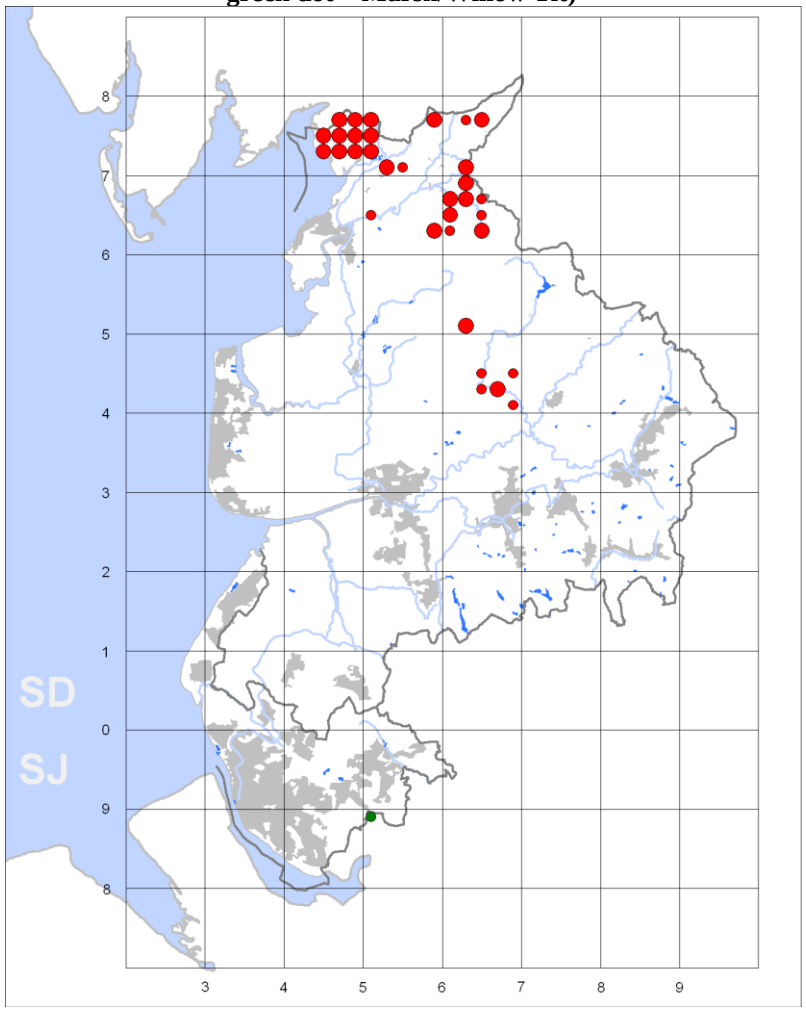


MARSH TIT *Poecile palustris*

Breeding

The breeding range of Marsh Tits is a complete reverse of that of Willow Tits with all records north of the Ribble. Birds were located in 34 tetrads during 2008-2011, indicating a decline of 30% since 1997-2000 (Fig.1).

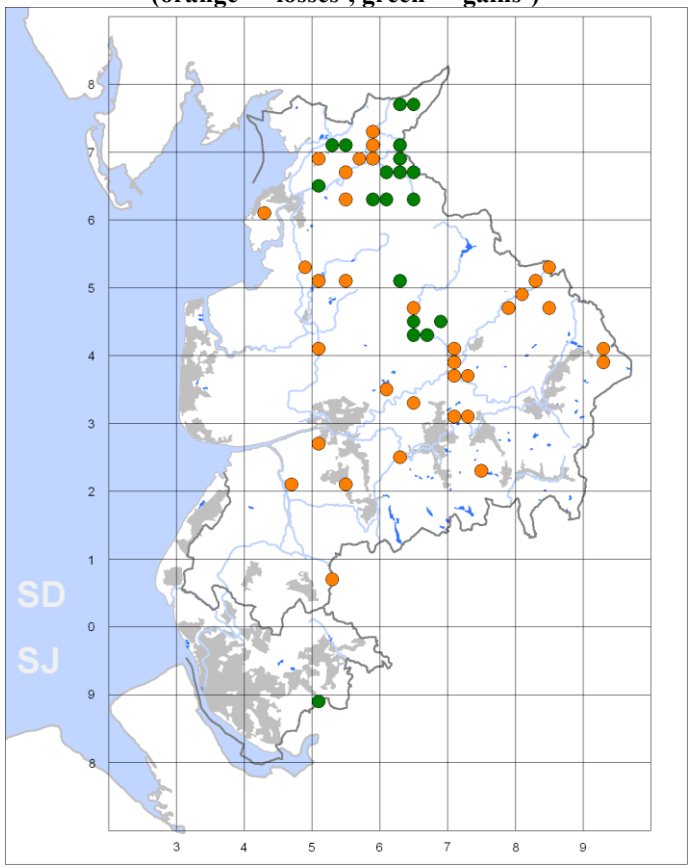
Figure 1. Marsh Tit: breeding distribution, 2008-2011.
(Large red dots = proven or probable; small red dots = possible; green dot = Marsh/Willow Tit)



In east Lancashire there was a cluster of records in the Hodder Valley and an isolated one in the Langden Valley. However, the majority were found in north Lancashire in the Lune and Leck Valleys but primarily in the limestone woodlands of Silverdale and Warton.

There was no change in distribution in this north-west stronghold and it is clear that Marsh Tits are continuing to thrive there but it is a very different picture in most of the rest of the county (Fig.2).

Figure 2. Marsh Tit: change in breeding distribution since 1997-2000 survey
(orange = 'losses', green = 'gains')



Marsh Tits appear to have disappeared from all areas south of the Ribble where they were found ten years ago, most dramatically along the Ribble Valley. However, three or four of these records were felt to be a little

uncertain when the previous atlas was compiled as they fell, and still do, within the range of Willow Tits.

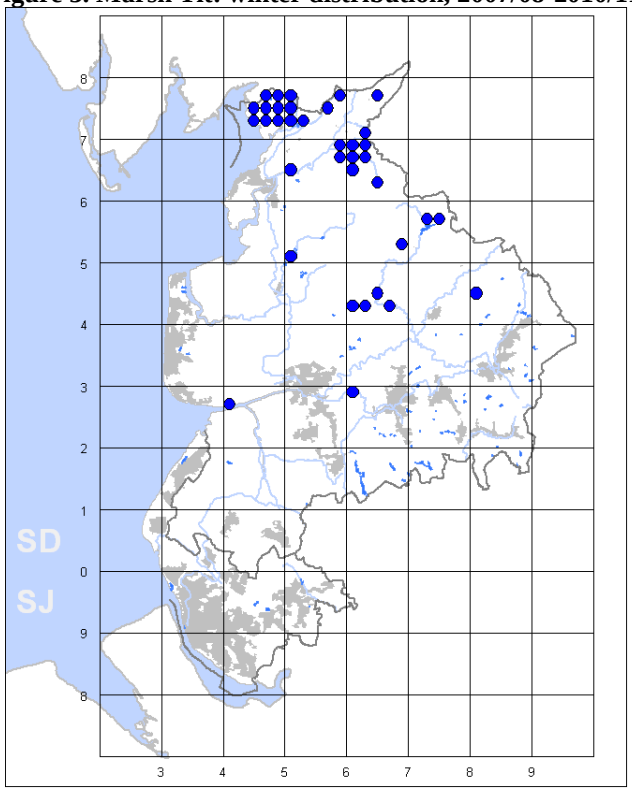
It is unclear to what extent the cluster of apparently newly-occupied tetrads in the Hodder Valley represent a small expansion here or merely increased survey effort, but the similar cluster in the north-east of the county was almost certainly due to the latter.

Densities are thought to be significantly higher in the Silverdale/Warton area than elsewhere, making estimating population size difficult, but it is probably in the order of 200 pairs.

The specific identity of one record, at Pex Hill in Knowsley (SJ58E), has not been confirmed and is shown in Figs.1 & 2 as Marsh/Willow Tit; it was close to the known Lancashire range of Willow Tits but also that of Marsh Tits in Cheshire.

Winter

Figure 3. Marsh Tit: winter distribution, 2007/08-2010/11



Marsh Tits were found in 36 tetrads during 2007/08-2010/11 (Fig.3).

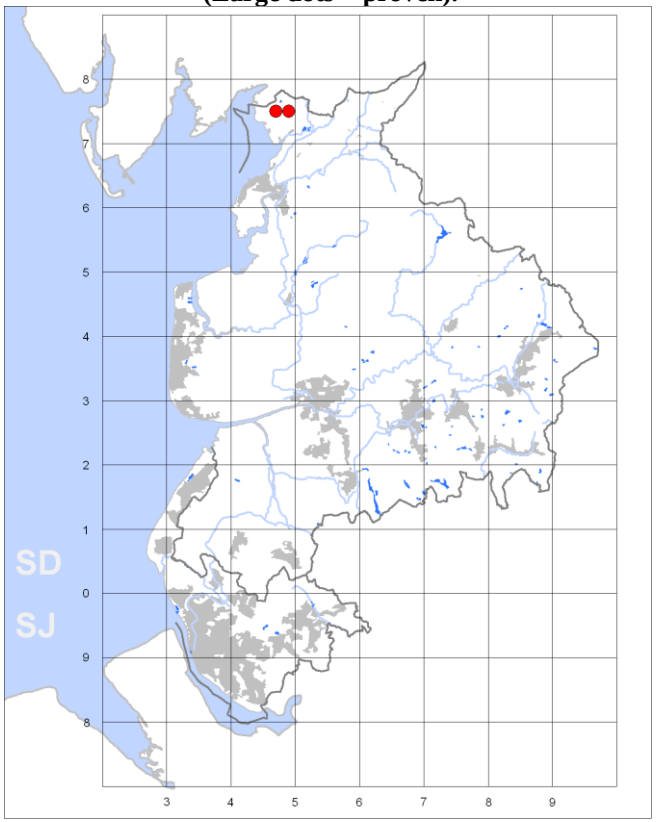
Almost all were within or close to the confirmed breeding range, but two south of the river in the Ribble Valley were within the previous range, which perhaps indicated that small numbers have in fact held on there. The single record in the Fylde at Warton Bank, however, was confirmation that this essentially sedentary species does occasionally disperse considerable distances.

PJM

BEARDED TIT *Panurus biarmicus*

Since they first became established in the Leighton Moss reedbeds in 1973 this has remained the only regular site in Lancashire for Bearded Tits.

Figure 1. Bearded Tit: breeding distribution, 2008-2011.
(Large dots = proven).



Birds nested and wintered in both Leighton Moss tetrads during 2007-2011 (Fig.1) but their presence continues to be somewhat tenuous. Harsh winter weather and high water levels pose a constant threat and the population is subject to large fluctuations (Fig.2). The colony increased more or less steadily to reach a peak of 65 pairs during the last atlas survey in 2000 before crashing to near extinction in 2001. Birds then began a comeback but numbers fell to 18 pairs in 2008, increasing to 26 pairs in 2009 and 32 in 2010, before falling again to twelve pairs in 2011. At its peak in 2010 Leighton Moss held 5% of the British population.

Although irruptive behaviour has not been noted at Leighton Moss for some years, there were three records of wandering birds from unknown sources during the current atlas period. A pair was in a small reedbed at Seaforth on 15-16 April 2010 before moving to the RSPB's Conwy reserve where they nested. Later that year one was at Martin Mere on 24 July with two there on 25 October.

SJW

SKYLARK *Alauda arvensis*

Breeding

Skylarks have a special place in the public imagination and their national plight has received much publicity; numbers in the UK fell by 58% between 1970 and 2010 and by 20% since 1995. The situation in Lancashire appears to have followed this national trend closely.

They do, however, remain a very widespread species in the county and were found in 573 tetrads during 2008-2011, 61% of the total but indicating a 17.5% decline in range since 1997-2000 (Fig.1).

Their distribution was more or less solid outside of urban areas in the south-west, in the area south of the mill towns stretching from the West Pennine Moors to Rossendale and the Trawden area, and in northern Bowland, but was a little patchier elsewhere and sparse in a large area of central and north Lancashire.

This reflects the presence of their two main breeding habitats, arable farmland in the south-west and Purple Moor-grass moors in the uplands; they avoid pure Heather moorland and intensively-grazed pastures and silage production in both the lowlands and uplands.

Figure 1. Skylark: breeding distribution, 2008-2011.
(Large dots = proven or probable; small dots = possible)

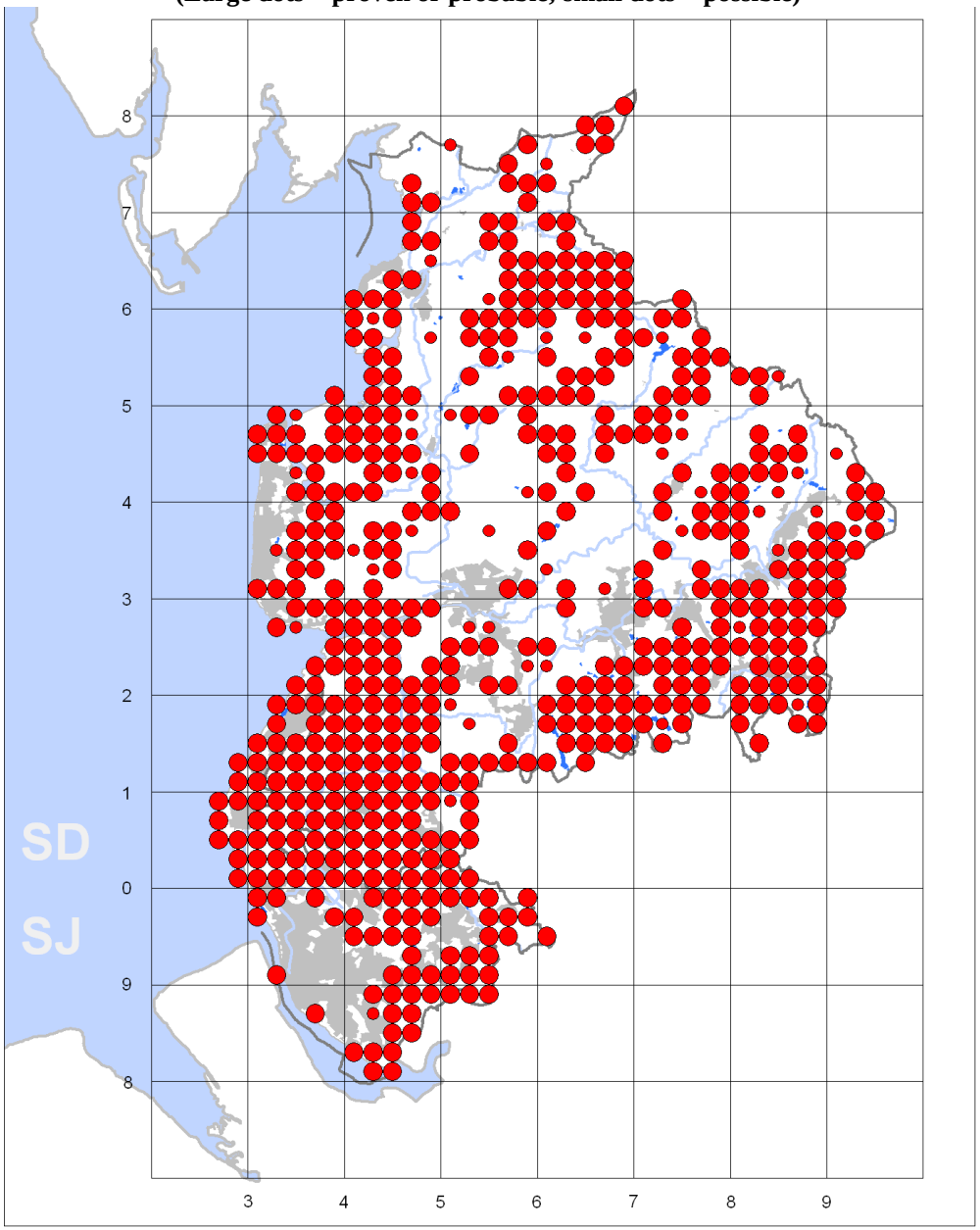
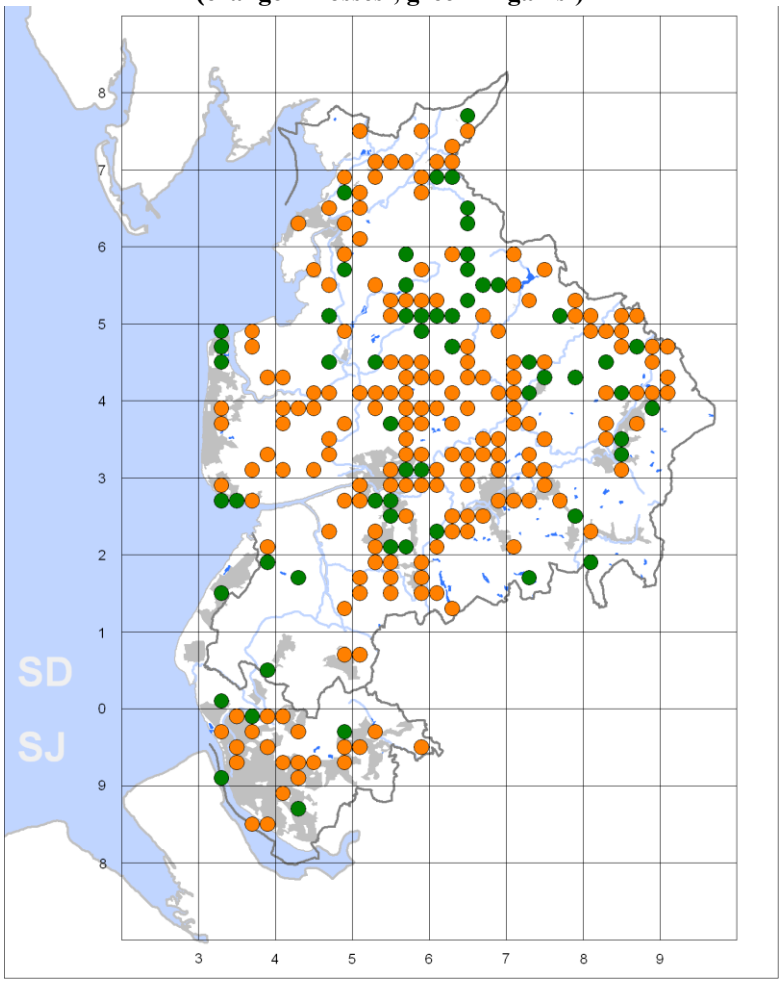


Figure 2. Skylark: change in breeding distribution since 1997-2000 survey (orange = 'losses', green = 'gains')



Despite a dramatic intensification over the past few decades, arable areas continued to support higher average densities of Skylarks than the fells; densities in occupied tetrads were 75% higher in the west than the east of the county but did not differ between the north and the south.

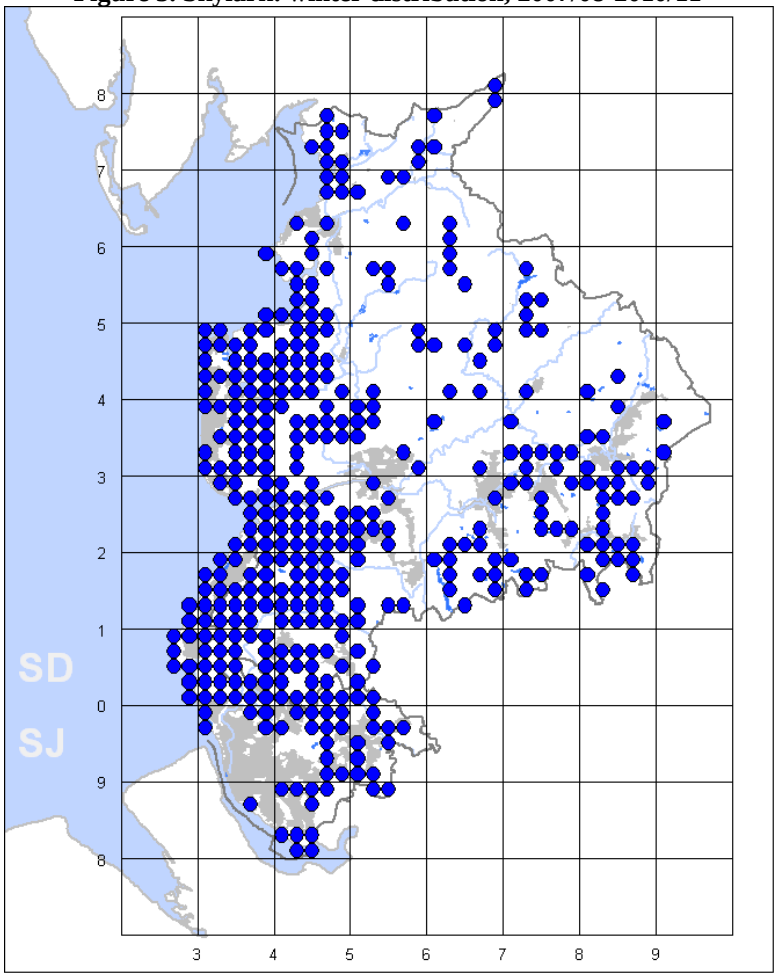
A total of 188 tetrads was apparently abandoned since 1997-2000 and only 62 were newly occupied (Fig.2). Gains were scattered throughout the county with no obvious pattern, while losses, although also widespread, showed a heavy concentration in the centre of the county.

Breeding densities varied considerably both within and between regions but the average was around 12 pairs per occupied tetrad, producing a county population estimate of 7000 pairs, roughly 0.5% of the national total.

Winter

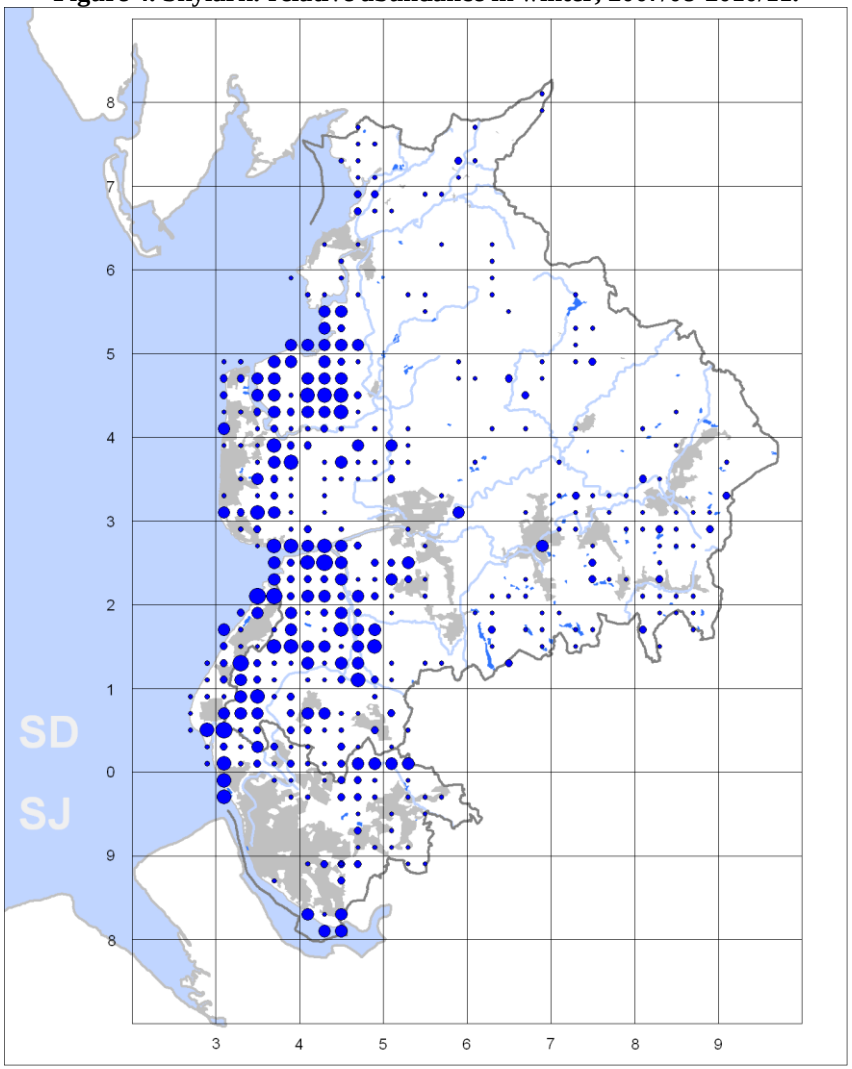
The winter distribution of Skylarks is very different to that of summer with a large majority of tetrad registrations in the western third of the county. Birds were found during the formal winter atlas months in a total of 394 tetrads, covering 42% of the county total (Fig.3).

Figure 3. Skylark: winter distribution, 2007/08-2010/11



The distribution map gives a misleading impression of the extent to which Skylarks are found in the uplands of Lancashire in winter as the species is an altitudinal migrant and deserts its moorland nesting areas after the breeding season. However, many do return to breeding territories early in the year and almost all of these apparent winter records were in fact made in February and would be better regarded as breeding season records.

Figure 4. Skylark: relative abundance in winter, 2007/08-2010/11.



Dot size in descending order: 500-1780; 150-499; 30-149; 10-29; 1-9

Some do overwinter on lower ground in the east but usually in very small numbers, 40 at Fishmoor Reservoir in December 2007 being the sole exception, and all other significant counts occurred on the coast or particularly on agricultural land in the south-west and north Fylde (Fig.4).

Peak counts of 200 or more were recorded in 19 tetrads, the largest being 1780 at Marshside, 1300 in Formby, 850 on Halsall Moss and 750 at Hesketh Bank; the largest counts in the Fylde were 300 at Stalmine and Eagland Hill.

Average densities were estimated at 80 birds per occupied tetrad in the western half of the county, indicating a Lancashire population of 25000.

PJM

SHORE LARK *Eremophila alpestris*

There were two records during 2007/08-2010/11, singles at Birkdale in November to December 2009 and Carnforth Slag Tips in January to April 2011.

SJW

SAND MARTIN *Riparia riparia*

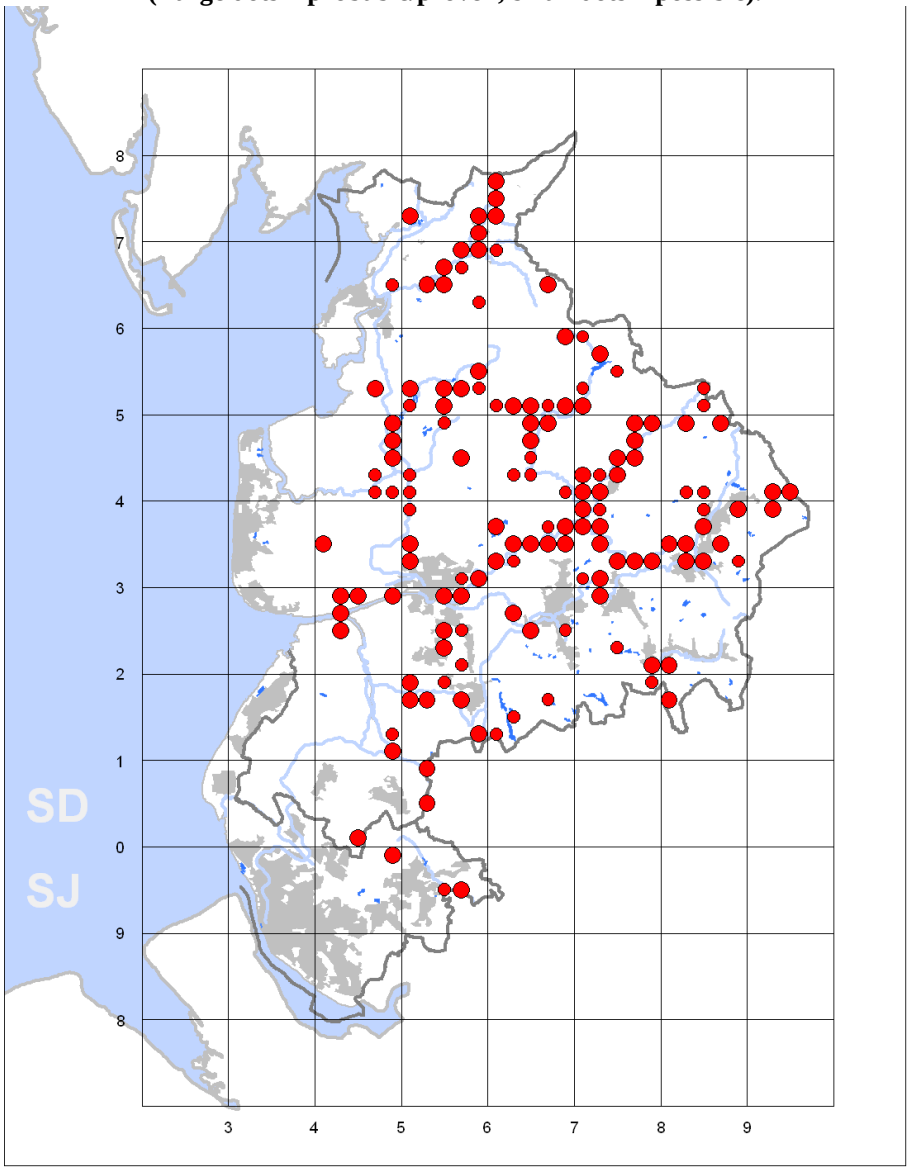
Sand Martins were proven or probably breeding in 96 tetrads, a relatively insignificant fall of 4% since 1997-2000, perhaps best treated as indicating a fairly stable range (Fig.1). This contrasts with a national population increase of 60% between 1995 and 2010, but Sand Martins are prone to large fluctuations and they were particularly numerous in Lancashire in 2011 after much of the survey had been completed in the previous two summers.

Their distribution follows that of Lancashire's main rivers, the Lune, Ribble and Calder, which provide suitable nesting sites where burrowing into exposed, sandy banks is possible and all of which are more or less fully occupied in their middle to upper reaches, together with a few gravel pits and constructed nesting banks as at Brockholes and Alston.

The change map shows particular losses in the north of the county, especially along the Lune and Wyre. In contrast, breeding along the Ribble appears far more stable (Fig.2).

Peak counts at the main colonies during 2008-2011, most of which were made in 2011, were 3026 pairs on the Lune between Skerton Weir and Kirkby Lonsdale with 1316 of these at Arkholme, 410 at Lightfoot Green in

Figure 1. Sand Martin: breeding distribution, 2008-2011.
(Large dots = probable/proven; small dots = possible).

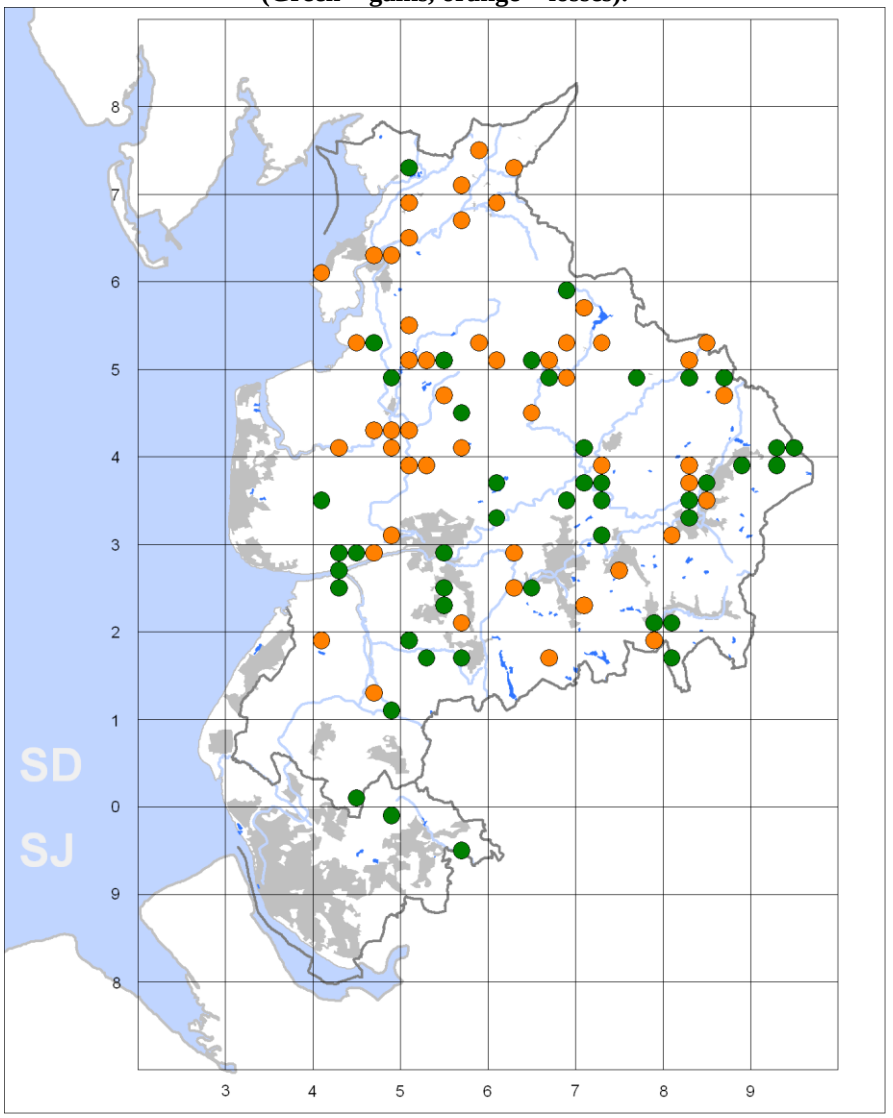


Fulwood, 362 on the Calder between Altham and Martholme, 350 at Alston Wetland, 143 on the Calder at Ightenhill Bridge, 100 on Crossdale Beck, a tributary of the River Hindburn, and 60 at Brockholes and Simonswood Moss, Kirkby; no significant counts were received from the River Ribble.

At its peak during the survey period the Lancashire population exceeded 4500 pairs but on average was probably closer to 3500.

GH

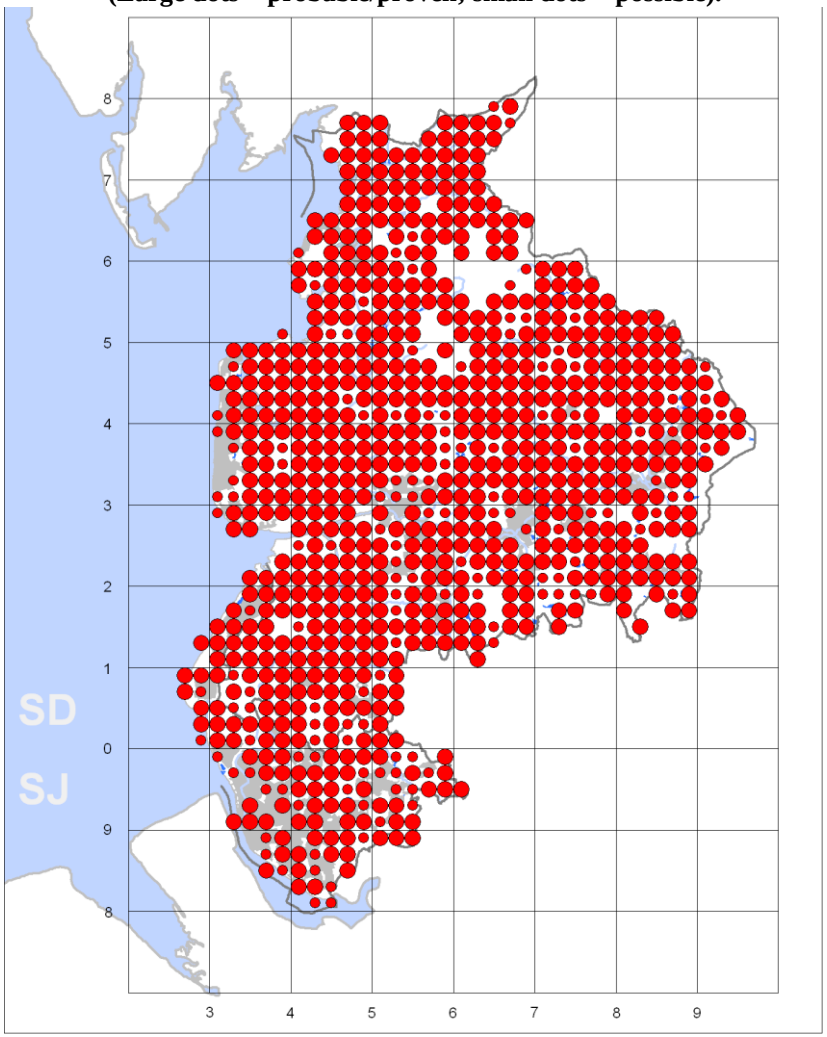
Figure 2. Sand Martin: changes in breeding distribution, 1997-2000 to 2008-2011.
(Green = gains, orange = losses).



SWALLOW *Hirundo rustica*

Swallows were seen in what was regarded as suitable breeding habitat in 860 tetrads during 2008-11 but a large number of these records (142) were logged as possible breeding only with 718 thought probable or proven (Fig.1); this compares with equivalent figures for 1997-2000 of 89 possible and 753 probable/proven.

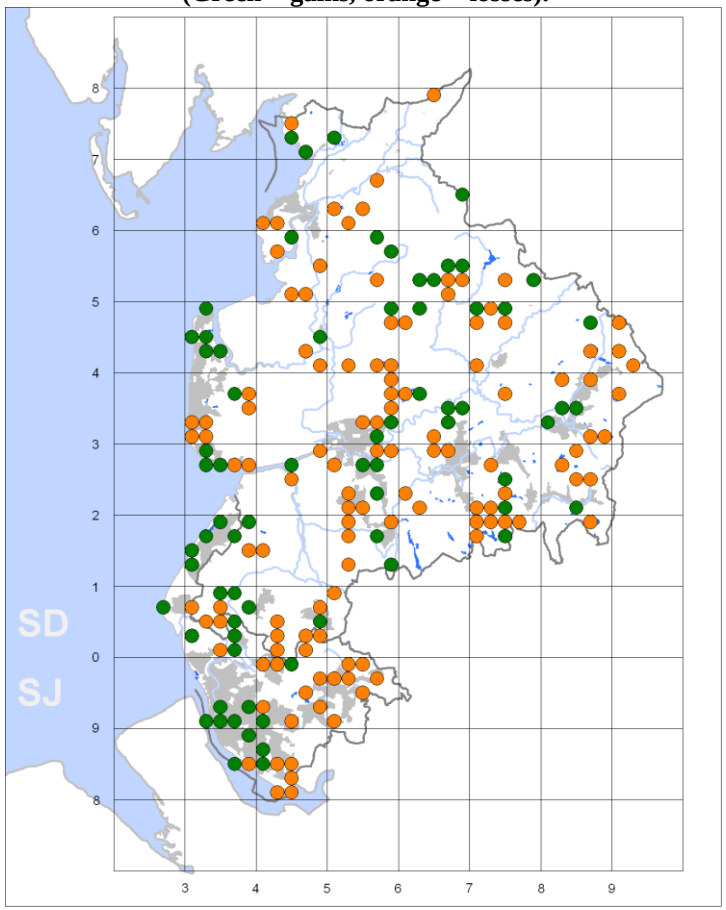
Figure 1. Swallow: breeding distribution, 2008-2011.
(Large dots = probable/proven; small dots = possible).



It therefore seems likely that rather different criteria were used to assign breeding status in the two surveys and, since all hirundines and Swifts range widely when feeding making it difficult to know where they are breeding, it is safer to use only the probable or proven breeding records in analysing range and population trends.

On that basis the breeding range of Swallows in Lancashire declined by 5% in the first decade of this century, covering 77% of the county in 2008-11, but if possible breeding records are taken into account then their range remained stable. Whichever criterion is used it seems clear that Swallows have not undergone any very significant range change in recent years.

Figure 2. Swallow: changes in breeding distribution, 1997-2000 to 2008-2011.
(Green = gains, orange = losses).



They were found throughout the county including the upland fringes but largely avoid inner urban areas. Taking only probable and proven records into account, a total of 71 tetrads were newly occupied during the present survey, many of them in suburban areas in Merseyside and Fylde, while 106 losses were spread throughout the county (Fig.2).

Breeding densities in occupied tetrads were 60% higher in the west than the east but were similar between north and south and between the south-west and north-west.

Population estimates for probable/proven tetrads averaged 13 pairs which, given some allowance for possible breeding tetrads, suggests a county population of 9000 pairs, 1% of the British population.

SJW

HOUSE MARTIN *Delichon urbicum*

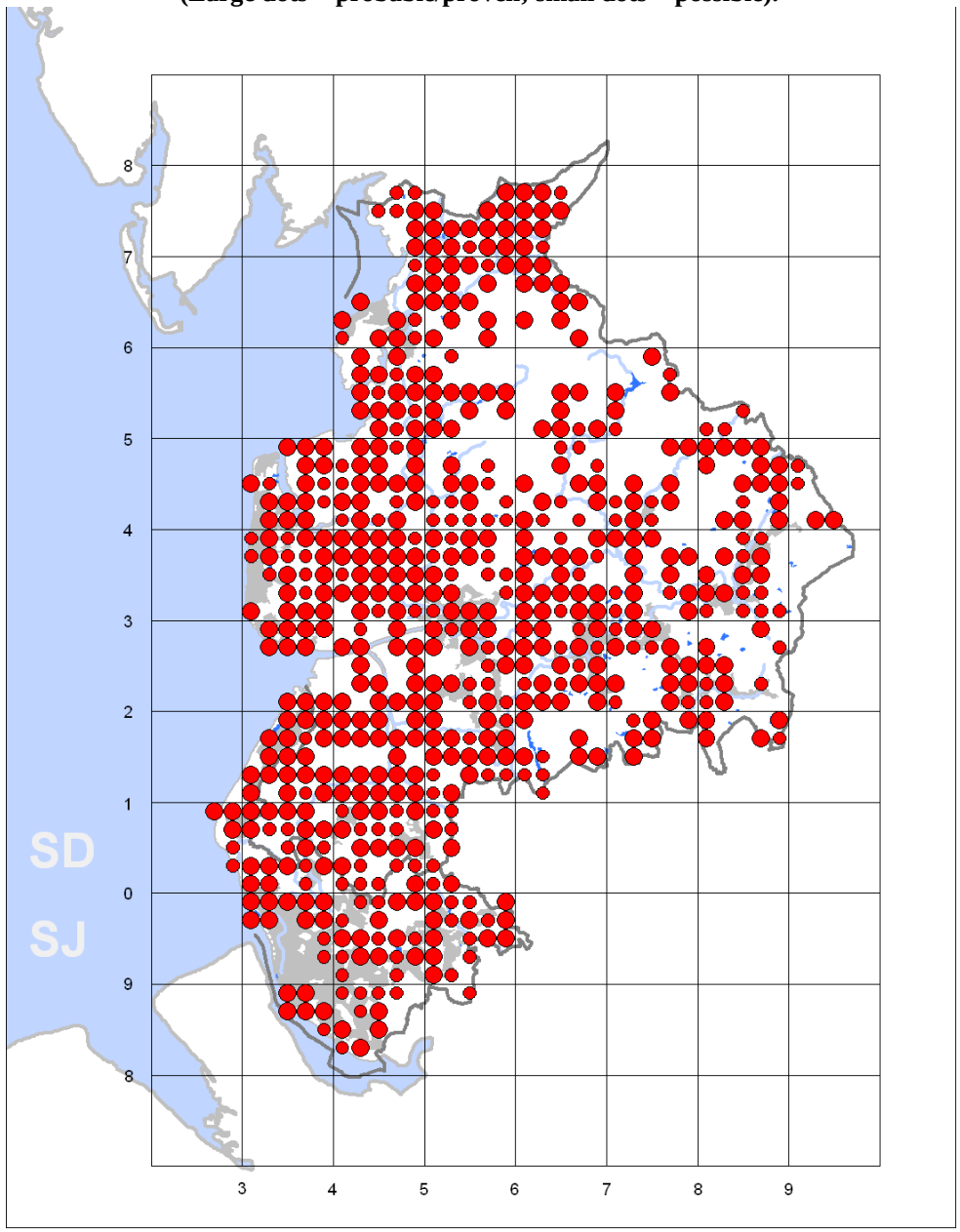
Normally the latest of our three regular hirundines to arrive in spring, the House Martin is familiar to many people with only a passing interest in birds due to its habit of nesting, usually in small colonies, on the sides or under the eaves of dwellings and other buildings. Two broods in a season is the norm and unfledged young may often be seen in the nest as late as mid-September.

The House Martin's British population declined by 44% between 1970 and 2010, but by only 2% since 1995, so it appears to be stabilising albeit at a much-reduced level, but the Lancashire population seems to be in a significantly worse position.

During 2008-2011 breeding House Martins were located in 429 tetrads, 45.8% of the total and indicating a range contraction of 20% (Fig.1). Most sites were in the lowland west but widespread breeding was recorded throughout the county, except in the highest parts of Bowland and the Pennines and in parts of the Liverpool and Fylde coast conurbations.

Examination of the breeding change map shows some areas of range expansion, most notably in the Lune Valley and on parts of the Fylde coast, but substantial swathes of the county appear virtually to have lost the House Martin as a breeding species (Fig.2). This decline is most obvious across the south-west and Chorley regions, but is also evident in parts of east Lancashire and in Rossendale.

Figure 1. House Martin: breeding distribution, 2008-2011.
(Large dots = probable/proven; small dots = possible).



Despite these territorial losses the present population is estimated at 4250 pairs, a little less than 1% of the British population.

The causes of the House Martin's range decline are unclear, and may be multiple; quite apart from hazards on migration and in the wintering areas, construction of new buildings presumably offers some nesting opportunities but these may be outweighed by the loss of habitat due to demolitions or building modifications.

BM

Figure 2. House Martin: changes in breeding distribution, 1997-2000 to 2008-2011. (Green = gains, orange = losses).