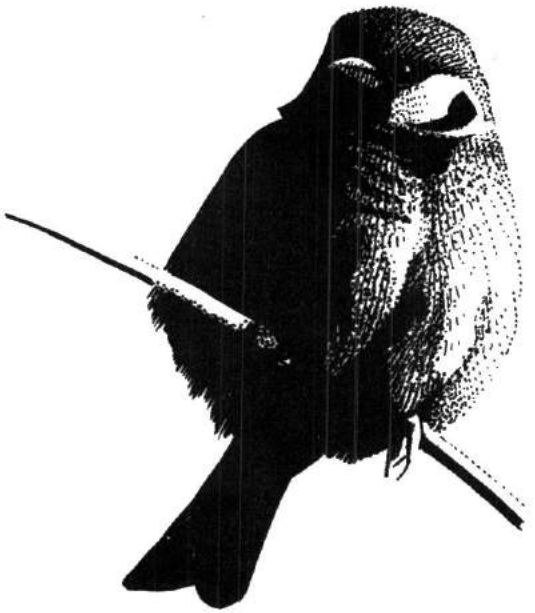
AN ATLAS

of the

BREEDING BIRDS of CAMBRIDGESHIRE

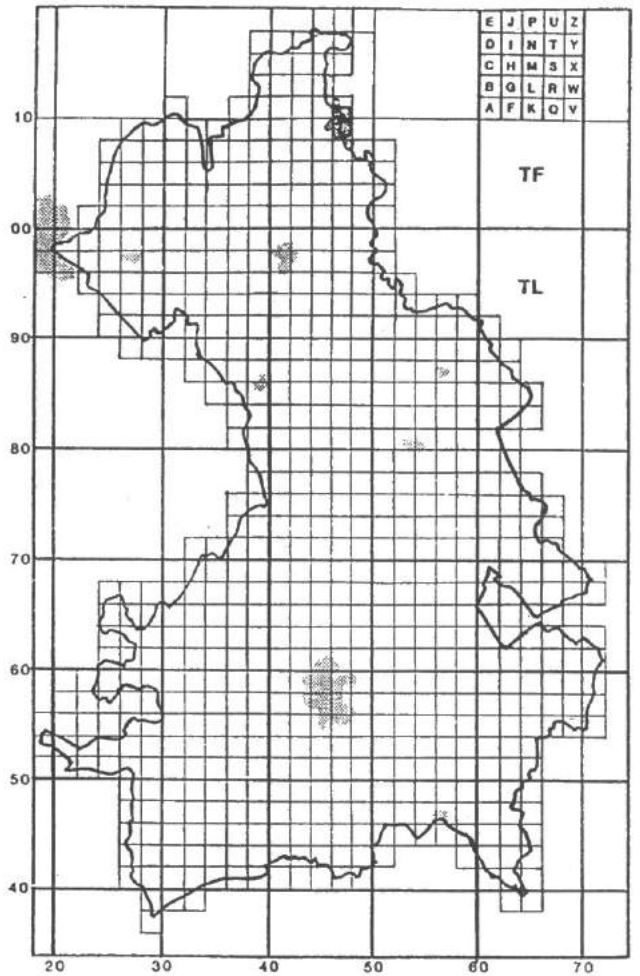
(Vice County 29)



by

P.M.M. Bircham J.C.A. Rathmell W.J. Jordan

The Cambridge Bird Club January 1994



Notation of Tetrads
in Vice-County 29

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County Council

Anglian Water

AN ATLAS OF THE BREEDING BIRDS OF CAMBRIDGESHIRE

(VICE COUNTY 29)

using 2 x 2 kilometre squares (tetrads) 1988-92

by

P.M.M. Bircham J.C.A. Rathmell and W.J. Jordan

with line drawings by Richard Fowling

The Cambridge Bird Club January 1994

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Moorhen

INTRODUCTION

By the late 1980s most counties in England had produced, or were undertaking, a 2 kilometre square analysis of breeding birds, known as a Tetrad Atlas.

It was originally suggested that Cambridgeshire should embark on such a project to coincide with that of Huntingdonshire (1979-83), indeed there was a suggestion that they might be combined, but at that time the Cambridge Bird Club had other projects active and to get good coverage seemed unlikely. However in 1986, as the Honorary Research Officer of the Cambridge Bird Club, I agreed to organise an Atlas for Cambridgeshire, timed roughly to coincide with the 'new' BTO National Atlas.

Initially a small committee was formed to assist in drawing up the criteria to be used. This consisted of myself as Chairman together with Michael Allen then the local BTO Regional Rep., Colin Bibby, Bill Jordan who was the Report Editor and Simon Stirrup who was at that time Secretary of the Club.

Once the criteria were agreed I set out to organise the county by 10 km squares with a named individual to co-ordinate each square. Fieldwork began in 1987 with a small-scale 'pilot' project and full scale fieldwork from 1988 onward.

The results of our labours appear within and we have tried to make detailed analytical comments where they are justified.

I have received considerable assistance throughout the project from John Rathmell whose productivity has been overwhelming, I suspect that there is barely a tetrad in the whole county that he has not entered looking for breeding birds and his summaries are written from considerable personal experience. Bill Jordan has also written some of the summaries and we have been very fortunate to receive some wonderful drawings from Richard Fowling. I must also thank Colin Bibby for casting an eye over the manuscript and highlighting anomalies, omissions and factual errors as well as adding some very useful suggestions.

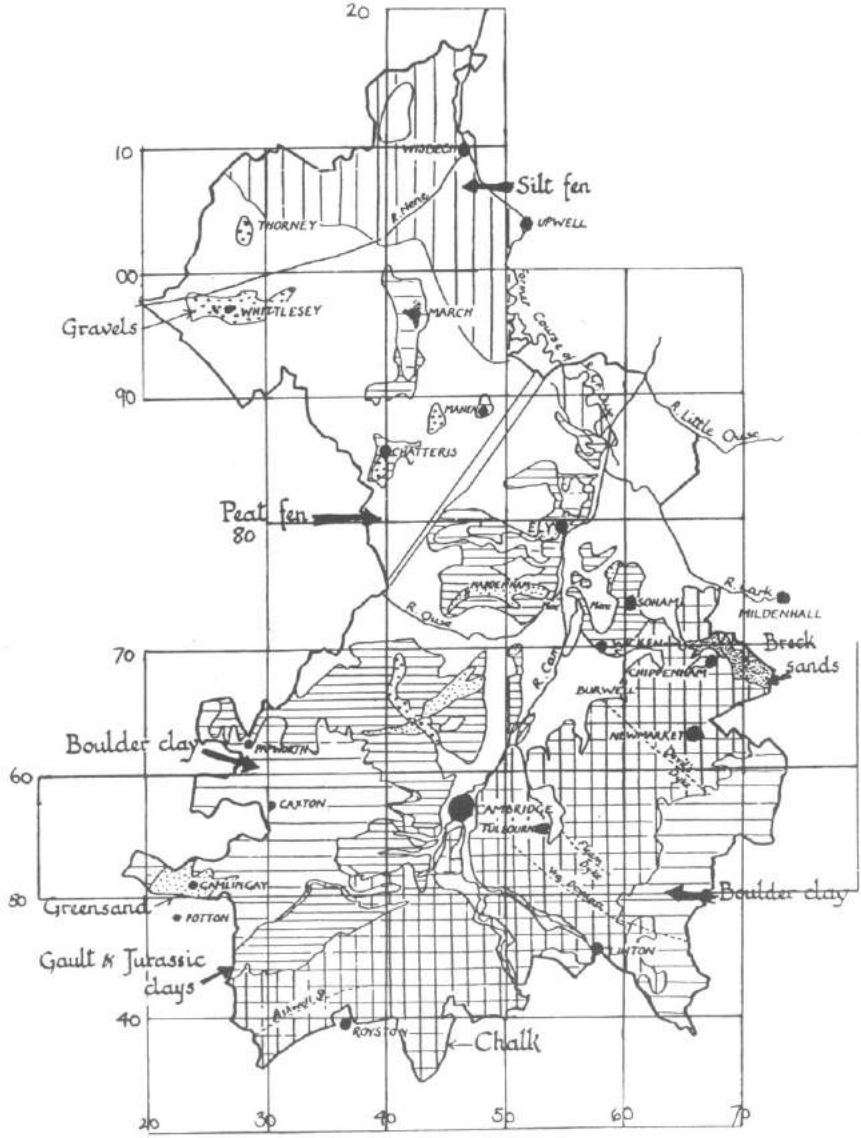
The Club has been most fortunate to receive assistance with the cost of publication of the Atlas from both the Cambridgeshire County Council and Anglian Water for which we are very grateful. Small clubs like the Cambridge Bird Club have very limited resources and are compelled to publish material in a less lavish form than they might ideally choose but the cost of even this modest publication would be a heavy burden on our funds and I must thank Jeff Kew (CCC) and Colin Edge (AW) for their help.

Finally and most significantly I must thank all those good people who have sent records to me. I hope that this production proves to be a suitable reward for their efforts.

Peter Bircham

Cambridge

December 1993



Simplified Geology of Cambridgeshire showing solid formations and recent deposits which determine the chief soil and vegetation types.
(adaption from Godwin H. *Botany of Cambs* 1938).

THE CAMBRIDGESHIRE LANDSCAPE, CLIMATE and AGRICULTURE

In topographical terms Cambridgeshire is a county of two halves. The northern area, the fenland, largely consists of peat and silt fen deposits and the southern half of chalk and boulder clay. This dichotomy is reflected in the distributions of the birds and the systematic list continually refers to it.

The combination of rich soils and flat land makes Cambridgeshire ideally suited to arable farming.

The number of towns is small and the population, although growing rapidly, remains lower per hectare than in many neighbouring counties. Industrial activity is small, somewhat specialised and mostly restricted to the urban areas, Cambridge in particular.

THE NORTH (Fenland)

The immediate impression of flat windswept fields of peaty soil is not an inaccurate one. Much of fenland, however, is not as inhospitable to birds as it might at first appear. The agricultural land provides good feeding opportunities for some species and breeding is mostly restricted in this area of the county by the lack of suitable sites due to the shortage of trees and the sparse human habitation. In places there are outcrops of clay and these are sometimes less intensively farmed but in general small birds are reliant on the hamlets, farmsteads and small villages for breeding sites as well as the towns: Chatteris, Ely, March, Wisbech and Whittlesey.

Field boundaries

Fields are divided more often by dykes or ditches than by hedgerows: this means that many species of common passerines are often absent, however the vegetational structure of the banks of the dykes provides a useful feeding habitat for passerines such as finches, warblers and predators such as Barn Owl.

The washlands

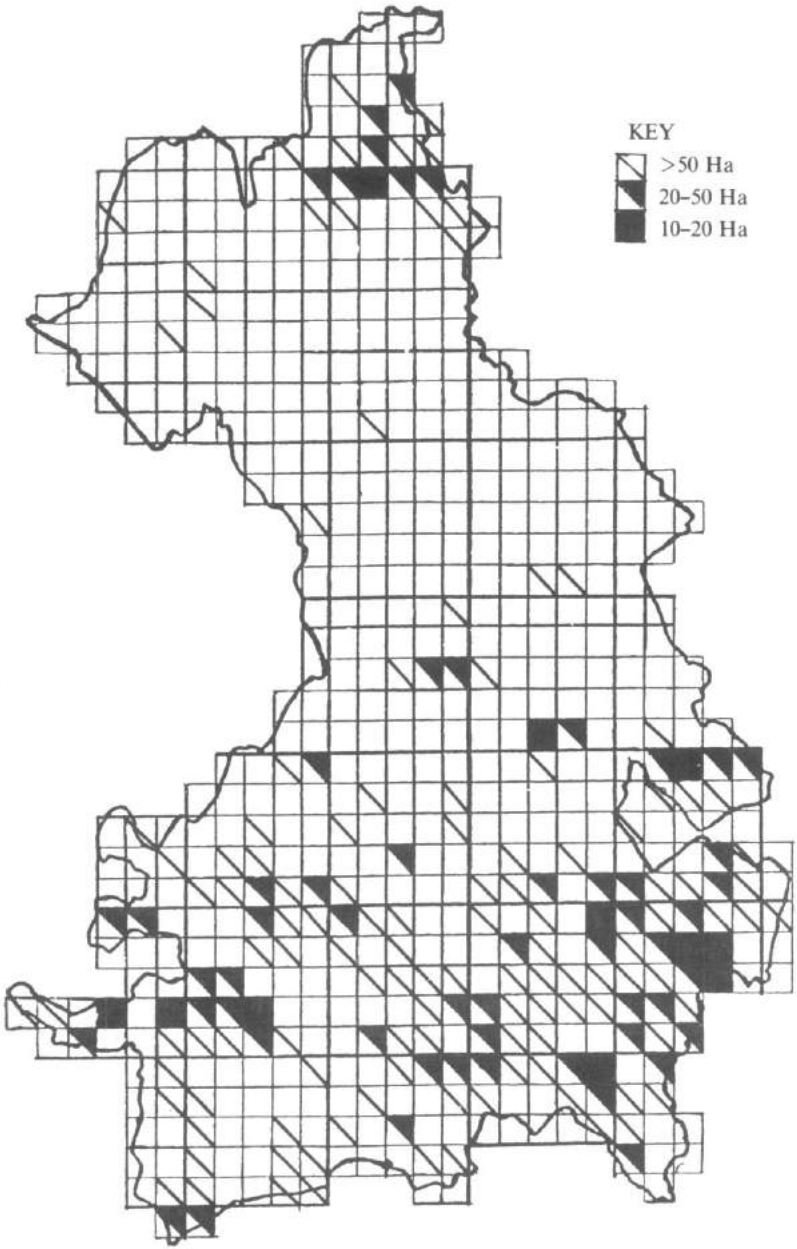
The fenland is also the site of the various river washes which are an invaluable dual habitat, being rough grassland in summer used by waders and passerines and floodlands in winter for wildfowl and water birds such as grebes and Cormorants. Those of the Ouse and Nene are of international importance for wintering Bewick's and Whooper Swans and huge numbers of Wigeon, while in summer they support small but regular breeding populations of rare waders such as Ruff and Black-tailed Godwit. In addition the smaller washlands alongside the Old West river and the Cam support small numbers of ducks such as Gadwall and Garganey and waders such Snipe and Redshank although the extent of occupation varies from year to year depending on the water levels.

Gravel and Clay Pits

Within the fenland area there are gravel/clay workings: at Block Fen/Mepal, March, Ely, Whittlesey and Wimblington which provide both reedbed and open water.

Wicken & Chippenham Fens

Finally, on the eastern perimeter lie Chippenham and Wicken Fens: the former is a National Nature Reserve and the latter is owned by the National Trust and remains



Woodland and Orchards

the largest remnant of typical fen habitat. While Wicken Fen is not renowned for any one particular species it is an immensely rich breeding site for a wide range of species both common and uncommon and has its fair share of nationally rare breeding birds such as Marsh Harrier, Long-eared Owl and Spotted Crake.

THE SOUTH (Chalk and Boulder Clay)

The south of the county differs markedly in many ways. First the land is slightly higher and more undulating with sparse surface water, secondly it is a much more wooded habitat and thirdly it is an area of relatively high human population.

There are two main soil types in the south. The band of chalk that runs from Royston in the south west to Newmarket in the east (see Map) and the boulder clay which occurs in two areas: to the west of Cambridge as far as Bedfordshire and also along the Suffolk border to the south of Newmarket. A small band of greensand, which squeezes into the county from neighbouring Bedfordshire around Gamlingay also outcrops as distinctive ridges at Cottenham and Haddenham.

THE CHALK AREA

The Uplands.

The chalk is mostly arable land. Where it abuts Essex, there are some small areas of pasture for both sheep and dairy cattle. These features, together with the slightly hillier land make this a good habitat for several uncommon species such as Quail and Stone Curlew as well as for the traditional farmland avifauna. Where the chalklands lie eastwards the farming becomes more intensive and close to Newmarket the fields are larger and often bordered by tree belts usually of Scots pine. Crops in this area are mostly winter-sown cereals, sugar beet and oilseed rape.

Chalk grassland

There are some breaks in the landscape: the Icknield Way stretching from Royston to Chrishall Grange and the Roman Road that runs from the east up to the Gog Magog hills are double hedged walkways/bridlepaths.There are two earthworks crossing the chalk: the Fleam Dyke from Fulbourn almost to Balsham, and the Devil's Dyke which runs from Reach, on the edge of the fens, to Stetchworth near Newmarket. These two latter sites are managed largely as chalk grassland although scrub encroachment increases their value for breeding birds. The countryside around Newmarket (the town itself is in Suffolk), because of its horse-racing interest, is another area where there is considerable pasture and the adjacent villages, the sites of many stud farms, are often as rich in grassland as in arable.

Woodland

Throughout the eastern chalk ridge there are small coverts and woodlands, often containing a few beech, which also give breeding opportunities for birds other than the game birds for which they are designed. On the western edge of the uprun of the chalk lie the Gog Magog hills atop of which is a conservation area, Wandlebury. This site is mainly a beech woodland but management of various kinds has converted much of the area into parkland. The pressure of visitors and the lack of specialised habitat prevents it from being a site for rarities but it represents an oasis for passerines and its proximity to the golf course undoubtedly increases its attraction for breeding birds.

Waterways

The western end of the chalk is the site of the origins of the river Cam/Rhee which is joined to the south of Cambridge by the river Granta which rises from two sources on the southern perimeter of the county. Elsewhere the area is very short of natural water especially between the Gog Magog Hills and Newmarket.

Within the chalk belt, at one or two sites, spring water wells from the ground creating wetland areas such as at Fowlmere nature reserve, and Dernford Fen near Stapleford. Both these sites have a flora and fauna more akin to the fenland than to the rest of the county.

THE BOULDER CLAY AREA

The two boulder clay areas are also used predominantly for agriculture, though somewhat less intensively particularly as you go further west from Cambridge where the amount of woodland and hedgerow increase and there are more stock than on the chalk.

Woodland

The great importance of this area is the presence of the most significant natural woodlands in the county such as Buff Wood, Hayley Wood, Gamlingay Wood etc. in the west and the Widgham Wood complex in the east.

Cambridgeshire has the lowest proportion of woodland of any county in England (2% against a national average of 5%) and these woods are a very valuable habitat forming the stronghold for species such as the Marsh Tit and Nuthatch. The general absence of coniferous woodland (apart from Ditton Park Wood) explains the absence of species such as Crossbill.

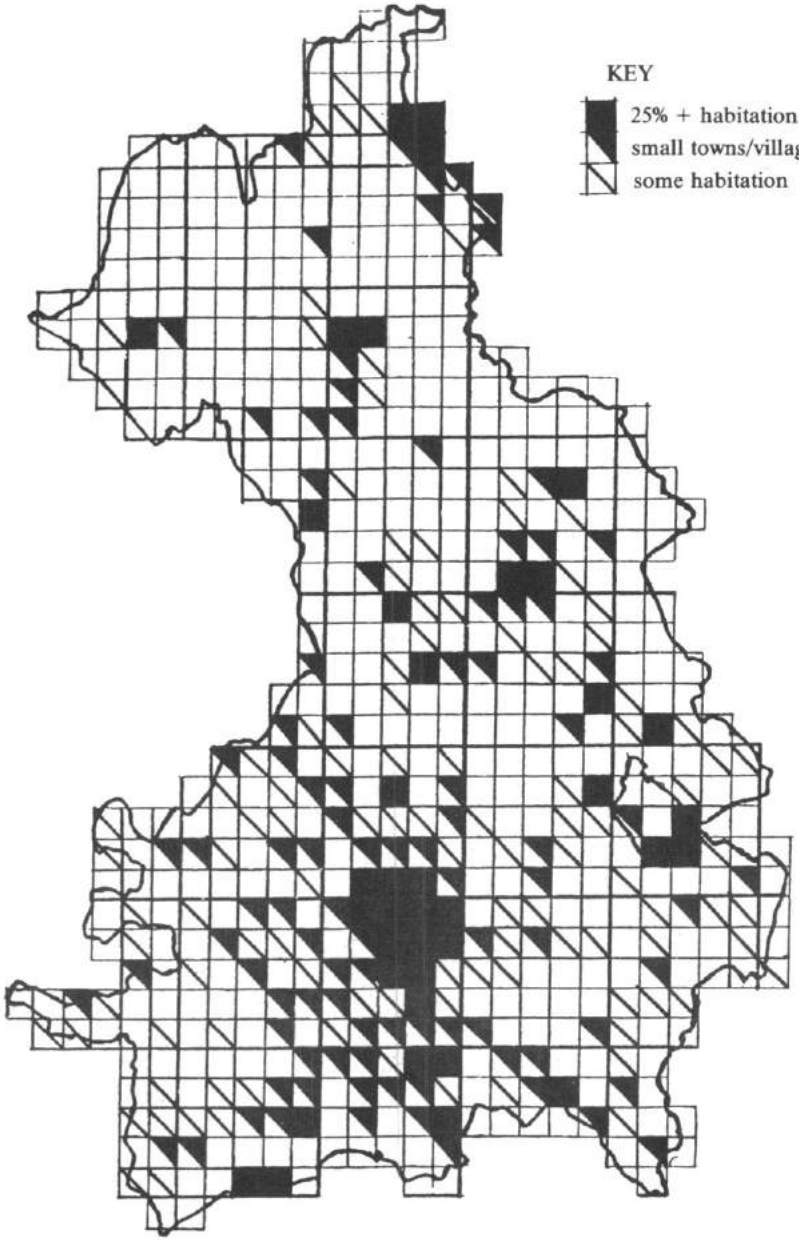
BUILT UP AREAS

Suburbia

The south of the county is also rich in suburban habitat. Many species rely heavily on human habitation for nesting sites, the hirundines for example, and thus houses and buildings are often important breeding sites for species that might otherwise struggle to find suitable accommodation. In comparison with the fenland area, villages are much closer to each other and often form a consecutive sprawl. Mature gardens, playing fields, hedged horse paddocks and village-green areas all combine to make the suburbia of the county rich in both variety and density of breeding birds.

Cambridge City

Cambridge city is, in comparison with many cities in this country, a very wildlife-friendly area. Apart from the few streets of the immediate city centre, every area of housing is close to some area of open parkland. The grounds of the colleges are often large, with mature trees, flowerbeds and lawns providing a variety of habitats which are relatively secluded and attractive to species such as Spotted Flycatcher, Nuthatch, Moorhen etc. The college playing fields together with those of the city schools provide a huge amount of open grassland. In addition, the many areas of commonland, most of which are adjacent to the river, offer feeding opportunities for birds that can nest within gardens. One particular bird speciality, which was sadly not recorded breeding during the project is the Black Redstart which has bred irregularly within college grounds, the last such record being in 1985.



Distribution of Human Population

NATURE RESERVES AND WATER HABITATS

Nature reserves

The county has a large number of nature reserves, although many of them are small such as the boulder clay woodlands. However, its wetland reserves must be among the finest of their kind inland and include the Ouse and Nene Washes and Wicken Fen (see above). The table below shows the disposition of these reserves.

TABLE. Area of Nature Reserves in 'Old' Cambridgeshire (in hectares)

Beds and Cambs Wildlife Trust (in old Cambs)		RSPB		National Trust		English Nature	
'Grassland'	356	Ouse Washes	773	Wicken Fen	272	Chippenham Fen	92
Woodland	168	Nene Washes	303				
Water	52	Fowlmere	34				
Total	576	Total	1,110				

Overall Total woodland = 168

Overall Total grassland, fen, washes etc = 1,882

Total Reserve area = 2,050 hectares

(This does not include areas such as Wandlebury, Milton Country Park etc since these are not specifically nature reserves)

Water Habitats

Historically Cambridgeshire was probably the wetland county of England. Sadly for the ornithologist the draining of the fens, which was completed in the eighteenth and nineteenth centuries, has altered the balance between land and water drastically although some wetland remains.

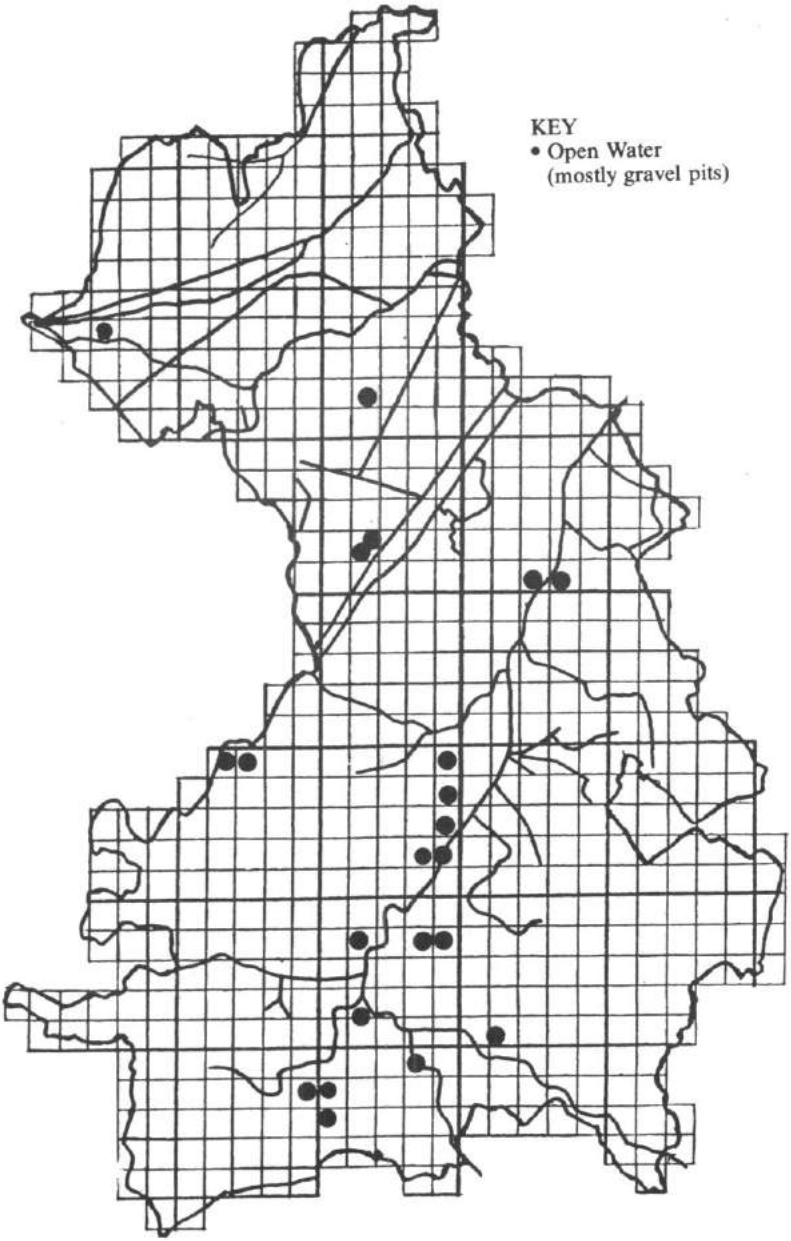
Natural waterways and drains

On the positive side the draining of the fens created a system of waterways which have relatively recently been colonised by birds such as grebes and ducks, and was also responsible for the creation of the areas of the Ouse and Nene Washes. The courses of the main drains are shown in the map of water bodies.

Natural waterways such as the rivers Cam, Old West, Ouse, Lark, Whissey and Nene traverse sections of the county. South of Cambridge only the Cam and its tributaries: the Rhee and Granta, offer any significant riparian habitat. In some southern 10 km squares (TL 55 for instance) there are virtually no water bodies and quite large areas in the south are without even small streams or farm ponds.

Artificial sites - gravel pits etc

The most significant development with regard to water has been the water-filled pits which are the consequence of the mining of aggregates which has taken place over the course of the century. An indication of the scale of this extraction is that according to figures from the Minerals Planning Department of the County Council permission has been given for mineral extraction at the rate of around 40 hectares (100 acres) per annum over the last 20 years in old Cambridgeshire and



Waterways and Pits

allowing for in-fill of around 40% this means around 25 hectares per annum of open water have been created. There are, in addition, pits that have been dug to provide ballast for new roads such as those at Impington and Whittlesford.

All these pits have provided habitat for many wetland species including waders, ducks and geese and the Fen Drayton pit complex, which is still expanding, has become an important site for unusual/rare species throughout the year.

Commercial use of water

Within much of the county, water is available to the water supply companies from the aquifers and historically this has proved an extremely reliable source. However, over the past decade the county, and particularly the area around Cambridge has seen considerable development with a consequent rise in the demand. This has recently combined with low rainfall (see below) over a period of two or three years and many previously undrained areas such as Little Wilbraham Fen have begun to dry out simply as a result of a drastically low water table. While the rainfall effect is doubtless temporary the demand is likely to continue increasing and remaining wetlands must be under threat.

CLIMATE

While the western half of Britain benefits from the effects of the gulf stream and enjoys an atlantic type of climate, Cambridgeshire, like most of the eastern counties, has a climate closer to that of the continent. In effect this means a lower rainfall, hotter summers and colder winters.

The weather data below are taken from those recorded by J.W. Clarke at Swaffham Bulbeck (TL56) and published in *Nature in Cambridgeshire.*

A seven year period was analysed (1985-1991) and the results are presented in the two histograms below. The first shows mean monthly temperatures based on measurements of the mean maximum and mean minimum per month. The table below it shows both the highest and the lowest monthly means during this period. Likewise the rainfall histogram shows seven-year means of the monthly means recorded by Mr Clarke. There is also a table below that histogram of the highest and lowest monthly rainfalls recorded over the seven-year period.

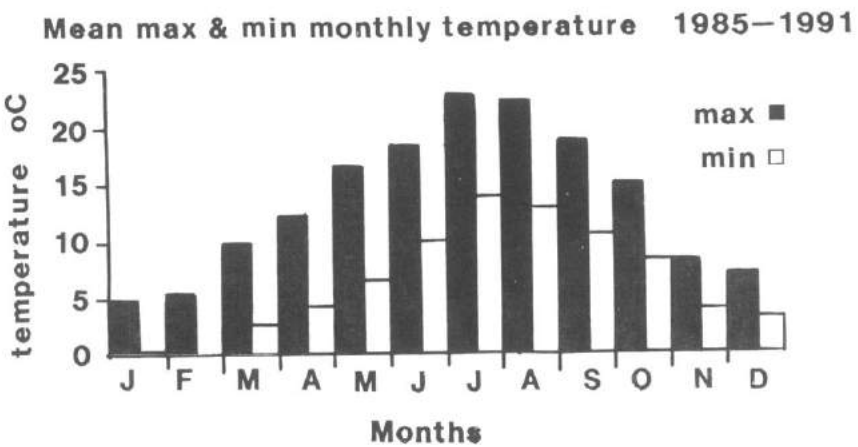


TABLE Range of Temperatures C

Mean maximum 1985-91	J	F	M	A	M	J	J	A	S	O	N	D
Highest	9	10	13	15	19	21	25	26	21	17	11	9
Lowest	1	−1	7	9	15	17	21	19	16	13	6	5

Mean minimum 1985-91	J	F	M	A	M	J	J	A	S	O	N	D
Highest	4	4	4	7	8	11	14	15	12	11	7	5
Lowest	−3	−4	1	3	6	8	13	12	8	6	1	1

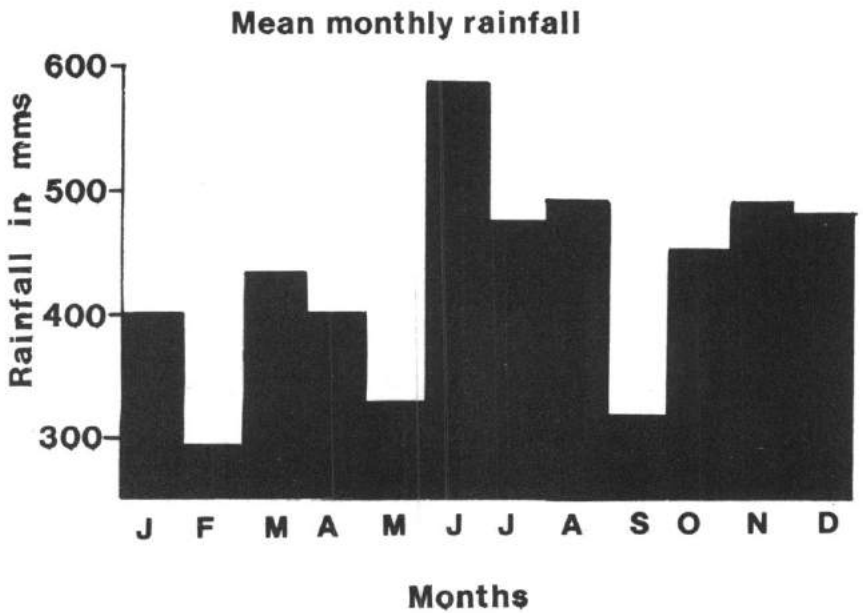


TABLE Range of monthly Rainfall (in mms)

	J	F	M	A	M	J	J	A	S	O	N	D
Highest	98	62	61	68	57	105	89	81	52	93	77	105
Lowest	11	13	23	29	5	10	17	21	17	10	27	14

Mean annual rainfall 1985-91 = 513 mms

Mean annual number of days with snow lying 1985-1991 = 9

Drought

The reality of the drought that affected the later years of the Tetrad Atlas Survey (1989+) is revealed by the annual rainfall figures in the table below using three separate five-year periods:

TABLE Five-year annual rainfall recorded at Swaffham Bulbeck (in mms)

1969	=	543	1978	=	608	1987	=	644
1970	=	510	1979	=	592	1988	=	582
1971	=	550	1980	=	544	1989	=	478
1972	=	405	1981	=	569	1990	=	386
1973	=	476	1982	=	714	1991	=	409

From this table it is clear that apart from the 1972 and 1973 figures there was rarely less than 500mm of annual rainfall. The low figures for the years 1989-91 are not in themselves unprecendented but the significance lies in the cumulative effect of low annual rainfall that caused so intense a drought that the Cambridge Water Company was compelled to introduce a hose-pipe ban for the first time in its history!

AGRICULTURE

Comparisons of the Agriculture of Cambridgeshire with that of the rest of England.

Cambridgeshire now makes up 6% of the total farmland of England and the data for 1988 (the start of the Tetrad Atlas project) reveal how different the cropping pattern is from other counties (see Table). The most striking contrasts are the areas of farmed grassland (9%) and tillage (91%) relative to other counties (48% grassland and 52% tillage). For birds the lack of grassland in Cambridgeshire acts mainly by restricting feeding activities rather than directly reducing nesting habitat; since most grassland on farms in England is now too intensively managed to allow waders such as Snipe, Redshank and Lapwing to nest.

However, the species diversity and abundance in peripheral habitats (hedgerows, woodland) are reduced by this domination of arable cropping. 'Rough grazings' (not included within the total percentage) are generally more suitable for breeding, but again other English counties have nine times the percentage of heath, moors, marshland etc than Cambridgeshire where most 'rough grazing' consists of grassy washlands. Conversely, only a few species are able to nest within arable fields or margins - Lapwing, Yellow Wagtail, Skylark, Corn Bunting, partridge spp, or rarities such as Quail, Stone Curlew, harrier spp and Black-tailed Godwit.

The area occupied by wheat (95% winter-sown) is strikingly high at 43% and this, along with oil-seed rape at 6%, comprises half the total Cambridgeshire farmland area, these two crops are particularly dense and inhospitable for most species, although in recent years Reed Bunting have increasingly bred in rape fields. Less dense crops such as sugar beet (9%) and field beans (4%), which are more widely grown in Cambridgeshire than in other counties, provide breeding opportunities for species such Lapwing, Stone Curlew and Yellow Wagtail.

Changes in the farming patterns of Cambridgeshire since the National Atlas 1968-72.

The years at the start of the National 10 km square Breeding Bird Atlas (1968) and the Cambridgeshire Tetrad Atlas (1988) have been selected to illustrate recent changes in cropping.

The total farmland area in the county declined by 5% over this twenty year period, due to building and road construction. In addition to the loss of farmland, the crops have changed.

Grassland-arable balance

The area of grassland declined from 15% to 9%, with a consequent increase in tillage from 85% to 91%. This has exacerbated the existing lack of diversity in the farmland of Cambridgeshire to the further detriment of many bird species that require grassland for feeding such as Barn Owl, Rook and Stone Curlew.

Reduction in livestock

This grassland decline is related particularly to the reduction in the number of dairy herds in Cambridgeshire which amounts to a loss of over 90% since the early 1960s (see Table) when there was at least one dairy farm in most villages outside the fens. Grazed pastures and hay meadows usually occupied the heavier, wetter fields alongside streams and rivers. With the loss of dairy herds most of the remaining wet grasslands in southern Cambridgeshire have been ploughed out eliminating breeding sites for Snipe and Redshank, together with passerines such as Meadow Pipit and Sedge Warbler.

Sheep numbers declined considerably from 1960 to 1970 but have recently partly recovered (see Table). Thirty years ago most sheep were kept on chalkland arable farms: their pastures were thinly-stocked and thereby favoured bird specialities of chalk grassland. Sheep are now distributed throughout the county, including the fens, and are usually intensively stocked on grassland or fed on waste from arable crops. This present form of husbandry does not significantly enhance breeding opportunities for most species.

TABLE Changes in the numbers of Dairy Herds and Sheep (total numbers) in Cambridgeshire.

	1960	1970	1988
Number of dairy herds	520	213	43
Total sheep numbers	89,200	39,600	62,800

(Source: MMB 'Facts and Figures', MAFF statistics)

Time of sowing

An important, but perhaps less perceptible change has occurred within arable crops themselves, relating to the time of sowing. The area of farmland sown in autumn has increased from 34% in 1967 to 57% by 1988, whilst crops sown in spring declined from 41% in 1967 to 24% by 1988. This is part of a national trend and has arisen locally from the huge increase in winter wheat, oil-seed rape and the reduction in spring barley. This has severely affected bird populations in two ways. Firstly the establishment of a growing crop in autumn removes the feeding area previously occupied by 'stubbles' which provided grain and weed seeds for finches and buntings. Oil-seed rape fields, however, have offered additional winter food for increasing numbers of Woodpigeons. Secondly the winter-established crop grows

rapidly in early spring preventing the nesting of species such as Lapwing which might be successful in spring-sown barley. The reduction in barley may also have adverse effects on Corn Bunting densities (O'Connor and Shrubb 1986) although its distribution in Cambridgeshire remains much as expected.

Farm Woodlands and Orchards
More minor changes in the county include the loss of half of the orchards but an increase, due to the encouragement via grants of woodland, through the 'farm woodland scheme.' However, at present this merely comprises fields with saplings or at best very immature trees of limited value for nesting although used by some ground-feeding birds.

Recent developments 1989-93
Cropping data for 1988 probably represent the extreme limits of unfettered, intensive production. Since then various statutory and voluntary schemes have been introduced which have reduced the total cropping area.

Set-aside.
Voluntary set-aside began in autumn 1988 and by 1991 had covered about 4% of Cambridgeshire. In 1992 a more 'compulsory' scheme was introduced, resulting in most farms leaving 15% of their arable land as rotational set-aside i.e. cereal stubble or sown grassland which is 'mown-over' occasionally from autumn to July. More permanent systems were introduced in 1993.

Conservation schemes.
During 1991 and 1992 840 hectares of 'Countryside Stewardship' and 527 hectares of 'Set-aside Premium' were established, covering about 0.5% of farmland. Financed by the Countryside Commission these schemes have grant-aided the management or recreation of riverside meadows and to a lesser extent, chalk grassland.

The combined effect of these schemes has resulted in an extra 10%-15% of Cambridgeshire now existing as mown fallow or 'natural species' grazed grassland. This may not result in a great increase in nesting habitat except for species such as Skylark, Grey Partridge and Meadow Pipit. However, a large expansion of bird feeding area which is untreated with chemicals and thus richer in both variety of plants and populations of invertebrates has occurred and will be further enhanced by the cessation of the practice of straw-burning.

Note
The data on which this section is based are taken from MAFF statistics for 'new' Cambridgeshire, which includes the old county of Huntingdonshire because this information has not been separated since the local government re-organisation in 1974. However, the cropping patterns for Huntingdonshire and old Cambridgeshire are very similar and two-thirds of the new larger county consists of old Cambridgeshire.

TABLE Comparison of the of Crops/Grassland in Cambridgshire with the rest of England and changes since 1968.

	Percentage of Total Farmland (=100)		
	Cambs 1968	Cambs 1988	Rest of England 1988
Total Grassland	15	9	48
Total Tillage Crops	85	91	52
Details of Tillage Crops			
Wheat	26	43	20
Barley	28	16	17
spring	19	8	8
winter	9	8	9
Oil-seed Rape	1	6	3.5
Sugar Beet	10	9	2
Field Beans	2	4	2
Potatoes	8	4	1.5
Field Vegetables	4	3	1
Winter sown crops (winter wheat, winter barley, oil-seed rape, field beans)	33	57	32
Spring sown crops (spring barley, spring wheat, sugar beet, field beans, potatoes.)	41	24	13
Total Crops and grass in hectares.	293,802 (=100)	275,433 (=100)	8,327,839 (=100)
Other habitats:			
Rough grazings, (heaths, moorland or washes)	(≡ 1%)	(≡ 1%)	(≡ 9%)
Woodland	(≡ 2%)	(≡ 2%)	(≡ 5%)
Orchards	(≡ 1%)	(≡ 0.5%)	(≡ 0.5%)

Loss of hedgerow in Cambridgeshire

Hedgerows are probably the most important feature determining the numbers of breeding birds on farmland.

1950-70

In 1950 there were around 800,000 km of hedgerows in England and Wales (Pollard et al 1974) with an average density of 80 metres/hectare. Even then the density in Cambridgeshire would have been slightly below average at around 65-70 metres/hectare. An RSPB survey of north Hertfordshire (Joyce et al 1988), which would equate closely with south Cambridgeshire, revealed a density of 65 metres/hectare in 1947, densities would probably have been higher than this in west Cambridgeshire and lower in the fens.

National rates of loss up to 1970 averaged about 0.6% per annum (0.6 m/ha/yr)(DOE 1986) with higher rates of loss in north Hertfordshire of 0.8% per annum and over 1.0% in Norfolk (Baird and Tarrant 1973) the rate of loss peaking in the late 1960s.

1970-90

Several surveys suggest that annual rates of loss have increased since the 1968-72 National Atlas by up to 0.8% nationally, up to 1.3% in East Anglia (DOE 1986) and up to 1.5% in north Hertfordshire. In Cambridgeshire the Institute of Terrestial Ecology (Barr et al 1991) has estimated a loss of 20% between 1984 and 1990 from 37 metres/hectare to 29 metres/hectare due mainly to degradation rather than complete removal.

Hedgerow damage

In recent years over-trimming and straw burning have led to many hedges consisting of stunted gappy remnants, which offer little suitable nesting habitat compared with mature or dense hedgerows managed to retain livestock. In general, taller, wider hedges hold both more species and higher numbers of breeding birds (O'Connor and Shrubb 1986). Although some new hedges have been planted, an ITE national survey in 1984 indicated that this has replaced only one in eight of the hedgerows lost (Barr et al 1986).

Present situation

Since 1950 about 30% of hedges have been lost nationally (NCC 1984) but in Cambridgeshire, starting with a below-average density, a much higher loss of about 55% has occurred (1.4% p.a.) and the hedgerow density in the county is now roughly half the national average (see Table). Hedgerows near woods are richer in birds and the lack of woodland in Cambridgeshire again results in impoverished hedgerows in open landscapes. However, there are still around 11 km (8 miles) of hedge in the average tetrad in the county.

TABLE Changes in Hedgerow Density in Cambridgeshire and England (metres per hectare)

	1950	1970	1990	
Cambridgeshire	65	45	29	(-55%)
England	80	68	55	(-31%)

TABLE Estimated Annual Rates of Hedgerow Loss % per annum

	1950-70	1970-90
England	0.6%	0.8%
East Anglia	-	1.3%
North Herts	0.8%	1.5%
Cambridgeshire	------->	1.4%

(Sources: Pollard 1974, Joyce et al 1988, DOE 1986, Barr et al 1991, NCC 1984)

Effects of hedgerow loss on breeding birds.

The main effect of hedgerow loss has probably been to reduce the population density of many species within each tetrad, rather than a complete loss of

individual species. The number of different breeding species on farmland peaks at hedge densities of 70-110 metres/hectare, as 'open field' species such as Skylark and Lapwing are discouraged by smaller fields (O'Connor and Shrubb 1986). However the total number of all birds increases linearly with hedge abundance and shrub diversity.

This is illustrated by two studies in Cambridgeshire. A 'hedge-rich' area at Carlton gained 9 species and lost 6 (with 26 species declining and 17 increasing) as two-thirds of the hedgerows were removed between 1960 and 1971 (Murton and Westwood 1974), whereas on a fenland farm near Ely over half the breeding birds (and one or two species) were lost as hedgerow density declined from 53 m/ha in 1966 to only 3 m/ha in 1971 (Evans 1972).

With an average county density of 29 metres/hectare in 1990 Cambridgeshire is now well below the optimum of 70-110 metres/hectare quoted above. In addition, the disappearance of hedgerow trees, particularly elms, has had an effect in reducing hedgerow bird populations and measures to arrest these declines in field boundary habitats need active encouragement.

Increase in Use of Agricultural Chemicals and Inorganic Fertilisers

Herbicides and Insecticides

In the twenty years between the 1968-72 National Atlas and the Cambridgeshire Tetrad Atlas there has been an approximate doubling, nationally, of the amount of herbicides and insecticides used on farms, resulting mainly from a doubling in the area of land to which they are applied (see Table). The number of chemicals has also increased allowing a wider range of unwanted plants or insects to be controlled.

There is now little evidence of direct toxicity to birds by insecticides, however, both insecticides and herbicides have an indirect effect by reducing insect and plant food for birds particularly Grey Partridge, Stock Dove, finches and buntings. (In future set-aside may alleviate some of these problems).

Nitrogen Fertiliser

The increase in the use of nitrogen fertiliser has also had adverse, indirect effects. First it produces denser arable crop growth eliminating thin patches previously used for nesting by Lapwing etc. Secondly on grassland it reduces species diversity, by encouraging lush ryegrass growth with the loss of food plants; and thirdly by replacing the application of animal manures on fields, the number of invertebrates, on which birds can feed, is reduced.

TABLE Changes in the Use of Agricultural Pesticides and Fertilisers in England and Wales.

	1970	1985
Number of Herbicides	52	80
Number of Insecticides	44	53

Annual Use

	1966-70	1981-82
Herbicides		
Total used (tonnes active ingredient)	6,760	15,795
Area sprayed (thousand hectares)	4,050	9,791
Insecticides		
Total used (tonnes active ingredient)	533	1,051
Areas sprayed (thousand hectares)	2,578	3,250
	1970	1982
Nitrogen Fertiliser		
% land treated	77	89
Rate of nitrogen applied (kg/ha)	78	132

(Source: O'Connor and Shrubb 1986)

SUMMARY

Due to the variety of its topography Cambridgeshire has a relatively wide range of breeding species. What it lacks is coastline and areas of forest and heathland. Nevertheless in the wetlands of the north it is able to support populations of some of the country's rarer breeding birds and in the south it has an unusual range of farmland species.

Widespread changes in agricultural practice must have affected the density of the populations of many species and in the case of some, these population changes have led to a shrinking distribution.

ORGANISATION OF THE CAMBRIDGESHIRE ATLAS

Criteria

The criteria adopted by the committee were those of the 1976 BTO National Atlas (Sharrock). The reasons for this were twofold: first that it would allow comparison with other County Tetrad Atlases and secondly that the 'new' methodology which the BTO subsequently used for the 'new' national Atlas had not been formulated at the time.

These criteria allowed for three categories of breeding and the methods of assessment are included below:

1. **Bird present in the breeding season**

2. **Birds present and possibly/probably breeding**
   Singing male
   Bird apparently holding territory
   Display or agitated behaviour
   Visiting probable nest site
   Nest building

NOTE: this category has historically been described simply as *probable* breeding following the example of the National Atlas published in 1976. However, we believe some birds fulfil either or both of the first two criteria (e.g. Grasshopper Warbler, Red-necked Grebe) without there being sufficient evidence to suggest *probable* breeding and therefore it seems more accurate to describe this second category as *probable/possible* breeding.

3. **Birds confirmed breeding**
   Distraction display
   Used nest found
   Recently fledged young
   Adult carrying faecal sac
   Adult carrying food
   Adult entering/leaving nest site
   Nest and eggs/sitting bird/young

Timing of fieldwork

With exceptions for special species the fieldwork was conducted between the end of March and the end of July with emphasis on the period April/May/June.

The first season was in 1988 and the last was 1991 although some records for 1992 have been included for tetrads with previously poor coverage and for 'special' species such as Sparrowhawk whose status has changed during the period.

While every effort was made to encourage fieldworkers to attempt some evening work it is inevitable that those species which are crepuscular or nocturnal in activity have been under-recorded.

Coverage

The distribution of the human population in Cambridgeshire, which is concentrated in the southern half of the county, has led to a satisfactory coverage in all the tetrads south of the Ouse Washes. Those to the north, apart from the Whittlesey/Nene Washes area, have been covered mostly by 'roving reporters' from Cambridge. This is a less than satisfactory way to gather information, but the nature of the countryside in that area suggests that it is not overrun with birds and the final

coverage may well have been adequate. There are, however, some tetrads in the north where more work would doubtless have yielded more accurate information.

There can be no doubt that in areas where the principal observers were themselves resident the coverage has been excellent, such as the 10 km square TL 34. In areas where we found no resident birdwatcher it has been no more than barely adequate such as the 10 km square TF40.

It is always a matter of sadness for the organiser of projects such as this that if more active birdwatchers had taken part in the project the results could have been more complete.

Overall the information has been augmented by the Cambridge Bird Club records which have provided some additional information particularly on the less easily located species and those that are more active at night.

Finally, please bear in mind that due to the variability of coverage, gaps in the maps do not always mean that the species is absent from that tetrad.

The maps

For displaying the information on the maps a slightly different system has been adopted to that used by most other counties. The use of different sized dots can be a cause for confusion and we have provided a new technique which hopefully is easier to interpret at a glance. We have used:

a) a diagonal stroke to indicate Category 1 (bird present in the breeding season),

b) a filled triangle to indicate Category 2 (possible/probable breeding),

c) a filled square to indicate Category 3 (proven breeding).

Species have **NOT** been given a map where:

1. The information was usually given in confidence due to the rarity of the bird or where publication might jeopordise future breeding attempts.
2. Fewer than five tetrads were occupied.
3. No records of potential breeding were received, i.e. all the records were of sightings only.

(Where species do not have maps they have sometimes been placed together and thus out of order.)

These maps do not give any indication of breeding density and the reader should bear that in mind. For some species presence in ten tetrads might mean ten pairs while for others it might mean a hundred pairs. We have, therefore, tried to give some indication of the number of pairs in the county, where such information is known, in Appendix 3 where John Rathmell has calculated rough estimates for the breeding numbers of common birds.

We have also given in the summaries indications of relative ubiquity by stating the number of tetrads in which breeding was recorded both in actual numbers and as a percentage of the total number of tetrads in the county.

In total 114 species were confirmed breeding during the Atlas project.

Cambridgeshire - the recording area

The present administrative county of Cambridgeshire is the result of the 1974 re-organisation and is an amalgamation with old Cambridgeshire and Huntingdonshire. This Atlas is based on the old county of Cambridgeshire as the title explains,

but the maps used are those for Vice County 29 which is the standard unit for the recording of wildlife data and our definitive map was drawn for use in the botanical and butterfly surveys as well as our own. There are therefore slight differences in the vice-county boundary which includes an area of around fifteen tetrads in the extreme north west of the county and excludes around fifteen in the extreme south on the border with Essex.

Standard Background Information
We have provided standard reference information at the front of the Atlas in three forms: first a labelled tetrad map, secondly a map showing the names of towns and places of ornithological interest etc and finally a map showing the distribution of soil types.

Comparisons
We are fortunate that our neighbours, with the exception of Essex and Suffolk, have all published Tetrad Atlases in the reasonably recent past. This has enabled us to present information to allow comparison of the percentages of probable/proven breeding records in Cambridgeshire with those of Hertfordshire, Bedfordshire, Huntingdonshire and Norfolk and these have proved extremely interesting. These figures are to be found in Appendix 2 which follows the systematic list of species.

Standard references
Throughout the systematic list there are a few references which appear time and again. These are mainly Atlas projects and they are referred to in the text by the author of the publication. Below is a list of these publications:

Bircham P.M.M. (1989) The Birds of Cambridgeshire. C.U.P. (Bircham)

Kelly Geoffrey, (1986) The Norfolk Bird Atlas. Norfolk and Norwich Naturalist's Society. Norwich. (Kelly)

Limentani Julian, Elliot Graham, and Everett Michael, (1988) The Breeding Birds of Huntingdon and Peterborough 1979-83. Elliot and Everett Enterprises. (Limentani et al)

Sharrock J.T.R. (1976) The Atlas of Breeding Birds in Britain. T.& A.D. Poyser. London. (1968-72 National Atlas)

Marchant J.H., Hudson P., Carter S.P., and Whittington P, (1990) Population Trends in British Breeding Birds. B.T.O. Tring. (Marchant et al)

THE NEW ATLAS OF BREEDING BIRDS IN BRITAIN AND IRELAND (1988-1992)

Unfortunately this publication arrived too late for any detailed analytical comparison map by map. However, the following general comments should be noted.

As regards common birds in Cambridgeshire the New Atlas shows a contraction of range over the last twenty years of:

more than 15% in the following species:

Snipe, Barn Owl, Grey Partridge, Turtle Dove, Sand Martin, Nightingale, Grasshopper Warbler, Marsh Tit, Tree Sparrow and Corn Bunting.

Between 10 and 15% in the following species:

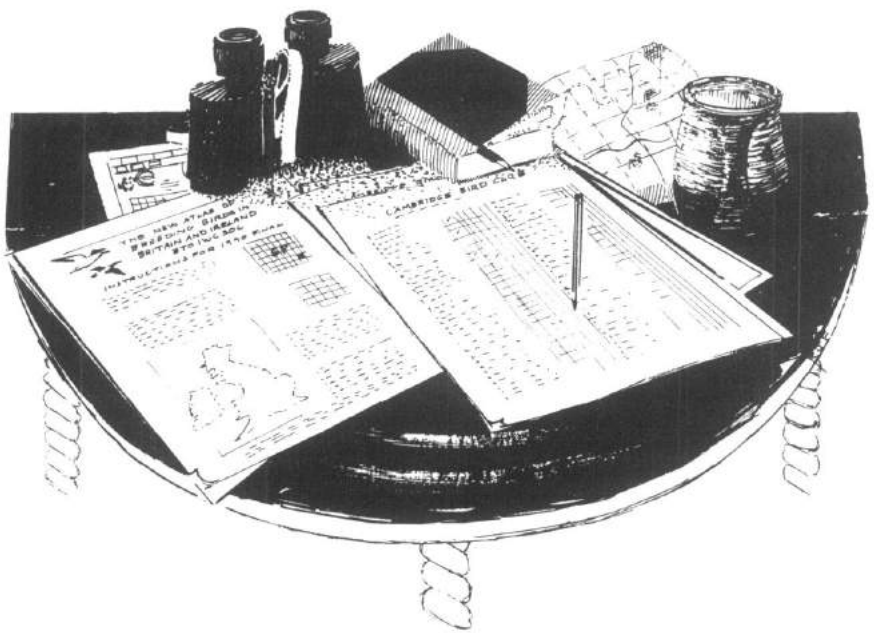
Shoveler, Redshank, Tawny Owl, Little Owl, Lesser Spotted Woodpecker, Willow Tit, Redpoll and Reed Bunting.

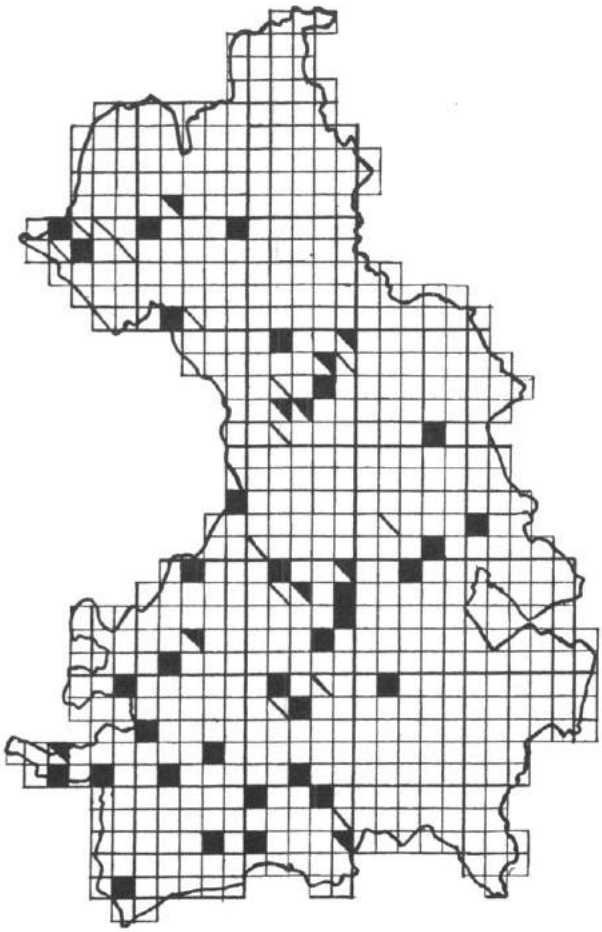
Conversely there has been an increase in range of over 15% in the following species:

Great Crested Grebe, Grey Heron, Canada Goose, Greylag Goose, Shelduck, Hobby, Sparrow Hawk and Lesser Whitethroat.

The New Atlas's abundance maps indicate exceptionally high breeding densities in Cambridgeshire (relative to the national population) for the following species:

Mute Swan, Mallard, Kestrel, Red-legged Partridge, Pheasant, Skylark, Yellow Wagtail, Sedge Warbler, Reed Warbler, Reed Bunting and Corn Bunting.

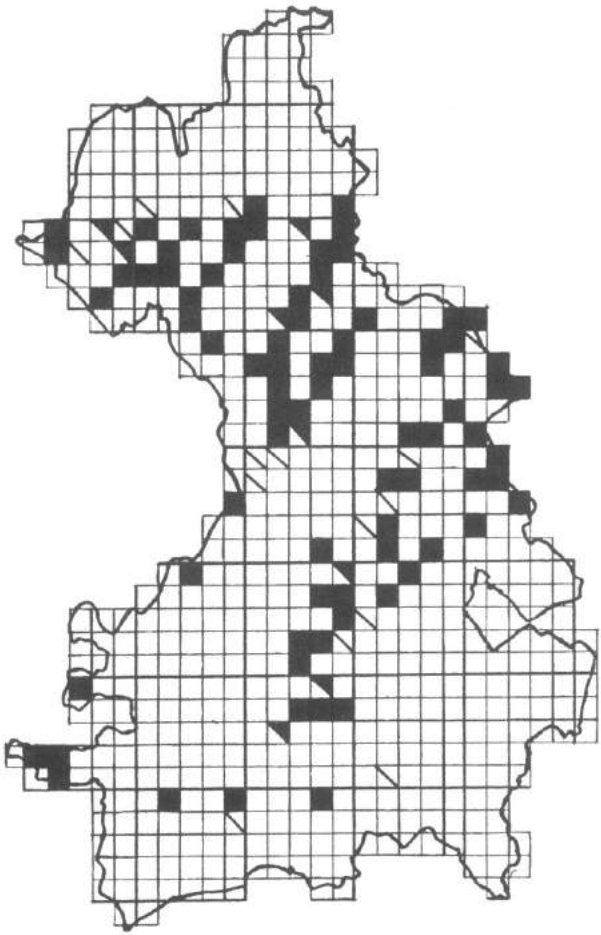




LITTLE GREBE *Tachybaptus ruficollis*

Unlike its congener, the Great Crested, the Little Grebe has failed to expand either its population or its range within the county. There is no real pattern to its distribution except that it breeds more regularly within the tributaries than on the main rivers. It has bred consistently on the various gravel pits but has failed to move onto the fenland waterways. Bircham suggested a breeding population of between 13 and 33 pairs at 6-20 sites, clearly an underestimate.

Probable/proven breeding was recorded in 43 tetrads (7%) with birds present in the breeding season in 15 others.



GREAT CRESTED GREBE *Podiceps cristatus*

After successfully returning to the county as a breeding species in 1934 the Great Crested Grebe has continued to expand its range and thus its population so that by the 1980s the total was estimated to be around 80 pairs. Much of this expansion has been due to the chain of gravel pits dug in the post war years, many of which support more than a single pair and also to the utilisation of fenland drains.

Probable/proven breeding was recorded in 91 tetrads (15%) with birds present in the breeding season in 15 more.

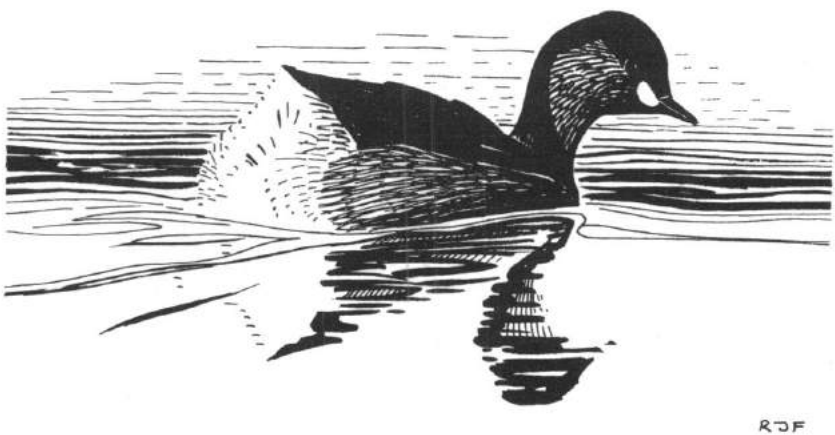
RED-NECKED GREBE *Podiceps grisegena*

This species nested unsuccessfully at one site in the county in 1988 and appeared in the same year at a second site. It subsequently made further attempts to breed at the first site, all of which failed.

There were therefore records in 2 tetrads each in separate 10km squares.

BLACK-NECKED GREBE *Podiceps nigricollis*

Like the Red-necked Grebe there was a single breeding attempt, though successful in this case in 1989 and birds of this species were recorded at a second site. Recorded in 2 tetrads in two separate 10km squares.

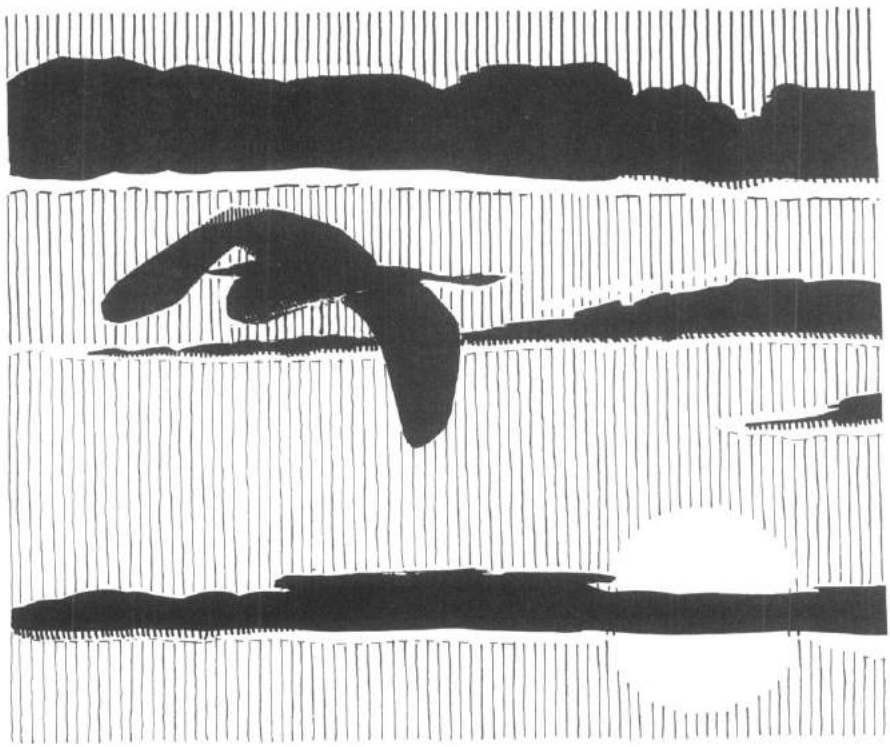


Little Grebe

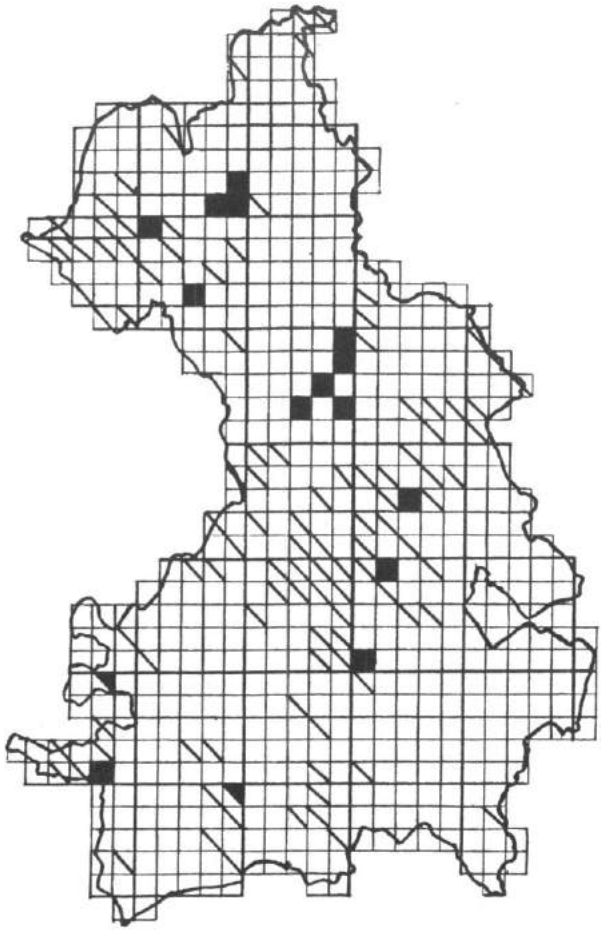
CORMORANT *Phalacrocorax carbo*

This species, which is increasingly breeding away from the coast, bred on the Ouse Washes in 1983 and attempted to do so at Fen Drayton GP in 1985. It now breeds at Little Paxton GP in neighbouring Huntingdonshire. There were no breeding records in the county during the project.

Recorded (present) in 7 tetrads within 5 10km squares.



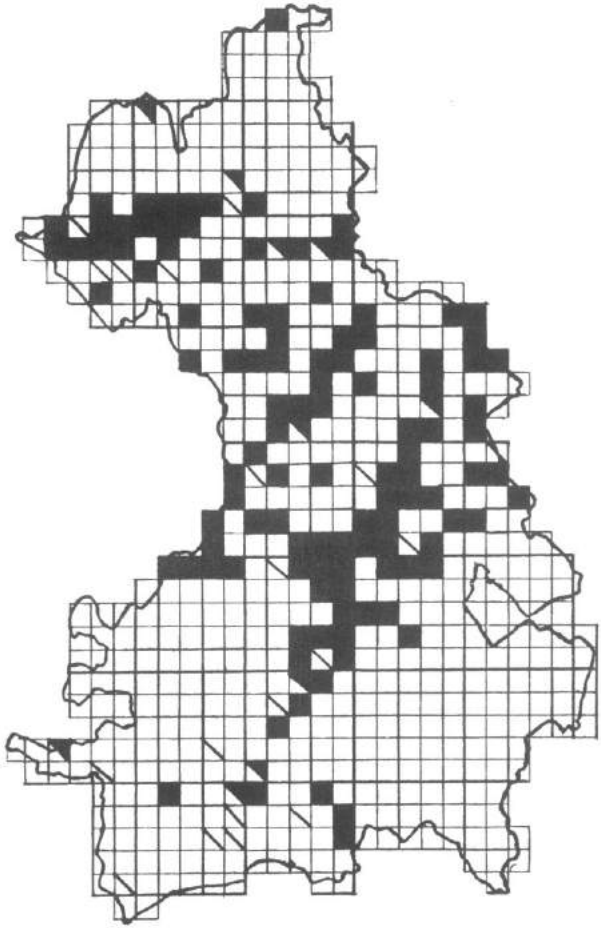
Grey Heron



GREY HERON *Ardea cinerea*

This species has been regularly counted in the county by A.E.Vine and thus we have an excellent knowledge of its status. Apart from the period immediately following the winter of 1962-63 there has been a breeding population of around 100 pairs spread over five or six sites which are situated mainly close to the ideal feeding habitats of the washes. Most of the sites away from the washes are of individual breeding attempts or very small colonies apart from the site at Stow-cum-Quy.

Probable/proven breeding was recorded in 16 tetrads (3%) and for this species the number of tetrads in which this species was present (97) represents the likely feeding range of the breeding birds and immatures.

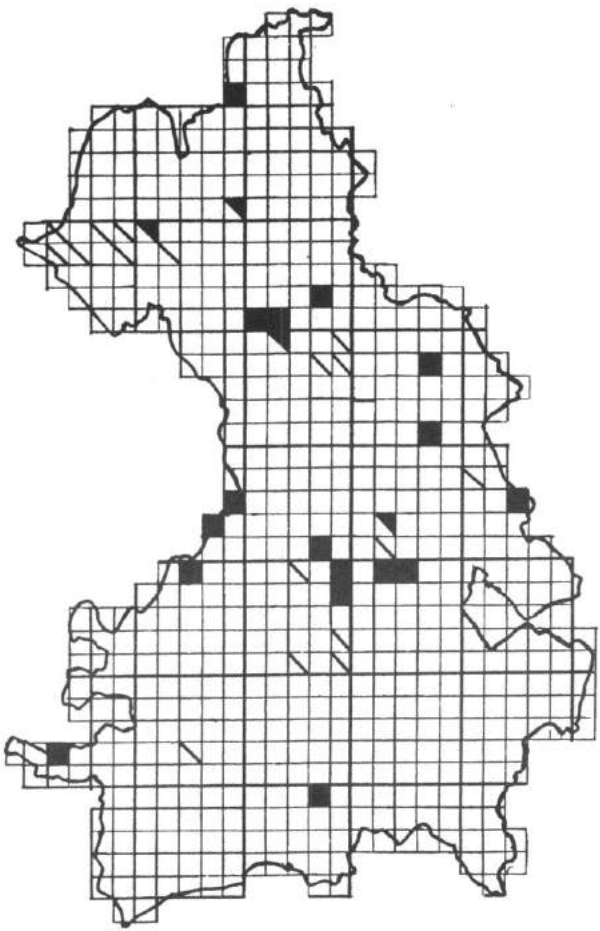


MUTE SWAN *Cygnus olor*

In general it is unlikely that, under natural conditions, the population of this species has changed drastically during this century, however there was a national decline associated with increased mortality due to the ingestion of lead weights (discarded by anglers) and an immediate recovery following regulation of their use. The digging of gravel pits has provided an additional breeding habitat which is widely used in Cambridgeshire.

The distribution is such that almost every available site is occupied and the only impediment to breeding seems to be human disturbance or vandalism. There is also a significant non-breeding population on the washlands of the Cam, Ouse and Nene.

Probable/proven breeding was recorded in 123 tetrads (20%) with birds present in the breeding season in another 18.

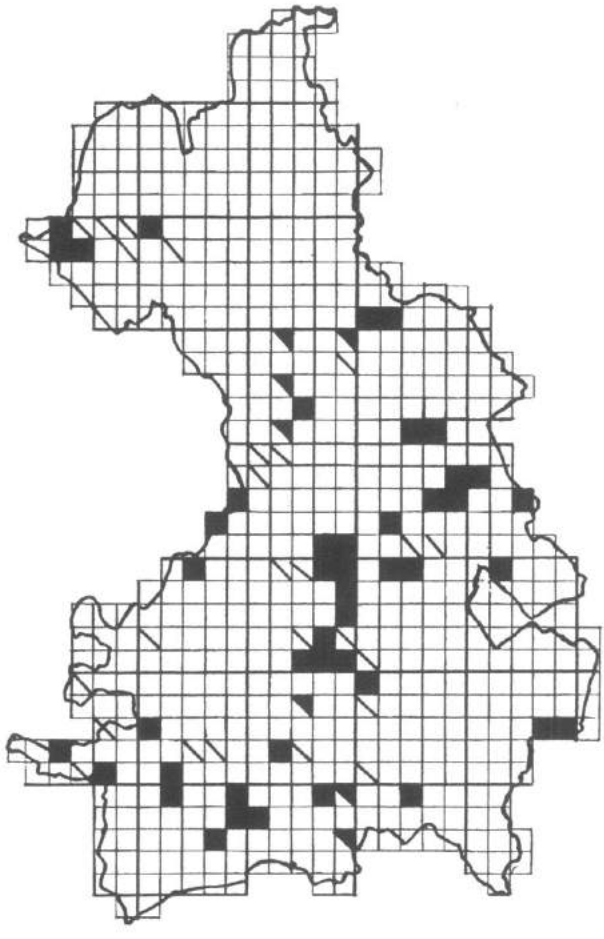


GREYLAG GOOSE *Anser anser*

Palaeontological evidence has shown that Greylags were found in the undrained fen although we do not know whether they bred there Northcote (1987).

In the recorded past this species first reappeared in the 1940s almost certainly as a result of introductions by wildfowlers thus it is unlikely that many birds at that time were genuinely wild. The first records of feral birds began in the 1950s, (it had been breeding in neighbouring Norfolk since the mid 1930s) and they increased until 1981 when the first breeding occurred at Wicken Fen; since when Greylags have increased and are commonly found on the county's gravel pits where their population growth is possibly limited by competition with Canadas.

Probable/proven breeding was recorded in 22 tetrads (4%) with birds present in the breeding season in 17 more.

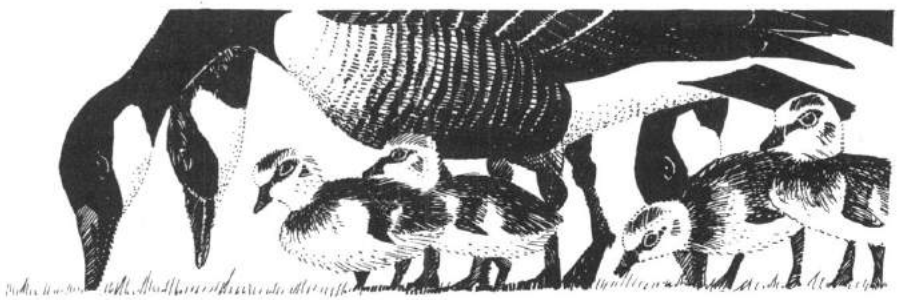


CANADA GOOSE *Branta canadensis*

Similar to the Greylag the population is entirely of feral origin. Following sporadic records from the 1930s this species was introduced into one or two sites in the late 1950s leading to breeding in 1961 and together with incursions there was soon a expanding breeding population.

The continued digging of gravel pits has provided Canadas with an ideal habitat in which to breed and there has been an expansion of the population to such an extent that this species is now regarded as a pest in the county. Although only one or two pairs breed at each site juvenile mortality seems low and thus numbers increase quickly.

Probable/proven breeding was recorded in 54 tetrads (9%) and birds present in the breeding season in a further 24.



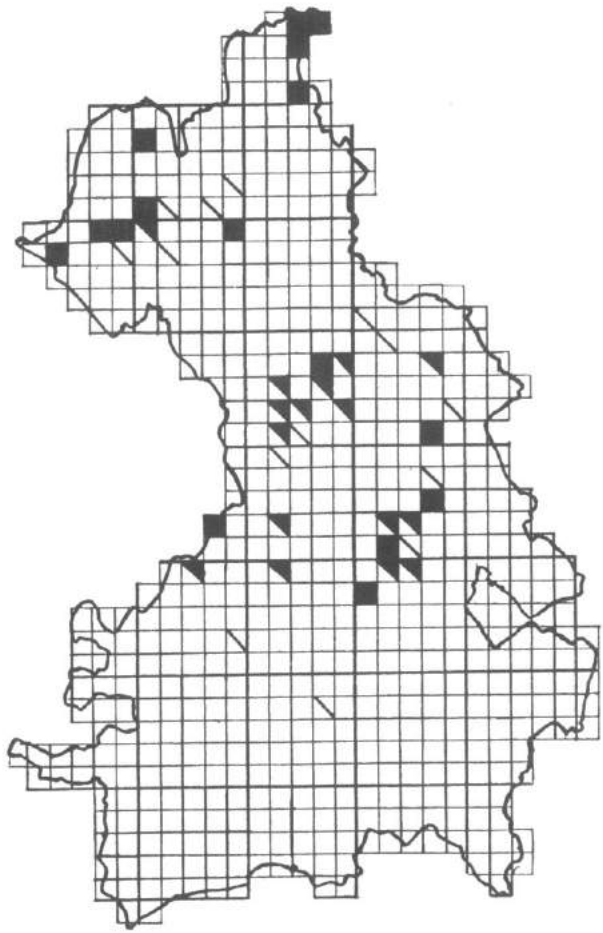
Canada Goose

EGYPTIAN GOOSE *Alopochen aegyptiacus*

This African species was introduced nationally in the seventeenth century and became widely distributed by the eighteenth and nineteenth (Sutherland & Allport 1991). The first record for Norfolk was in 1808 and it is in the north of that county that the population survived and has expanded (Kelly) so that it was inevitable that following the example of the two preceding species the Egyptian Goose would breed in Cambridgeshire.

The first Cambridgeshire records date from 1964 and were sporadic until the mid 1980s. The first breeding record was at Fen Drayton GP in 1988.

Probable/proven breeding was recorded in 3 tetrads and birds were present in the breeding season in 2 more.



SHELDUCK *Tadorna tadorna*

The spread of inland breeding of this species has been recently documented (Linton and Fox 1991) and Cambridgeshire was one of the first counties colonised with nesting on the Nene Washes from around 1936. In 1969 nesting began on the Ouse Washes and has subsequently spread to many other fenland sites.

At the present time there are birds nesting within a few miles of Cambridge and birds have been seen in the breeding season at Cherry Hinton cement pits. The main areas occupied are those around the three washlands of the Cam, Ouse and Nene.

Probable/proven breeding was recorded in 32 tetrads (5%) with birds present in the breeding season in 11 more.

(The number of breeding pairs is much higher, however, with 18-20 pairs on each of the Ouse and Nene Washes).

PINTAIL *Anas acuta*

Like the Wigeon this species has been present over the summer on both the Nene and Ouse Washes with some regularity and breeding was suspected as long ago on the Ouse Washes as 1928 and confirmed in 1947. Records remain hard to corroborate but some evidence of breeding is obtained in most years and in the early 1970s as many as twenty pairs were thought to be on the Ouse Washes. The numbers now are much lower with only 1-4 pairs involved.

Probable/proven breeding was recorded in 4 tetrads with birds present in the breeding season in one other.

MANDARIN *Aix galericulata*

Recorded in the county since the early 1970s this species has established a feral stock around Cambridge probably based on local escapes although the exact origins are not known.

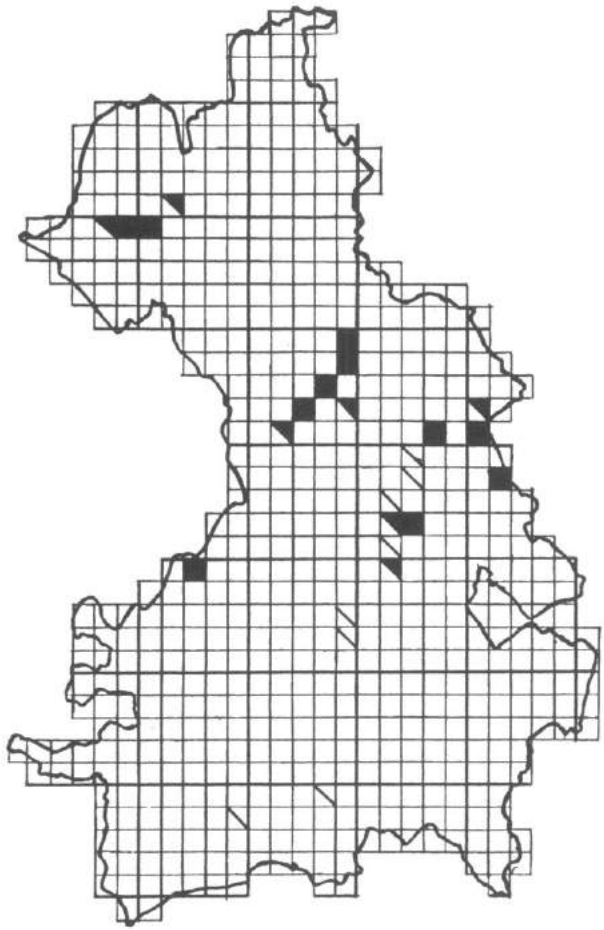
The first proven breeding was recorded in 1990 although Mandarins may have nested before that date.

Breeding was recorded in 2 tetrads and birds were present in one other tetrad in the breeding season.

WIGEON *Anas penelope*

This species has been oversummering in the county in small numbers in most years since the early 1960s, chiefly on the Ouse Washes but although breeding has often been suspected it has been hard to prove. The origins of the birds involved may be escapes but equally they may be wild birds left behind on the Washes from the huge wintering flocks.

Probable/proven breeding was recorded in 4 tetrads with birds present in the breeding season in 4 others (an attempt has been made to include only those birds that were oversummering and to exclude birds that were merely late leaving).

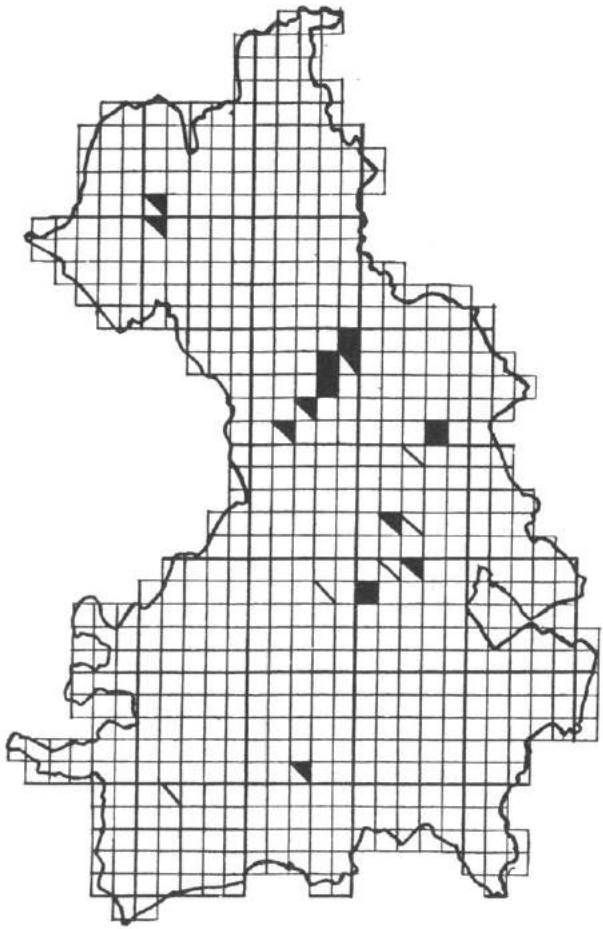


GADWALL *Anas strepera*

Once again the origins of the breeding population in the county are almost certainly of feral stock, spreading from neighbouring Norfolk where this species has been expanding its range for some time (Kelly).

Birds were first recorded summering in the 1950s on the Nene Washes and although breeding had been proven on Burwell Fen in 1938 the first record of the recent expansion was on the Ouse Washes in 1964. Whether immigrants from the continent are involved remains unknown but this species has increased around the general areas of the washlands, Cam (c5-6 prs) Nene (up to 20 prs) and Ouse (c15-18 prs) and is also breeding at one or two gravel pit sites.

Probable/proven breeding was recorded in 19 tetrads (3%) with birds present in the breeding season in a further 8.

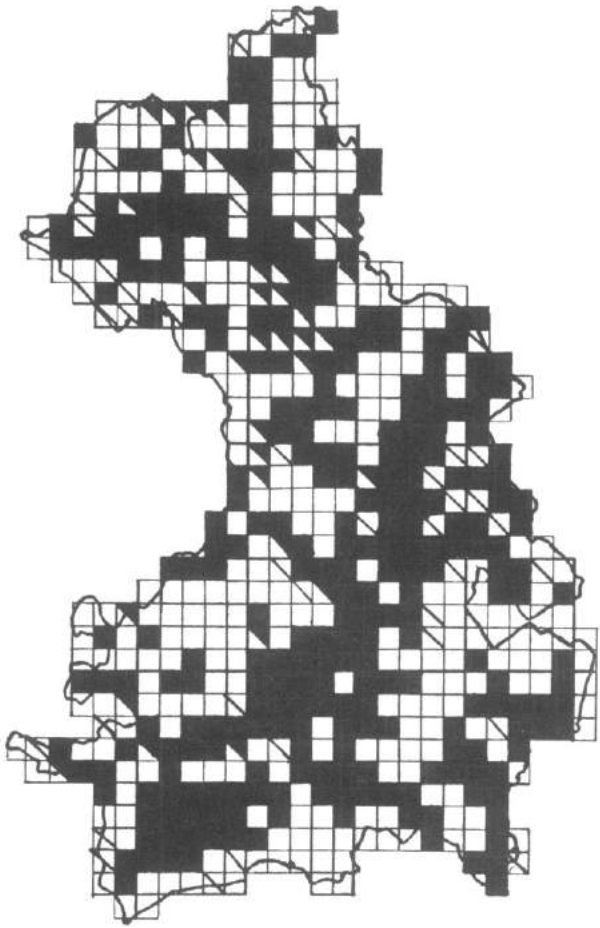


TEAL *Anas crecca*

This species may be under-recorded both in general breeding records and in particular during this Atlas project.

Most of the records are from the Nene and Ouse Washes although breeding has long been suspected at Wicken Fen (Thorne and Bennett 1989). The distribution shown is very similar to that for other ducks and the Teal appears to be less successful than Gadwall. Numbers on the Washes are also lower than for Gadwall with around 15 pairs on the Ouse Washes and 1-2 on the Nene.

Probable/proven breeding was recorded in 13 tetrads (2%) with birds present in the breeding season in 5 others.

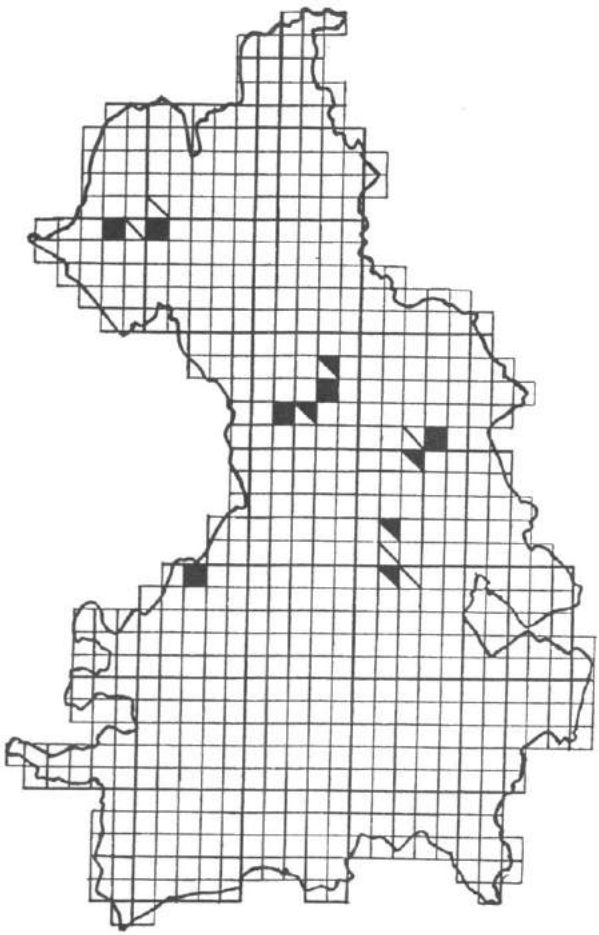


MALLARD *Anas platyrhynchos*

The most common and widespread of all the wildfowl and found even in the notoriously dry upland areas in both the south and east of the county. Almost any stream or pond seems to be adequate for this species. Most birds were thought to be wild although Cambridge has such a huge feral/tame population that some sites may well be used by the overflow.

With this species the limited coverage in some areas, particularly in parts of the fenland north of the Ouse Washes, may well have had an influence on the results so that gaps in distribution may not be as great as they seem.

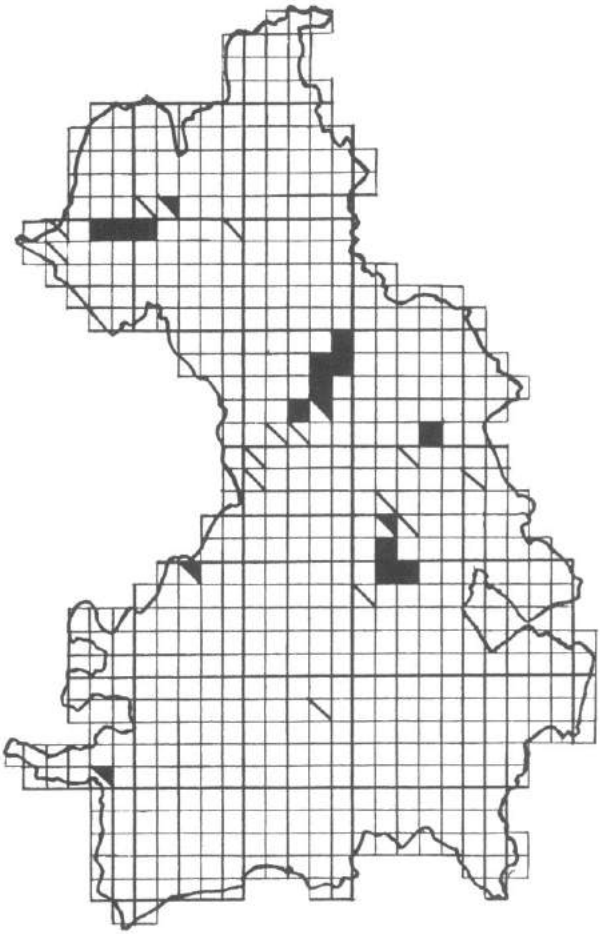
Probable/proven breeding was recorded in 319 tetrads (52%) and birds were present in the breeding season in 36 others.



GARGANEY *Anas querquedula*

Nationally, one of the two rarest of the breeding ducks. Their breeding stronghold in the county has always been the washes with both the Nene and the Ouse attracting nationally significant numbers totalling from ten to fifteen pairs. Elsewhere this species is an irregular breeding species but it is possible that another four or five pairs breed sporadically at suitable sites.

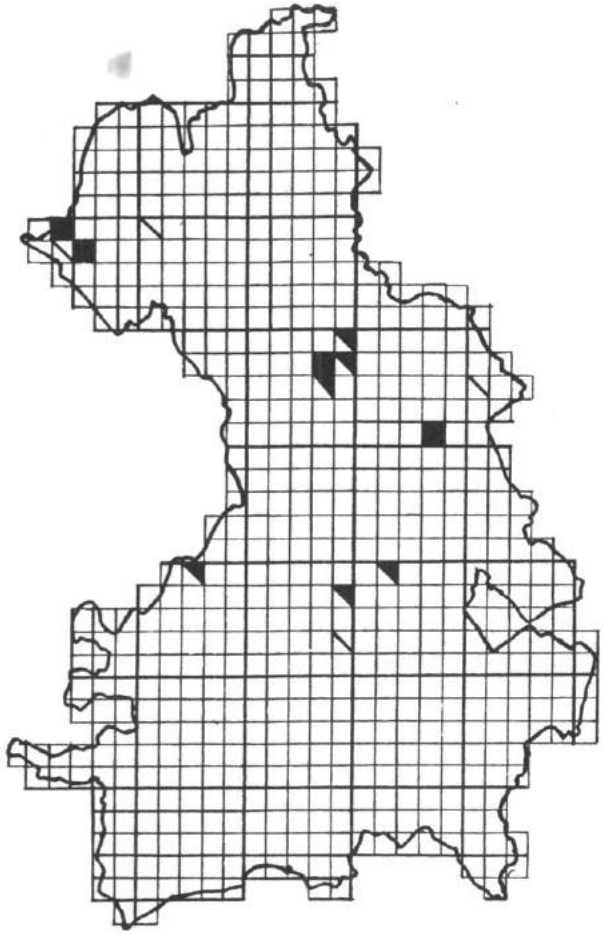
Probable/proven breeding was recorded in 11 tetrads (2%) with birds present in in the breeding season in another 5, all in fenland.



SHOVELER *Anas clypeata*

Found on all the important wetland sites across the county and particularly on the Ouse and Nene Washes where up to 30 pairs breed regularly on both sites. Elsewhere seen on the Cam Washes and at nearby Wicken Fen in summer where up to 5 pairs breed (Thorne and Bennett 1989). At Ely beet factory 2-3 broods are seen in most years.

Probable/proven breeding was recorded in 18 tetrads (3%) and birds present in the breeding season in a further 14.

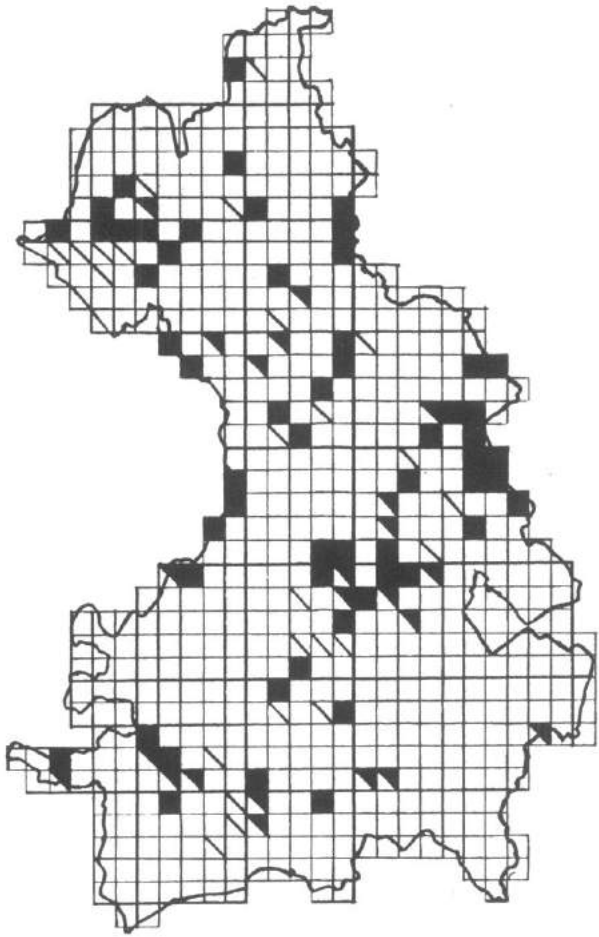


POCHARD *Aythya ferina*

This species first bred in 1934 with a number of sporadic records following until the 1950s when breeding became more regular on the washes and particularly on the gravel pits. Pairs have been seen in summer at several sites but breeding is only rarely proven.

Pochards cannot be said to have a very strong breeding population at present within the county. In most years it is almost certain that less than ten pairs breed and it might be less than five which represents a bit of a retreat from the 1970s.

Probable/proven breeding was recorded in 10 tetrads (2%) and birds were present in the breeding season in a further 4.



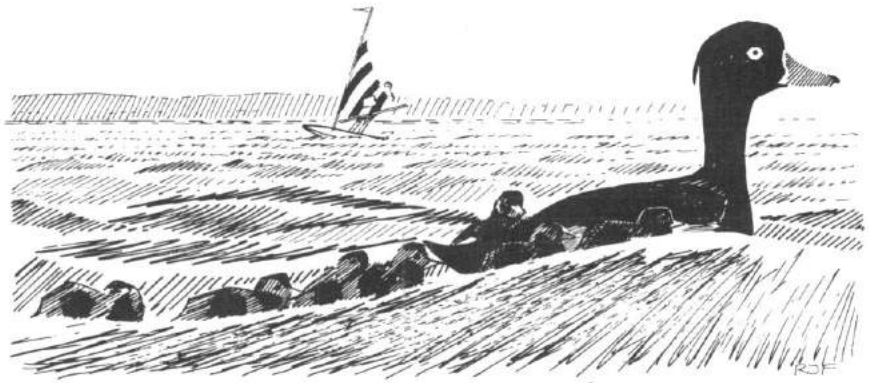
TUFTED DUCK *Aythya fuligula*

The first breeding record for Cambridgeshire was at Arrington in 1911 and the pattern that followed was of highly sporadic breeding records until the post-war period when, unlike its congener the Pochard, the Tufted Duck expanded its population as a result of the excavation of gravel pits.

In the 1950s the breeding population was just over ten pairs per annum and by 1967 there were forty-six pairs at eleven sites (Bircham). At present this species is found breeding not only on the gravel pits but also along the smaller rivers and fenland dykes.

The project found them to be widespread and there is a considerable possibility that it has not revealed the total population although the areas to the immediate east and west of Cambridge are unlikely to contain suitable water bodies.

Probable/proven breeding was recorded in 80 tetrads (13%) with birds present in the breeding season in a further 27.



Tufted Duck

RUDDY DUCK *Oxyura jamaicensis*

This species was introduced from North America and has spread from its original stronghold in the west of England. It was first reported in Cambridgeshire in August 1975 at Fen Drayton GP (Bircham). There followed a period of irregular records which increased until this species was regularly reported, although almost all sightings were of single birds. In 1988 there was a marked increase with several birds at more than one site and in 1989 breeding was confirmed at Ely beet factory where they bred also in 1990.

During the period covered by this project, birds were found in the breeding season at three other sites (total 4 tetrads) with pairs at Fen Drayton GP and on the Ouse Washes but no evidence of breeding.

MONTAGU'S HARRIER *Circus pygargus*

This species has nested sporadically in the county in the past. During the survey, breeding was confirmed in one tetrad (in 1990) when at least three young were fledged and this corresponded with a national upsurge to a total of 11 nests in that year, the highest figure for six years.

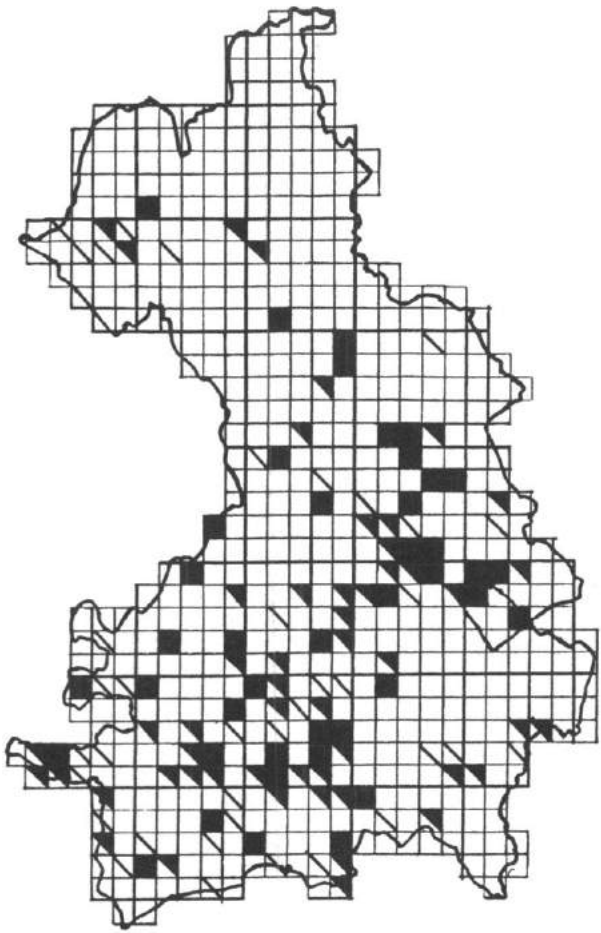
Possible (as opposed to probable) breeding was recorded in three other tetrads over the summers of 1989 and 1991. Throughout the past decade all breeding attempts have taken place in cereal crops on the chalk farmland in south or east Cambridgeshire. This corresponds with the national pattern where nesting in crops has become more usual than in traditional heath or reedbed sites. This species' presence on chalk farmland may be due to its preference for hunting over open countryside similar to the 'cereal-plain' habitats used on the continent.

Montagu's Harrier

MARSH HARRIER *Circus aeruginosus*

The 1968-72 National Atlas showed no records of breeding in Cambridgeshire for this species, however, since 1981 it has bred at first sporadically and then regularly in the county. During this survey breeding was confirmed in 5 tetrads and probable in 3 others.

Most nests were in reeds, although the sites varied from a large reedbed on the nature reserve at Wicken Fen to small farmland reedbeds, a fenland dyke, and a nettlebed on the Ouse Washes. No site was used for more than two years in succession and in some years of the survey only one pair bred in the county. In 1988 and 1992 two pairs were successful and in 1990 a single male bred with two females. Although substantial areas of reedbed occur only at Wicken Fen, small areas of reed are widely scattered in old pits throughout fenland, along the river valleys and in fenland dykes. The rapidly expanding national population now nests in small reedbeds and even cereal crops which makes it somewhat surprising that the Cambridgeshire population has remained at only 1-2 pairs per annum.

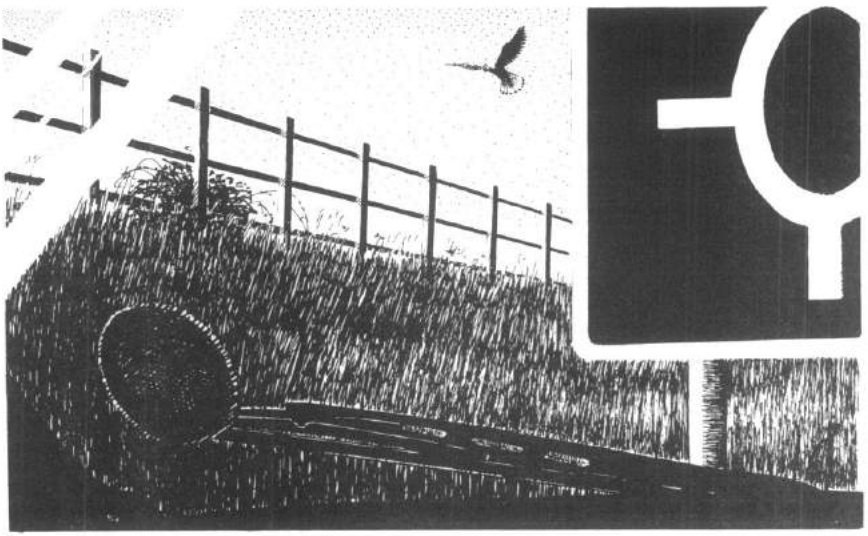


SPARROWHAWK *Accipiter nisus*

Up to 1984 this species had been virtually absent from the county for over twenty years and the 1968-72 National Atlas showed no records. Sparrowhawks returned to nest at Croxton (1984) and Eltisley (1985) and over the next five years much of the county was re-occupied.

Nesting usually occurs in woods, of variable sizes, and the lack of woodland in the fens almost certainly explains its sparse occurrence there. During the survey period this species was recorded in suburban habitats and although it is still increasing it remains far less well distributed than the Kestrel. It is possible that the present population is even higher than in the pre-pesticide days of the 1950s when persecution by gamekeepers was probably more significant.

Probable/proven breeding was recorded in 94 tetrads (15%) and birds were present in the breeding season in a further 35.



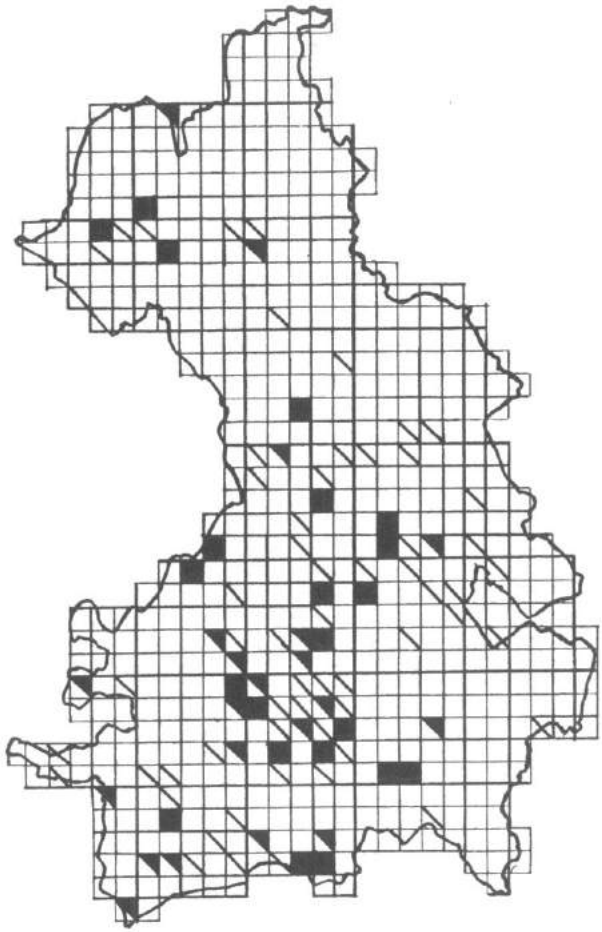
Kestrel

KESTREL *Falco tinnunculus*

Kestrels are fairly evenly distributed across the county. The results of this survey correspond well with a separate survey by a single observer (Easy 1990) which suggested a total of 150 pairs (10 prs per 10km square) mainly concentrated in the central lowland river valleys. However, the present survey, based on several years data reveals Kestrels also breeding widely along the chalk ridge to the south and east and across the fens.

The 1968-72 National Atlas revealed confirmed breeding in only 8 of the 10km squares and no breeding at all in one square (TL38). This survey suggests an increase from that time possibly associated with a recovery from the effects of pesticides in the 1960s.

Probable/proven breeding was recorded in 240 tetrads (39%) and birds were present in the breeding season in a further 70.



HOBBY *Falco subbuteo*

Although absent at the time of the 1968-72 National Atlas this species began to colonise the county in the south west in the mid 1970s and the county breeding numbers of this spectacular falcon are now at the highest level ever recorded, in line with an expanding national population.

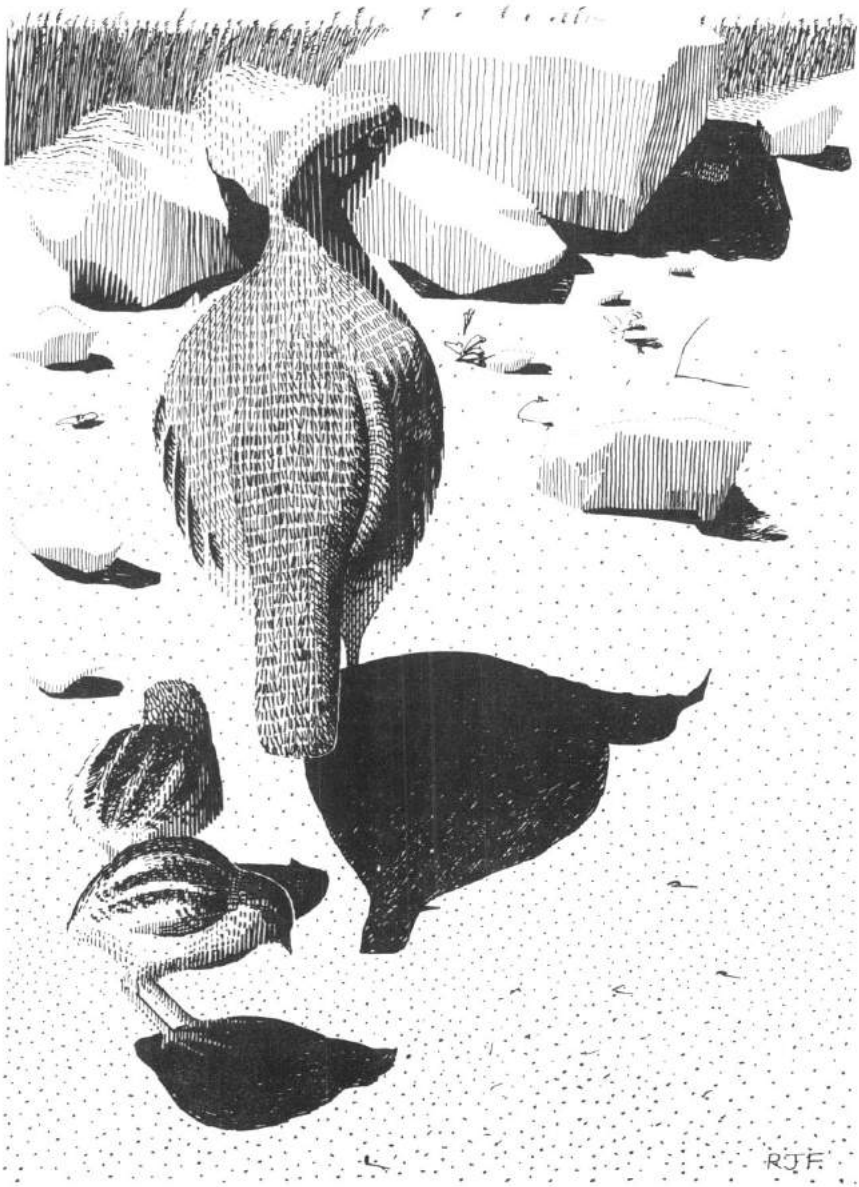
Prince and Clarke (1993) considered this expansion to be related to increased dragonfly food availability in areas with significant numbers of new gravel pit workings.

Since Hobbies are notoriously secretive and unobtrusive during incubation and early chick-rearing periods this map probably underestimates the true breeding status of this bird which has continued increasing throughout the survey period. Nesting occurs in a wide variety of hedgerow trees.

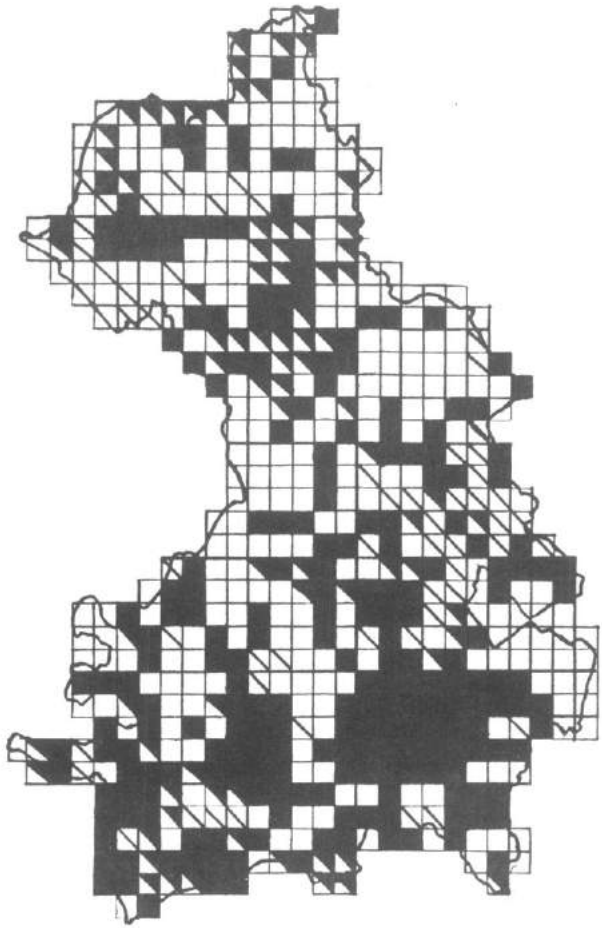
Detailed studies in west and south Cambridgeshire have shown pairs to be spaced at roughly 7 km intervals, 1.3 prs per 10km square. This compares with densities of 4 pairs per 10km square in the Bucks/Oxfordshire area (Fuller et al

1985) so it is possible that there is room for further expansion. While some areas remain unoccupied the distribution is fairly widespread with pairs possibly attracted to sites rich in dragonflies or hirundines.

Probable/proven breeding was recorded in 43 tetrads (7%) and birds were present in the breeding season in a further 56.



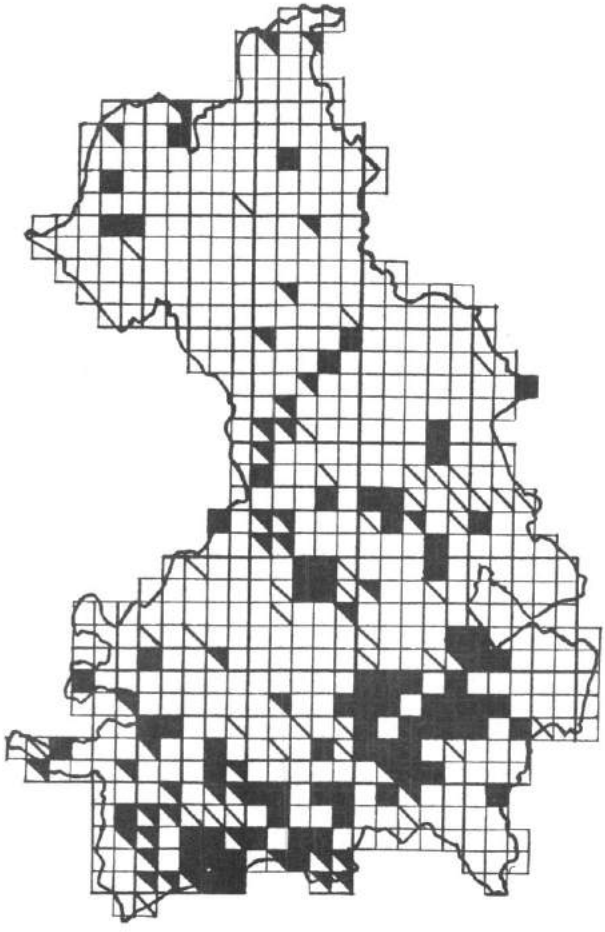
Red-Legged Partridge



RED-LEGGED PARTRIDGE *Alectoris rufa*

Red-legged Partridges are shown by the survey to be about three times more widespread than the Grey Partridge and although the higher densities seem to be on the drier chalkland areas of the county this species also shows a reasonable distribution in the fenland which was also the case in neighbouring Huntingdonshire (Limentani et al). Numbers are boosted in many areas by released birds. This species is not so dependant on insect food for its chicks as the Grey Partridge this has made it less susceptible to the impact of herbicides on the insect prey which feed on arable weeds.

Probable/proven breeding was recorded in 205 tetrads (33%) and birds were present in the breeding season in 56 others.

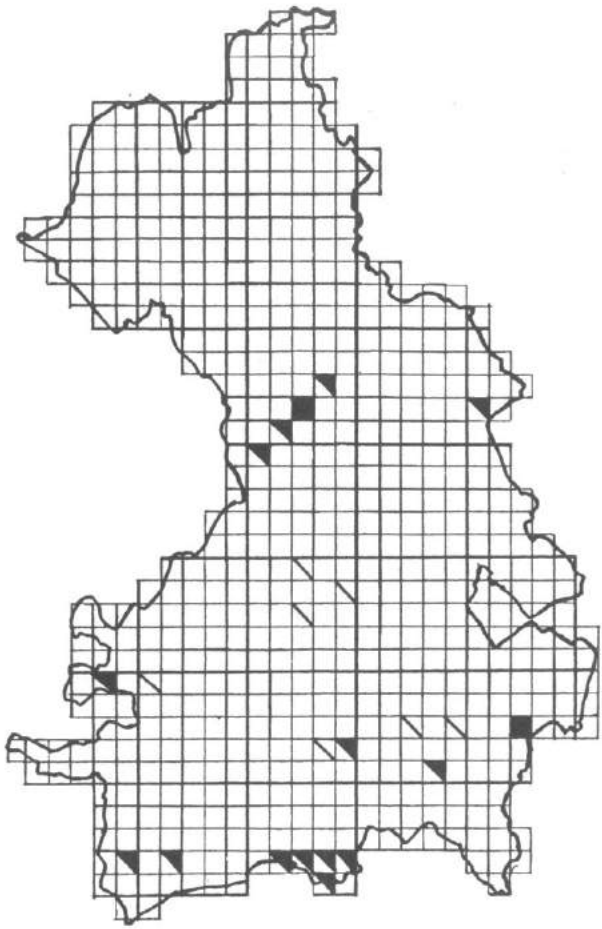


GREY PARTRIDGE *Perdix perdix*

Grey Partridges are now mainly confined to the southern chalk farmland. Elsewhere a few pockets of breeding birds occur on greensand soils around Cottenham and on the few clay ridges rising out of the fens such as those at Thorney, near Ely and around Wicken. A few pairs nest on the Ouse and Nene Washes where the semi-natural grassland provides another favoured habitat.

Partridges have been found to be commonest at an intermediate hedge density of about 80 metres/ha and prefer to nest on raised banks which are better drained (Lack 1992). This might explain why this species is not as common on the western side of the county as might be expected since this area is mainly clay soils compared with chalk in the east and south which is better drained. The concentration on chalk soils is also demonstrated by the results of the Norfolk survey (Kelly) and the absence of this species in fenland is confirmed by the results of the Hunts survey (Limentani et al).

Probable/proven breeding was recorded in 122 tetrads (20%) with birds present in the breeding season in 36 others.



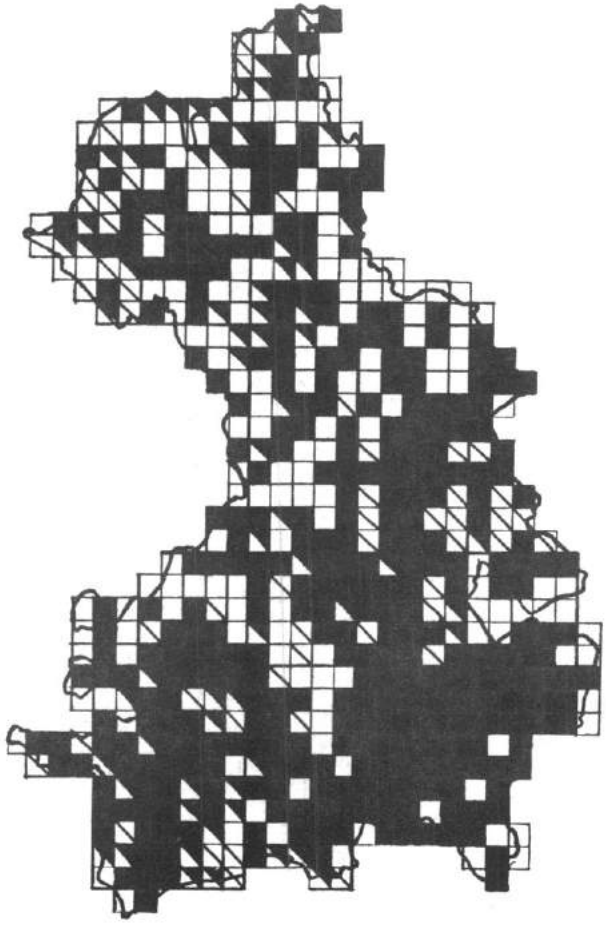
QUAIL *Coturnix coturnix*

The breeding status of this migratory species varies enormously from year to year. Breeding is difficult to prove and most records are of calling birds. Furthermore sometimes birds are released for game, making it a confusing bird to summarise.

Over the survey period large numbers were present in 1989, a record year nationally, when in Cambridgeshire at least fifty males were heard calling, mainly within the cereal crops in the south of the county and on the grassland of the reserves on the Ouse Washes. Even in poor years birds can generally be located along the southern chalk belt north of Great Chishill and at Hildersham.

The county distribution appears to be very similar to the 10km square distribution in the 1968-72 National Atlas.

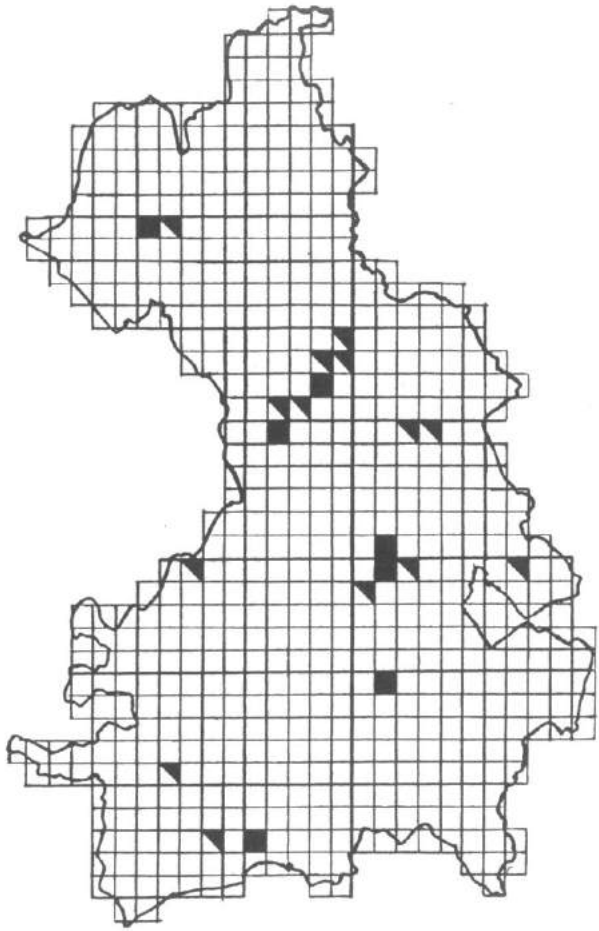
Probable/proven breeding was recorded in 16 tetrads (3%) and birds were present in the breeding season in a further 7.



PHEASANT *Phasianus colchicus*

The Pheasant is a common and widespread species throughout the county. Breeding was confirmed in most tetrads except those in built-up areas of towns and in the most open inhospitable parts of the fens. The densest populations seem to be in the south-east of the county where there are both numerous small woodlands and game-rearing for shooting.

Probable/proven breeding was recorded in 404 tetrads (66%) and birds were present in the breeding season in 49 others.



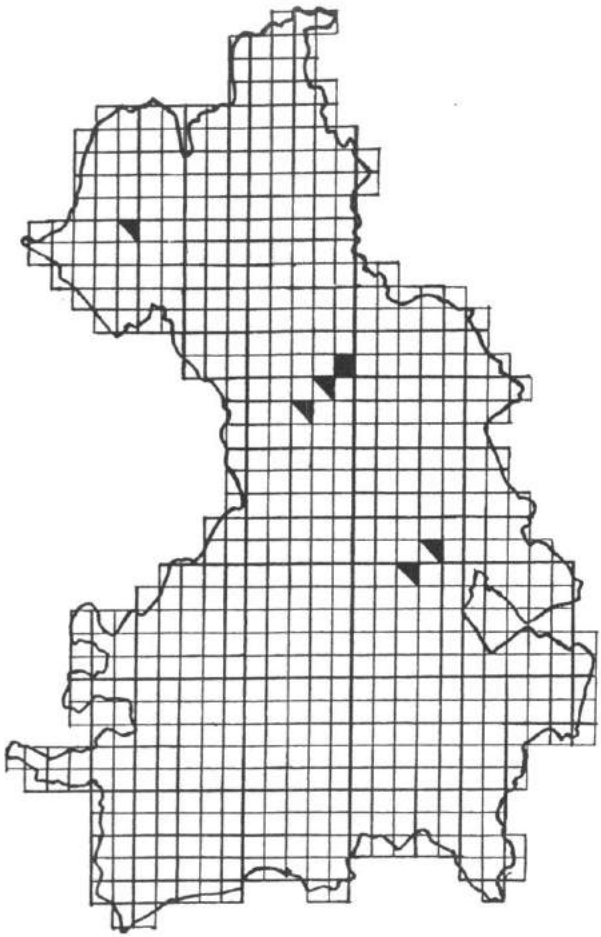
WATER RAIL *Rallus aquaticus*

Water Rails nest in dense marshland vegetation and since this is an exacting and somewhat scarce requirement their distribution is strictly limited. They were found at only a handful of sites: the Ouse and Nene Washes, Wicken and Chippenham Fens, Ely beet factory and at Fowlmere watercress beds. Their presence is usually established by their call and with their secretive habits breeding is usually only confirmed when young are seen.

The present population appears to be around 20 pairs at the above sites but with calling heard during the breeding season from gravel pits at Fen Drayton and Block Fen it is possible that there might be a larger breeding population.

The population appears to have expanded slightly since the publication of the 1968-72 National Atlas.

Probable/proven breeding was recorded in 21 tetrads (3%).



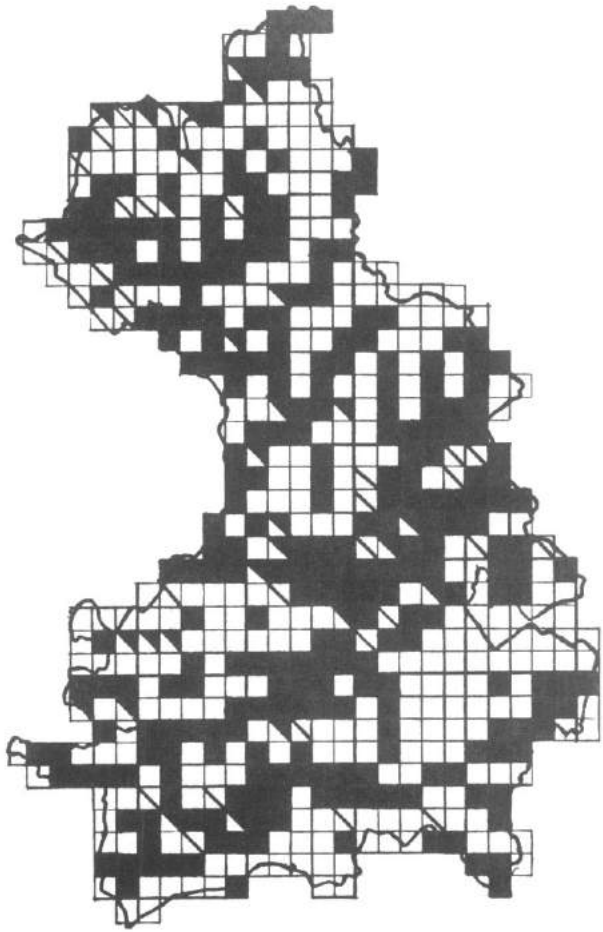
SPOTTED CRAKE *Porzana porzana*

This rare breeding bird was reported in the breeding season from only a handful of sites: the Ouse, Nene and Cam Washes and from Wicken Fen.

Like the Water Rail this species nests in dense marsh vegetation, usually sedge rather than reed, and is normally located by its distinctive whiplash call in early summer evenings. Thus breeding is seldom proved but young were seen on the Ouse Washes in 1987.

Numbers fluctuate and the breeding population may be between 2 and 10 pairs. The 1968-72 National Atlas shows no records for this species in Cambridgeshire so there appears to have been a small but genuine colonisation by this summer migrant.

Breeding was confirmed in only one tetrad (Ouse Washes) and was considered possible/probable in 5 others.

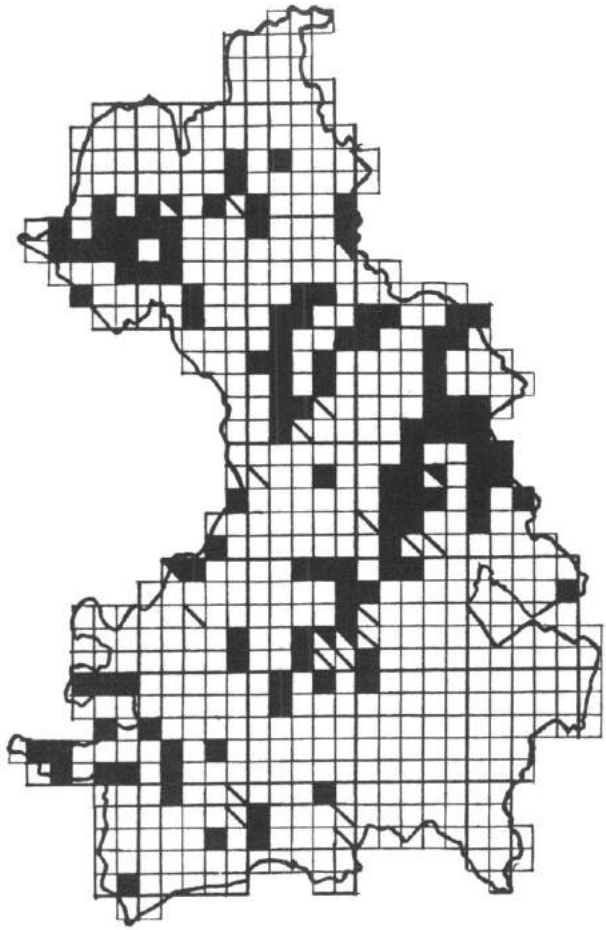


MOORHEN *Gallinula chloropus*

The Moorhen is a well distributed bird in the county found in farmland and suburban habitat wherever still or slow-moving water is available and there can be large concentrations in suitable habitat such as on the Ouse (up to 70 pairs) and Nene (up to 25 pairs) Washes. Moorhens and their young are conspicuous and breeding is therefore easy to prove.

The absence from some areas of the south-east is due entirely to the lack of watercourses in that region. Less easy to explain is the absence from several parts of the fens since the area is criss-crossed with ditches and dykes and as the Hunts survey showed it to be well distributed in their part of fenland (Limentani et al) this may be due to it being less obtrusive in that habitat.

Probable/proven breeding was recorded in 301 tetrads (49%) with birds present in the breeding season in a further 27.

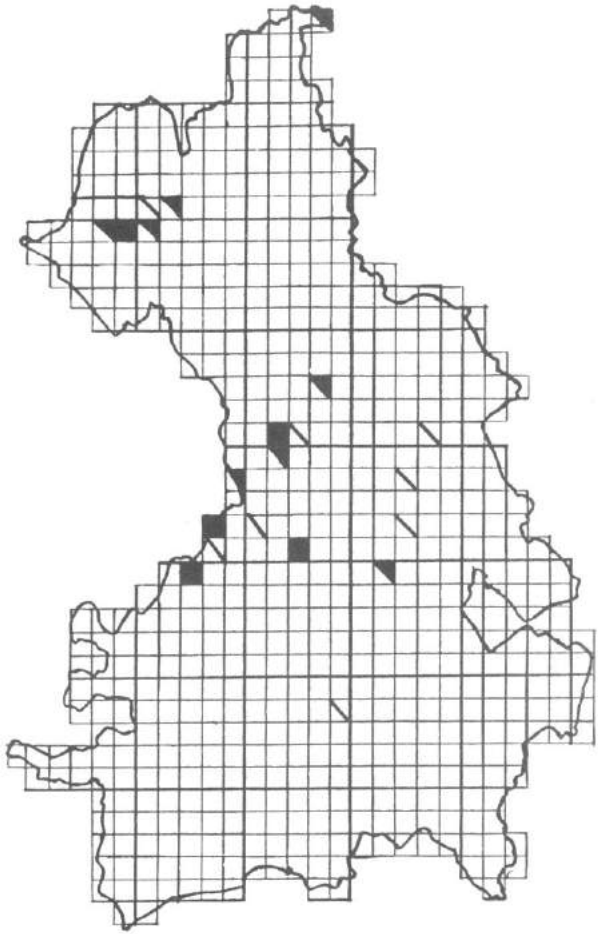


COOT *Fulica atra*

Coots, like Moorhens, are conspicuous birds when breeding and since they require larger areas of water, usually over 1000 square metres (Lack 1992), they should be easy to locate. Thus the distribution revealed by the survey follows the natural wetlands, slower rivers and excavated pits within the county.

The largest breeding concentrations are to be found on the Washes with around 40 pairs on the Ouse and 40-100 pairs on the Nene. The population is likely to increase further with renewed mineral extraction but at present is probably between 200 and 300 pairs.

Probable/proven breeding was recorded in 119 tetrads (19%) with birds present in the breeding season in 16 others.

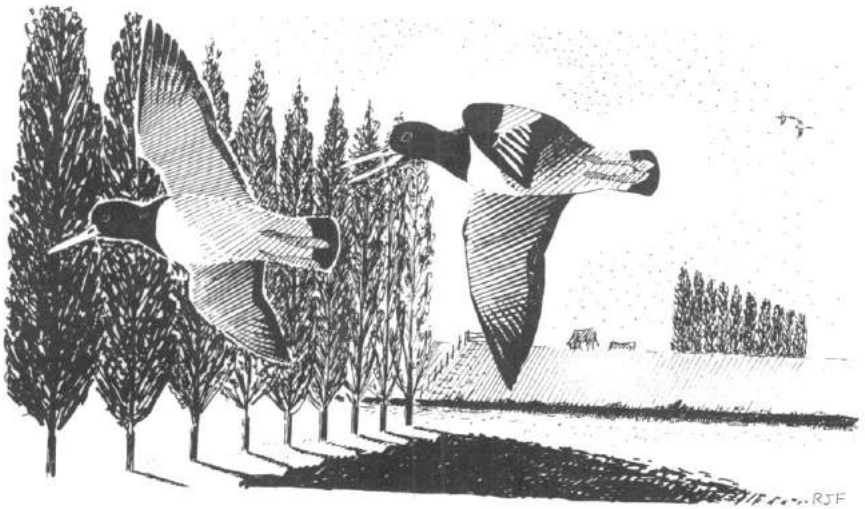


OYSTERCATCHER *Haematopus ostralegus*

This species appears to have undergone a behavioural change this century and, starting in the north of England, has gradually moved inland along the larger river valleys. Breeding was first recorded in Cambridgeshire in 1971 after birds had been seen displaying in previous summers (Bircham).

Oystercatchers use a variety of habitats in the county notably the washlands of the Ouse and Nene with up to 9 pairs at the former and 3 at the latter; gravel pit margins as at Fen Drayton and Block Fen or the banks of the larger rivers. Since these birds are so conspicuous it is unlikely that any pairs were overlooked, however, the expansion is continuing and in the summer of 1992 a pair spent a short time at Cherry Hinton cement pits close to Cambridge city centre so there is every reason to expect a wider distribution in the future.

Probable/proven breeding was recorded in 11 tetrads (2%) with birds present in the breeding season in a further 8.



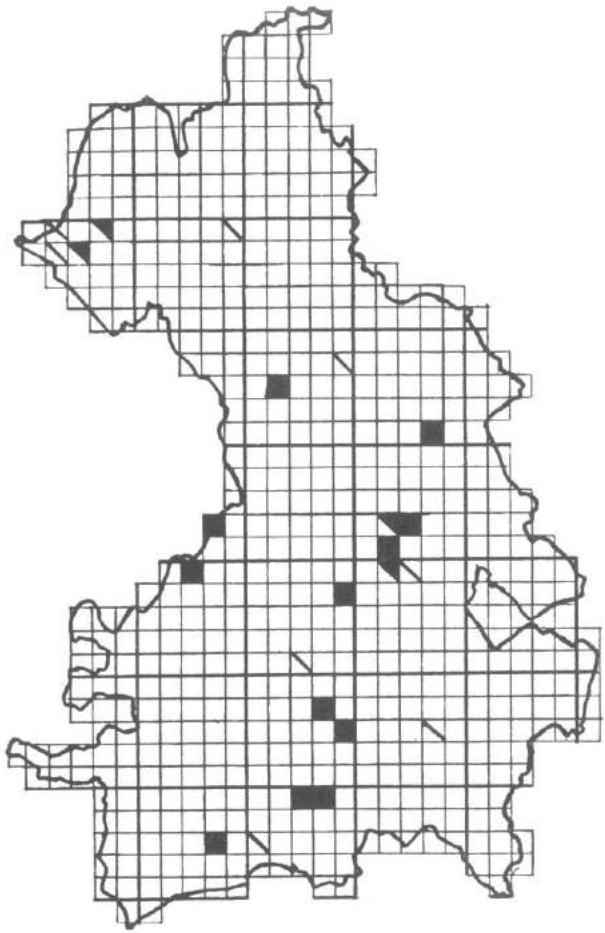
Oystercatcher

STONE CURLEW *Burhinus oedicnemus*

Comprehensive county surveys of Stone Curlew have been undertaken annually from 1979 since when the population has declined from 6 pairs in south Cambs and 6 in east Cambs to 4 and one pair respectively.

This species' complex habitat requirements (namely remote, undisturbed mixed farmland on dry chalk countryside) inevitably restricts its distribution. Nesting occurs in crops such as sugar beet, spring barley, field beans and maize which must be sufficiently short and open during the lengthy ten-week incubation and chick-feeding period. The rapid decline of this species is almost certainly associated with increased mechanisation, loss of sheep and cattle grazed pasture for feeding areas and the predominance in the 1980s of winter-sown cereals and oilseed rape which grow too tall too quickly to allow nesting. Only special protective measures combined with various initiatives such as set-aside are likely to prevent the extinction from Cambridgeshire of this enigmatic bird.

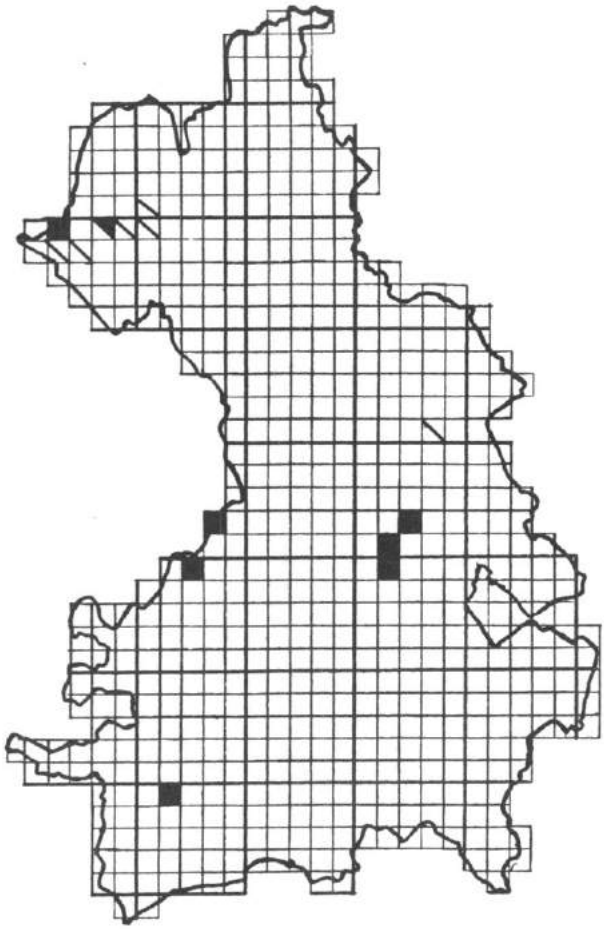
Probable/proven breeding was recorded in 10 tetrads and birds were present in the breeding season in 2 others.



LITTLE RINGED PLOVER *Charadrius dubius*

This species first bred in Cambridgeshire in 1952, ten years after it was first recorded in the county (Bircham) and fourteen years after it first bred in Britain. In Cambridgeshire it has remained a constant breeding species mainly on suitable gravel pits. As in other counties, unless the favourable conditions of open ground that prevail after excavation are maintained, Little Ringed Plovers rarely nest at the same site for any length of time and from the map it is possible to overestimate the level of the population which is probably no more than 4-5 pairs per annum.

Probable/proven breeding was recorded in 16 tetrads (3%) and birds were present in the breeding season in 8 others.

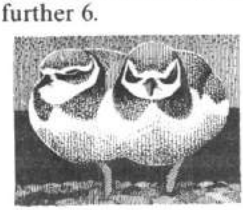


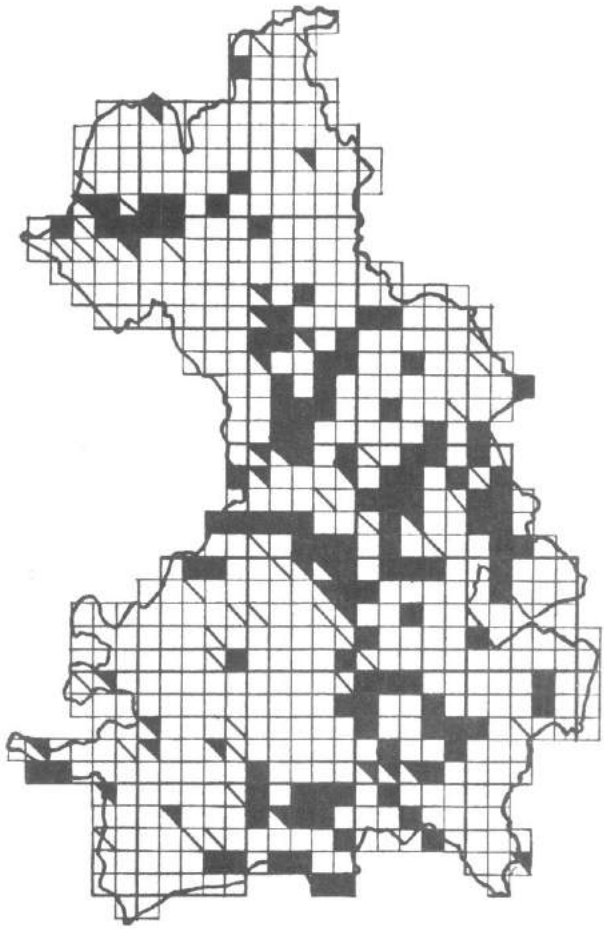
RINGED PLOVER *Charadrius hiaticula*

After a possible breeding record in 1952 there was a proven record in 1955 which presaged a period of sporadic breeding attempts. By the 1970s breeding was regular and reached several pairs mostly on gravel pits and the washes. There has been no great increase and at present 5-6 pairs attempt to nest in most years although their success rate appears to be quite low.

Compared with the previous species the Ringed Plover seems to be more site faithful.

Probable/proven breeding was recorded in 8 tetrads (1%) and birds were present in the breeding season in a further 6.



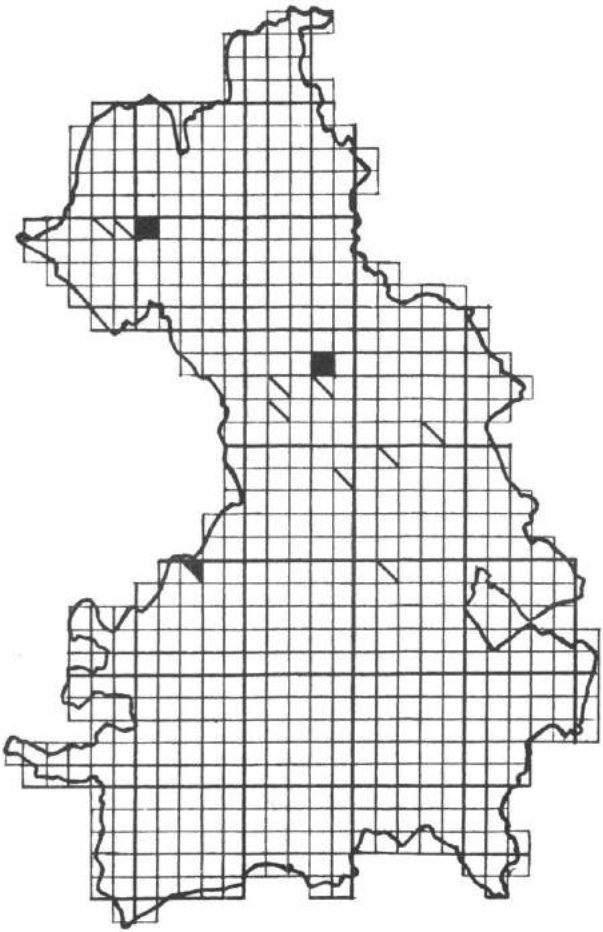


LAPWING *Vanellus vanellus*

There has been a national decline in the breeding status of the Lapwing in lowland Britain which has almost certainly been reflected in Cambridgeshire and recent research (O'Brien and Smith 1992) has shown a fall of 19% in the breeding population in East Anglia of birds nesting away from the nature reserves between 1982 and 1989. Lapwings prefer a mosaic of arable crops and pasture for nesting which is now less common in the county.

However, with the river washlands (up to 200 pairs on the Ouse and 100 on the Nene) and some remaining areas of rough grassland this species still has a reasonable distribution across Cambridgeshire and Lapwings seem to breed successfully on even the smallest suitable field. The gaps to the east and west of Cambridge reflect the nature of the agriculture where winter-sown crops predominate on the clay soils reducing nesting opportunities. Spring barley, more commonly grown on the chalk, provides more opportunites since the shorter crop with thin soil leaves bare patches which favour Lapwing success.

Probable/proven breeding was recorded in 141 tetrads (23%) and birds were present in the breeding season in an additional 37.



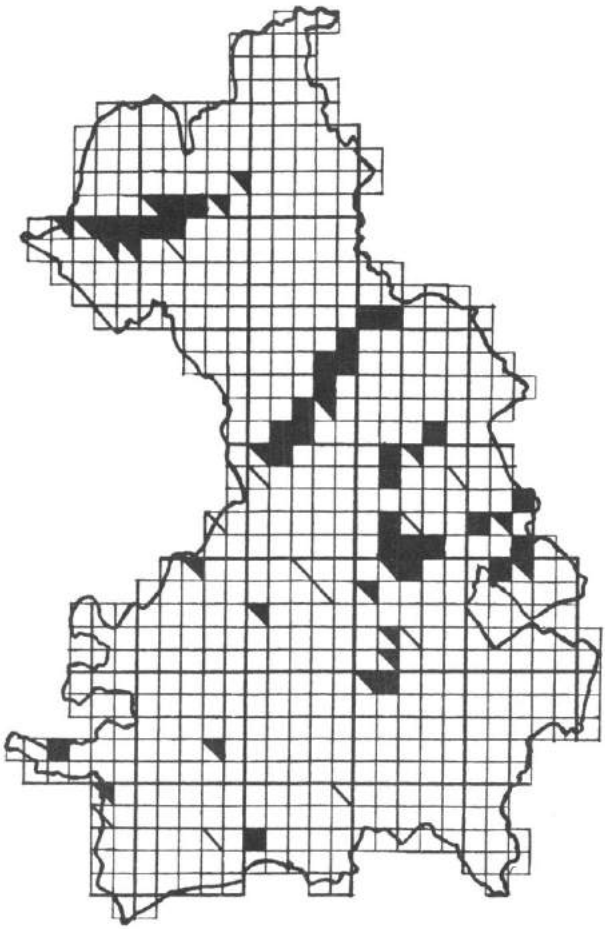
RUFF *Philomachus pugnax*

In recent times (since the drainage of the fens) this species was first recorded breeding in the county in 1962 although there may have been attempts earlier (Bircham).

Breeding has remained sporadic depending on conditions on the washes and when it has taken place, late summer floods have sometimes been the cause of failure. Despite nearly thirty years of records, and often very good numbers of birds at the leks, there is no sign of expansion or even consolidation of the Cambridgeshire population although this species is one of those where it is difficult to obtain evidence of breeding.

Probable/proven breeding was recorded in 3 tetrads and birds were present in the breeding season in 9 others.

Snipe

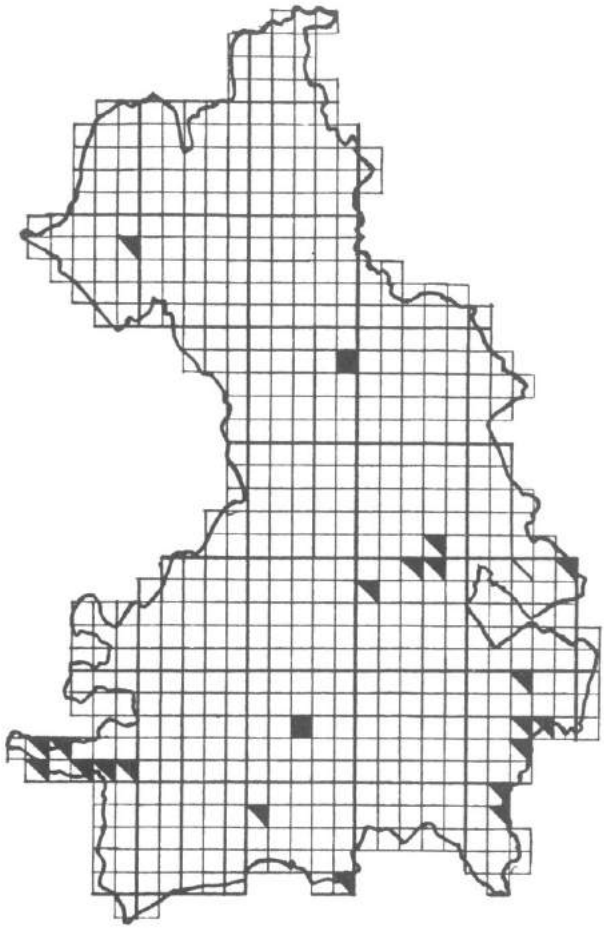


SNIPE *Gallinago gallinago*

Cambridgeshire has always been one of the strongholds of this wader in lowland Britain and, as well as using the washes, up to thirty years ago Snipe bred in wet meadows in most parishes in the west and south of the county before these meadows were drained.

The largest populations are based on the washlands of the Cam (c30+), Nene (100+) and Ouse (300-500) and in smaller numbers at Wicken and Little Wilbraham Fens. However, away from these sites this species now has an extremely thinly scattered distribution in just those one or two areas where wet meadows remain although O'Brien and Smith (1992) indicated that the status of this species was relatively stable between 1982 and 1989. It is possible that breeding was at a low ebb due to the prevailing drought conditions and that distribution away from the regular sites might, in more favourable conditions, be more widespread.

Probable/proven breeding was recorded in 52 tetrads (8%) and birds were present in the breeding season in 11 others.

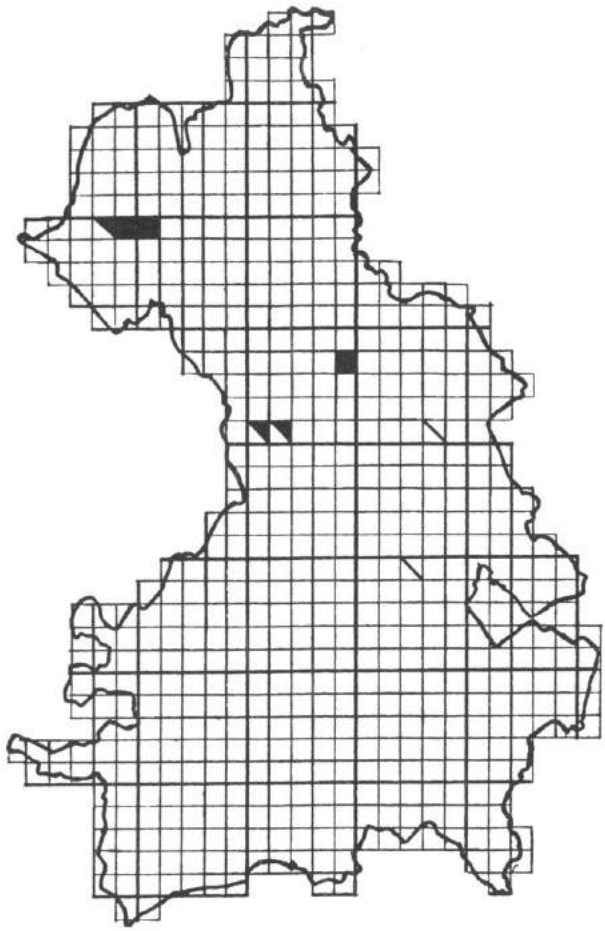


WOODCOCK *Scolopax rusticola*

The Woodcock began to breed with regularity during the first half of this century but the population remains low. This species with its preference for wet woodlands has a restricted distribution and is found in fenland only in areas such as part of the Ouse Washes, Wicken Fen and Fordham Wood. Elsewhere it is to be found in woodlands on the boulder clay in the extreme west and east of the county.

It is likely that the crepuscular nature of this bird has meant that without visits specifically to find Woodcock there remain undiscovered pairs.

Probable/proven breeding was recorded in 23 tetrads (4%) and birds were present in the breeding season in 1 other.



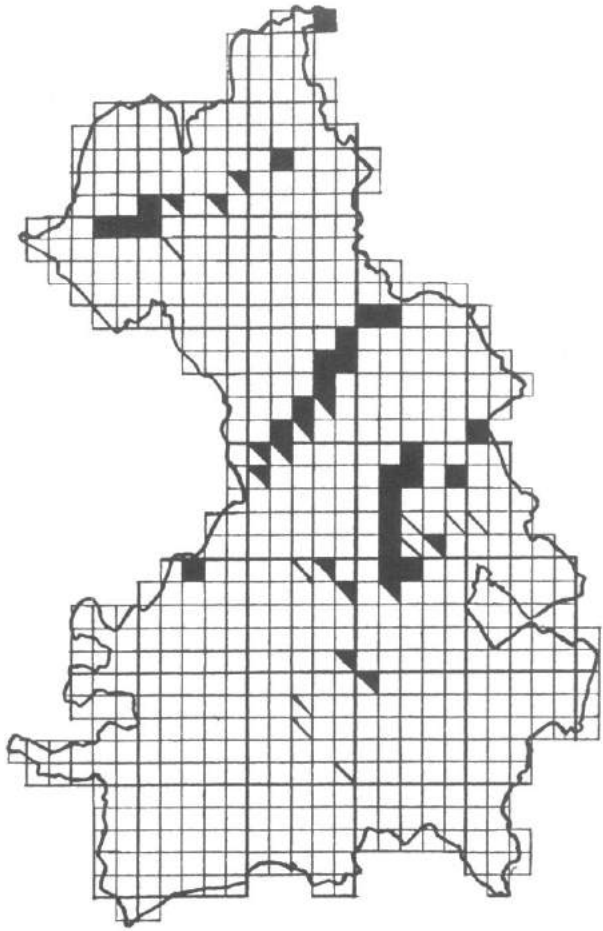
BLACK TAILED GODWIT *Limosa limosa*

During this century the Black-tailed Godwit was first recorded breeding in Cambridgeshire on the Ouse Washes in 1952 since when records have been fairly regular although, like the Ruff, this species has been flooded out in some years and the population appears to be in decline at present with around 20 pairs whereas during the seventies up to 64 pairs were counted. As monitored by RSPB staff success is low.

Breeding is no longer restricted to the Ouse Washes, and records on the Nene Washes suggest a successful management policy may lead to an equally important number of birds nesting there, (currently 13–14 pairs).

Elsewhere Black-tailed Godwits have been recorded at other fenland sites in the breeding season but to date there are no records of successful breeding.

Probable/proven breeding was recorded in 6 tetrads (1%) and birds were present in the breeding season in 2 others.



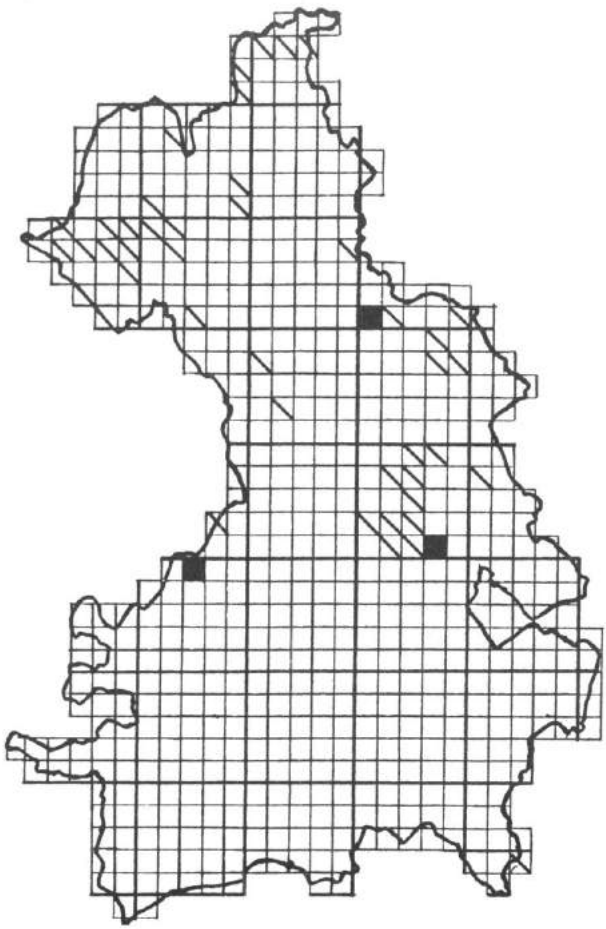
REDSHANK *Tringa totanus*

Like the other waders this species has a healthy breeding population on the washlands of the Cam (8), Nene (75) and Ouse (max 200+) which is a considerable increase on the estimate of 136 pairs across the county as a whole published in 1951.

Elsewhere, like the Snipe, this species breeds in wet meadowland where that habitat remains and some gravel pits. Otherwise it is almost entirely restricted in its distribution to the fenland area, with a loss of all sites south of Cambridge, due mainly to drainage and loss of grassland.

O'Brien and Smith (1992) indicated that there had been no change in the breeding status of this species in East Anglia between 1982 and 1989.

Probable/proven breeding was recorded in 41 tetrads (7%) and birds were present in the breeding season in 9 others.

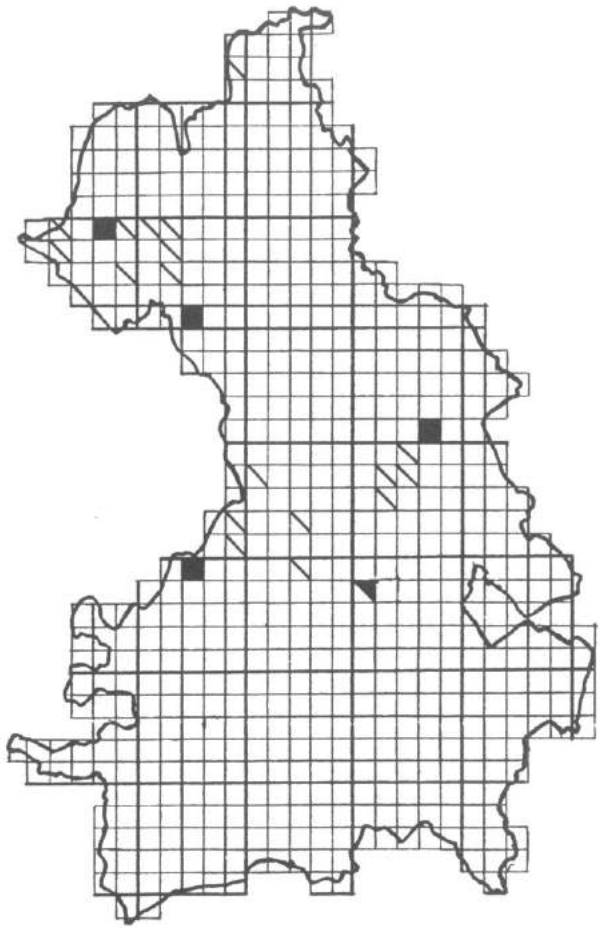


BLACK HEADED GULL *Larus ridibundus*

After a period of increasing records, breeding was first recorded at Burwell Fen in 1933 and this was subsequently followed by breeding at Cambridge sewage farm, Fulbourn Fen, and Ely beet factory (Bircham).

This colonial nesting species has been recorded breeding at three sites in the county during the survey. At Ely Beet Factory numbers fluctuate and have decreased from 100+ pairs in the early seventies to around 50 pairs or less in recent years. At Fen Drayton GP a new colony contained 15 pairs in 1990. The remaining records refer to birds wandering from their colonies some of which are along the Ouse valley in neighbouring Huntingdonshire.

Proven breeding was recorded in 3 tetrads and (feeding) birds were present in the breeding season in 41 others.

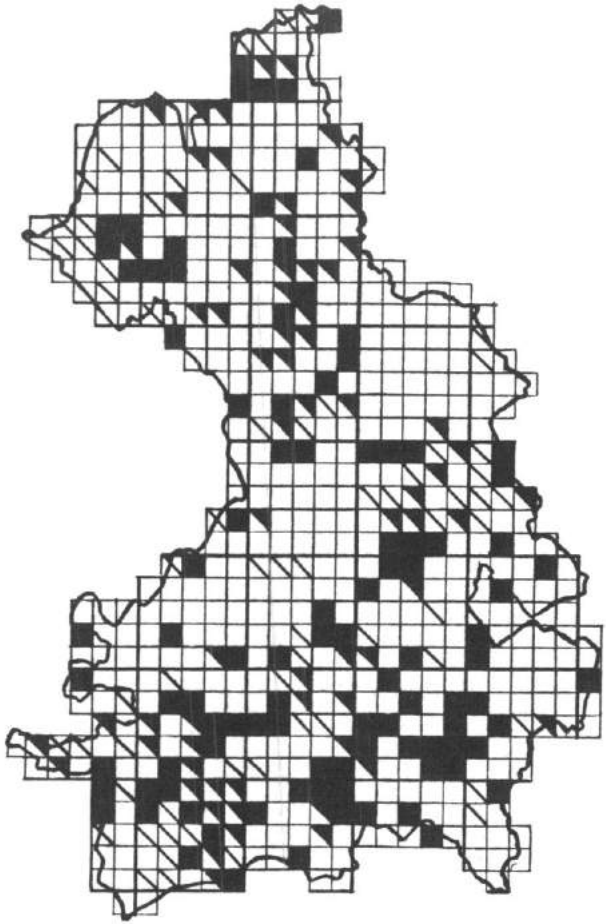


COMMON TERN *Sterna hirundo*

First recorded breeding at Chatteris GP in 1971 where the nest was flooded out. Breeding began at Fen Drayton GP in 1975 and numbers built up to 18 pairs in 1990. Elsewhere (mainly the Nene and Ouse Washes) only one or two pairs are involved.

This species can commonly be seen fishing in the larger waterways close to breeding sites throughout the summer and, like the Black-headed Gull, was reported breeding at sites in neighbouring Huntingdonshire mainly on pits along the Ouse valley (Limentani et al).

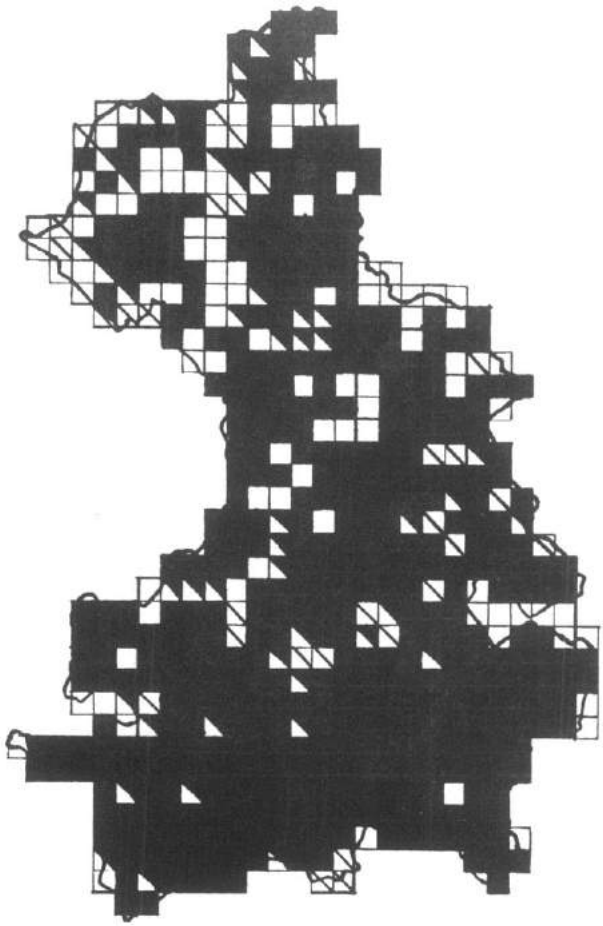
Possible/proven breeding was recorded in 5 tetrads and birds were present in the breeding season in 17 others.



STOCK DOVE *Columba oenas*

As in Norfolk (Kelly) and other neighbouring counties this species is significantly less widely distributed than the Turtle Dove and appears to be absent from some large open fenland areas north of Ely and to the east and west of March where suitable nesting sites are scarce. Stock Doves breed not infrequently throughout central and southern parts of the county. Favoured nesting sites include riverside alders and willows along the quieter stretches of the Cam and Granta, holes in trees and derelict farm-buildings (especially along the Ouse and Nene Washes) and well-timbered parkland.

Probable/proven breeding was recorded in 166 tetrads (27%) and birds were present in the breeding season in 62 others.

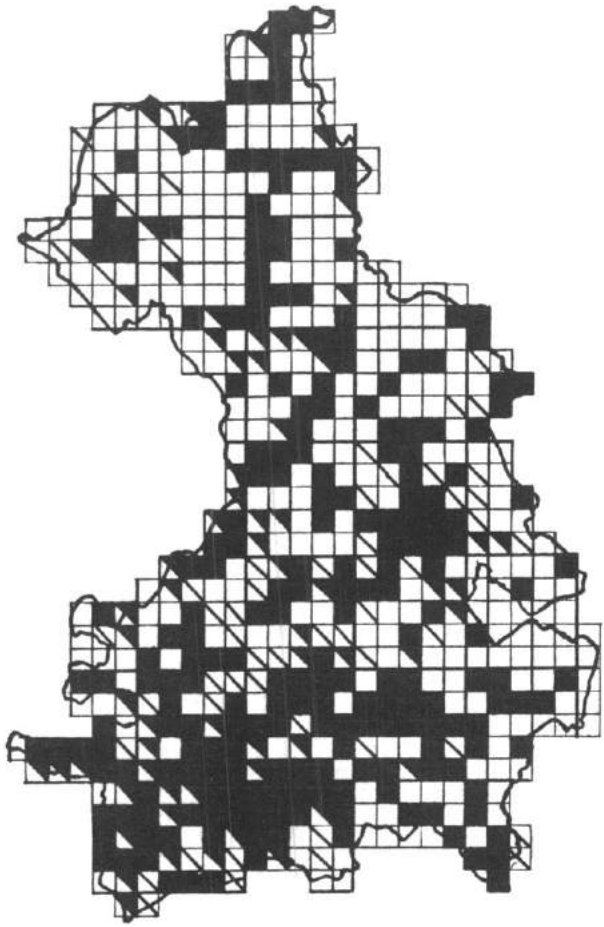


WOODPIGEON *Columba palumbus*

The Woodpigeon is one of the most familiar birds of the East Anglia landscape breeding in all but the most inhospitable areas of the county.

Like the Collared Dove it is almost as common in urban and suburban areas as in the country and its catholic choice of nesting sites allows it to breed in open fenland locations tolerated by few other species, being almost as widespread in the north of the county as in the south. There were in fact very few tetrads in which this species was not recorded.

Probable/proven breeding was recorded in 497 tetrads (81%) and birds were present in the breeding season in 29 others.

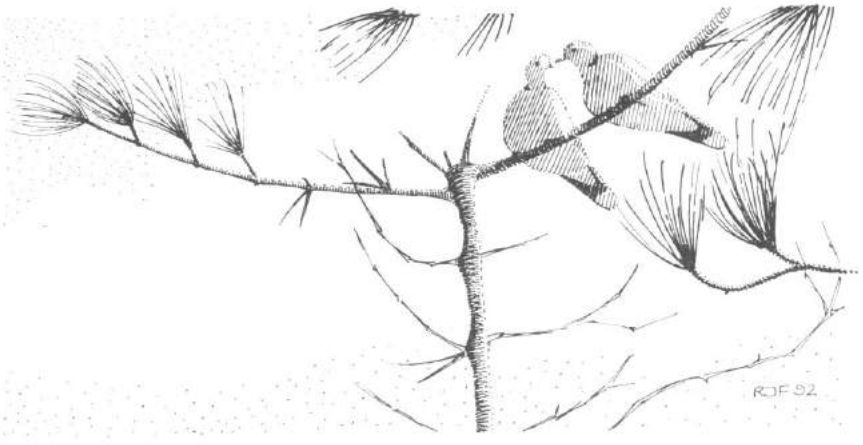


COLLARED DOVE *Streptopelia decaocto*

Since 1961, when this species was first recorded as breeding in the county (at Littleport), the Collared Dove has rapidly established itself as a common and sometimes abundant resident throughout the county.

Although it is found to the northwest of Wisbech and around Whittlesey, March and Chatteris it is largely absent from fenland areas to the east and west of March. Throughout central and southern parts of the county it is ubiquitous usually breeding close to human habitation: villages, farms, grain silos, railway sidings etc.

Probable/proven breeding was recorded in 289 tetrads (47%) and birds were present in the breeding season in 54 others.



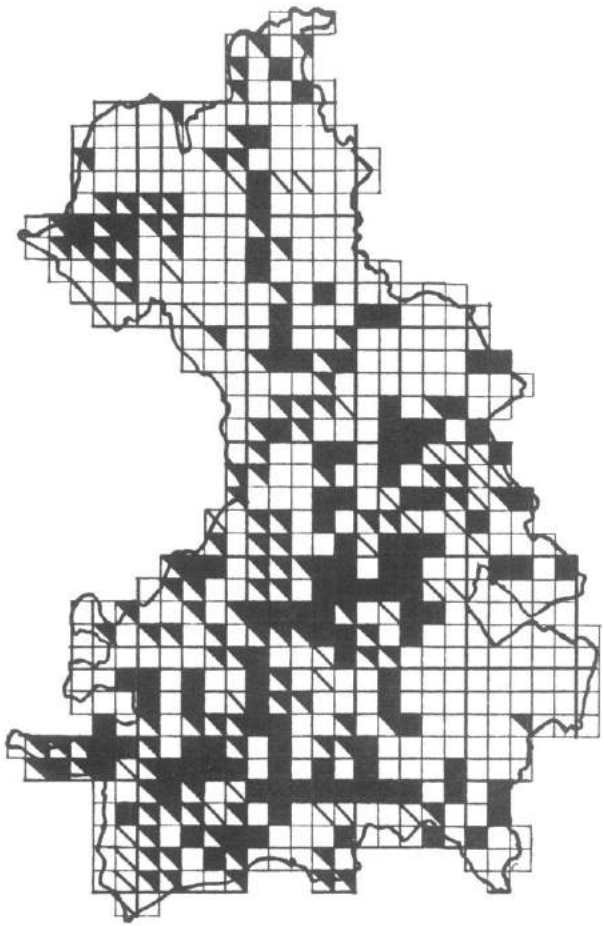
Collared Dove

TURTLE DOVE *Streptopelia turtur*

This graceful dove is surprisingly well distributed in all parts of the county including even the relatively inhospitable arable and fenland country to the north. Apart from the urban areas of the city of Cambridge and open land to the east of March this species can occur almost anywhere that contains hedges and bushes for nesting sites. It is found notably less frequently than the Collared Dove in the vicinty of human habitation but correspondingly more commonly in farmland and well-timbered country.

Recent evidence suggests a decline in the Turtle Dove population (Marchant et al) and in some areas where one would expect to find this species it was absent; the gaps on the eastern boundary with Suffolk, however, may have been due to poor coverage.

Probable/proven breeding was recorded in 293 tetrads (48%) and birds were present in the breeding season in 33 others.



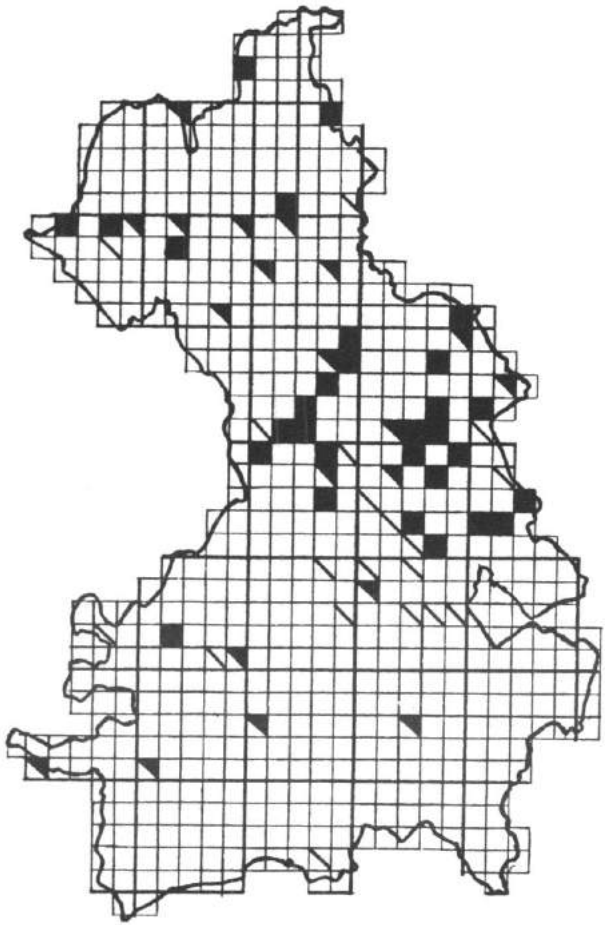
CUCKOO *Cuculus canorus*

Although the Cuckoo is often said to have declined during recent decades Atlas survey work shows that it is still very widely distributed throughout the county though the striking gap in the map to the south of Newmarket appears to represent a genuine scarcity in that area corresponding with the shortage of water courses and thus few host species.

Cuckoos can be heard within two or three miles of Cambridge city centre and it is common, though never abundant in most parts of southern and central Cambridgeshire. In the north of the county its distribution relates closely to that of host species, Reed Warblers and Meadow Pipits: consequently there are relatively high numbers on the Nene and Ouse Washes and at Wicken Fen (as also in the south at Fowlmere nature reserve).

The call of the Cuckoo can carry a long way and thus make it seem more common than it actually is, and the county population is almost certainly below 400 pairs.

Probable/proven breeding was recorded in 235 tetrads (38%) and birds were present in the breeding season in a further 33.

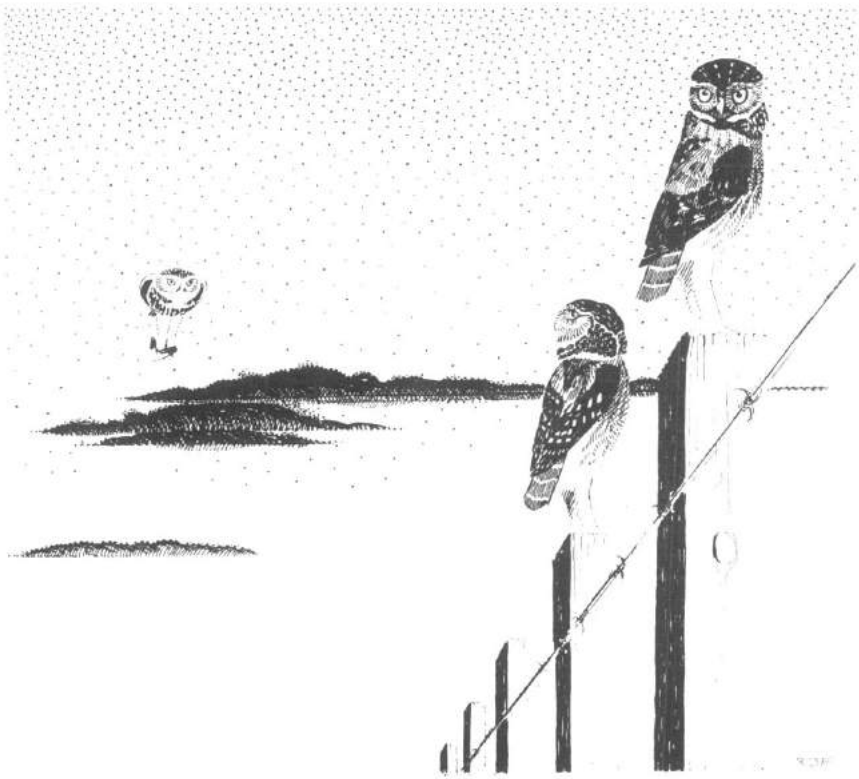


BARN OWL *Tyto alba*

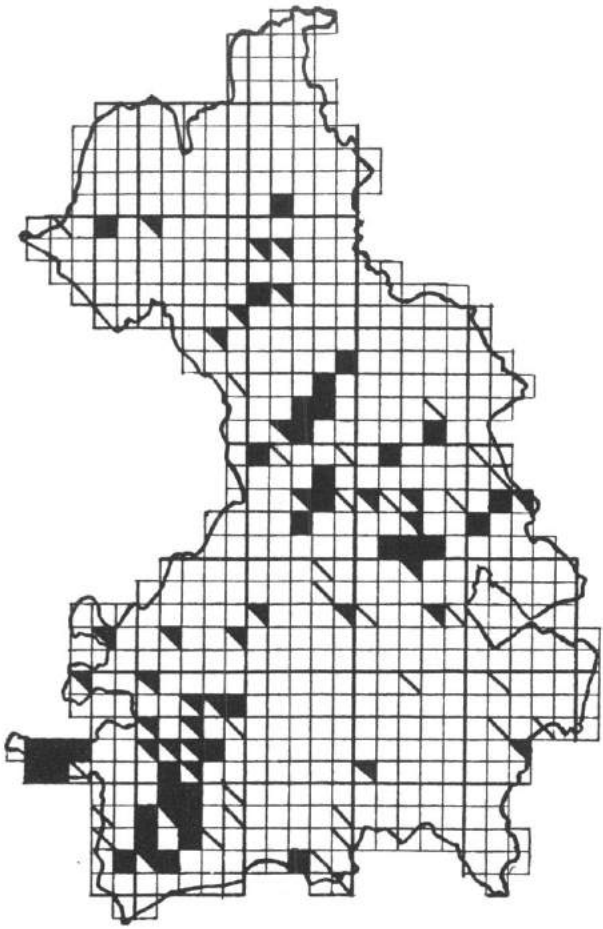
This species appears to be slowly recovering from loss of grassland habitat and the joint effects of toxic chemicals and dutch-elm disease which reduced the county's population to around 15 pairs by the early 1970s. The Bedfordshire and Cambridgeshire Wildlife Trust have helped the recovery with the provision of nest boxes and there are now between 35 and 50 pairs almost all in fenland areas with strongholds around Ely and the Nene and Ouse Washes and in 1992 about half of the population bred in boxes. In very recent years they have been reported in the south of the county and are now possibly breeding in some areas of arable farmland to the east, west and south of Cambridge city.

Possibly the rise in numbers is due to increased coverage of the area. Information from the BCWT project suggests that some sites have gone unreported in the past. Overall the coverage for this species has been very thorough due to both the project information and the conspicuous nature and interest in these birds.

Probable/proven breeding was recorded in 49 tetrads (8%) and birds were present in the breeding season in 18 others.



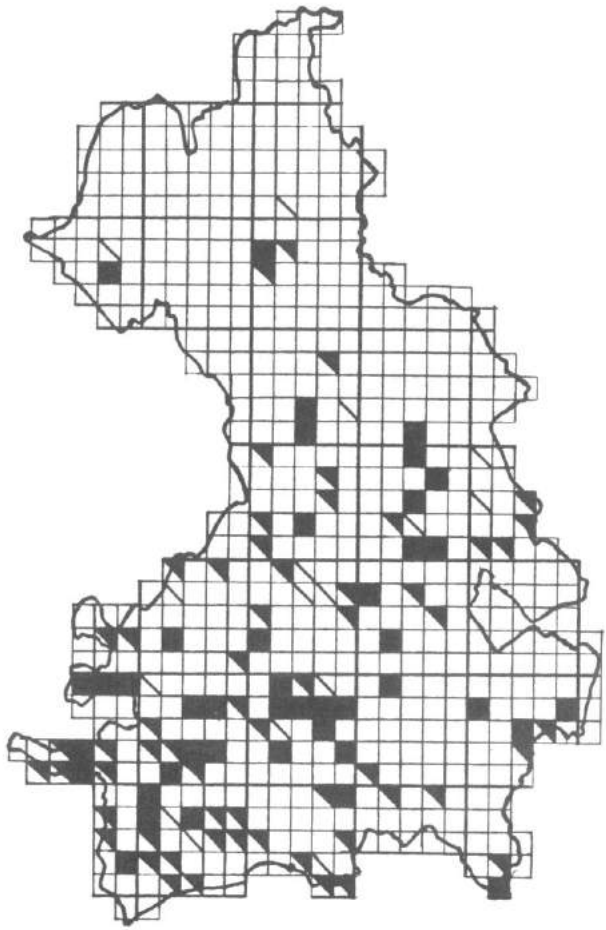
Little Owl



LITTLE OWL *Athene noctua*

The Little Owl is somewhat patchily distributed throughout the county. Although it may have been under-recorded, due to its crepuscular nature, it seems likely that the total population of 50-70 pairs represents a slight decline in recent years. The strongholds appear to be around the Ouse Washes, March, Wicken/Soham and on the south western fringes of the county. However, it is noticeable that information from these areas is largely drawn from local residents whereas in other parts of the county, where this species appears to be absent, the fieldwork was carried out by visitors to the area. Thus it may well have been overlooked in the Chippenham-Newmarket-Horseheath area. In general there is a strong grassland association in the distribution of this species.

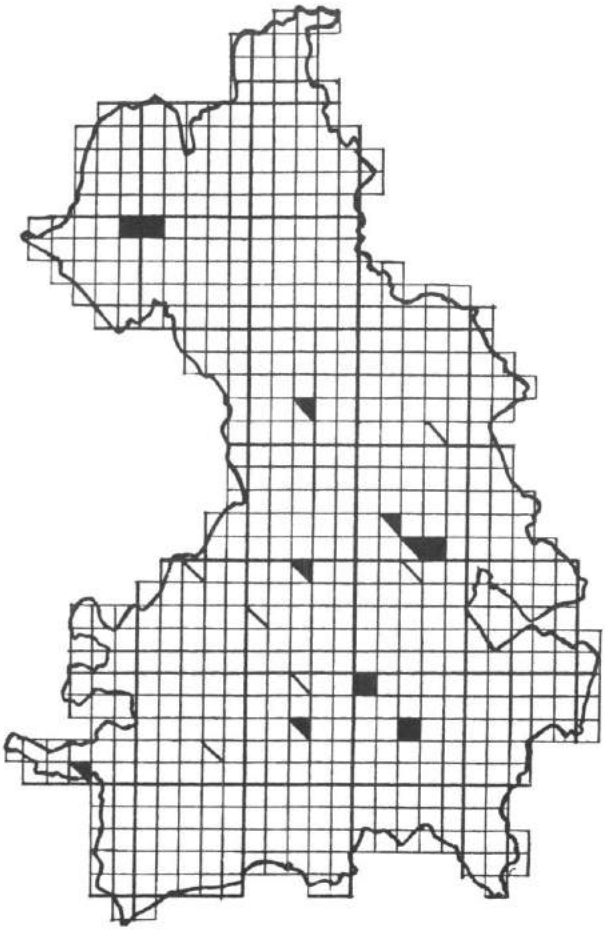
Probable/proven breeding was recorded in 68 tetrads (11%) and birds were present in the breeding season in 26 others.



TAWNY OWL *Strix aluco*

Although quite widely reported breeding in southern and central areas of the county, often in suburban locations or close to human dwellings, the Tawny Owl appears to be distinctly uncommon in the relatively treeless areas of the north. It is a striking fact that no breeding records were received for the areas around the fenland towns of Chatteris, March Whittlesey, Wisbech etc. Despite its limited northerly distribution, the Tawny Owl remains by far the commonest of the owls in the county.

Probable/proven breeding was recorded in 102 tetrads (17%) and birds were present in the breeding season in 16 others.



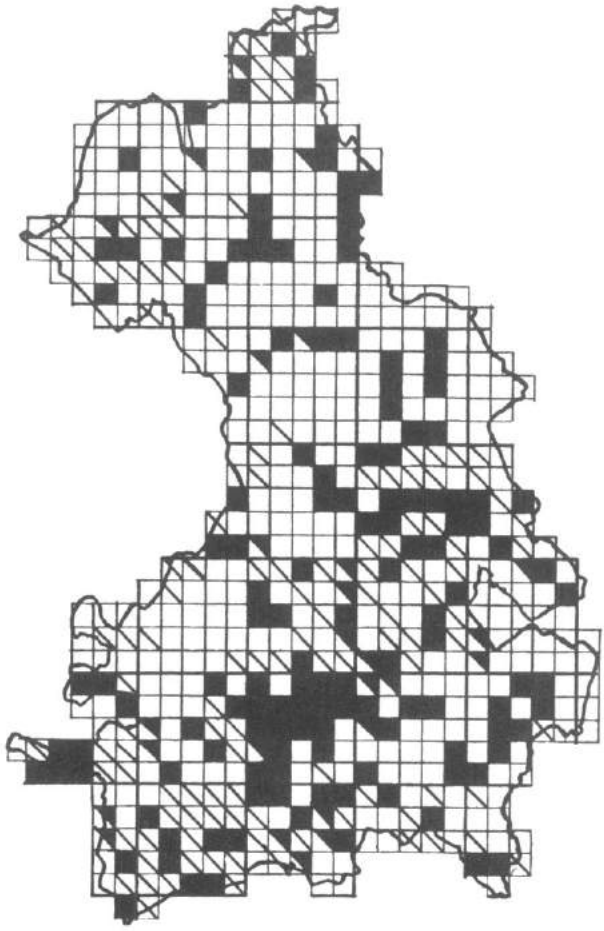
LONG-EARED OWL *Asio otus*

Although the Long-eared Owl has been recorded breeding in only a few areas of the county, a detailed survey, such as that recently conducted in Norfolk (Kemp 1980), might demonstrate that it is more widely distributed (particularly in conifer plantations and shelter-belts) There can be no doubt that its strictly nocturnal habits make it an unusually difficult species to track down but one of the best indicators of a breeding site is the noisy call of recently-fledged birds in June.

The results also suggest that away from traditional breeding sites such as at Wicken Fen there is less site fidelity than might be expected.

Perhaps the good numbers (up to 10 prs) in Cambridgeshire are related to conservation measures taken for this species in neighbouring Huntingdonshire.

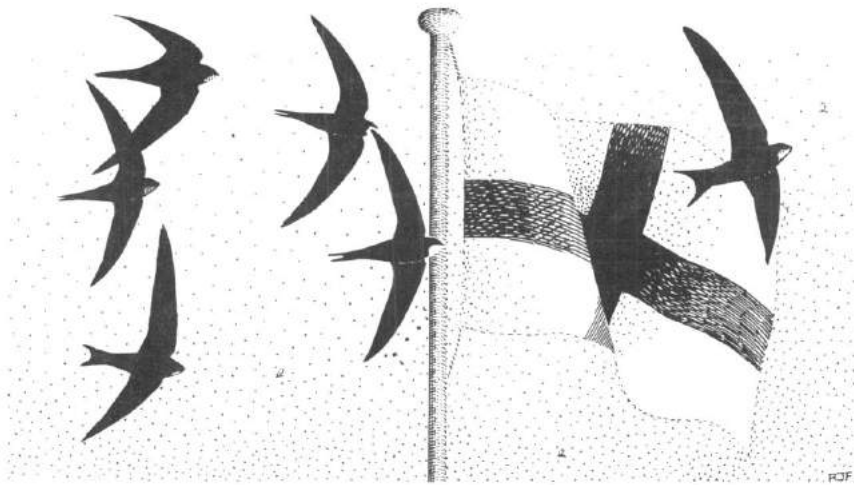
Probable/proven breeding was recorded in 11 tetrads (2%) and birds were present in the breeding season in 6 others.



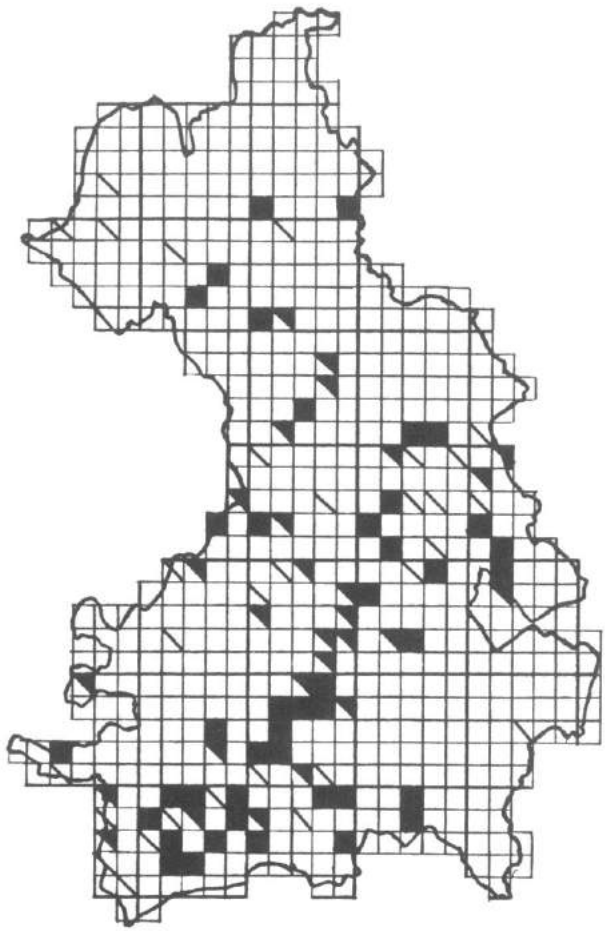
SWIFT *Apus apus*

Widely distributed throughout the county but restricted in its breeding sites to the vicinity of human settlements and therefore less numerous than the Swallow in rural areas especially fenland where suitable breeding sites are few and far between. In the north of the county there are sizeable colonies in towns such as Whittlesey, Chatteris, March and Wisbech.

Probable/proven breeding was recorded in 164 tetrads (27%) and birds were present in the breeding season in 117 others.



Swifts

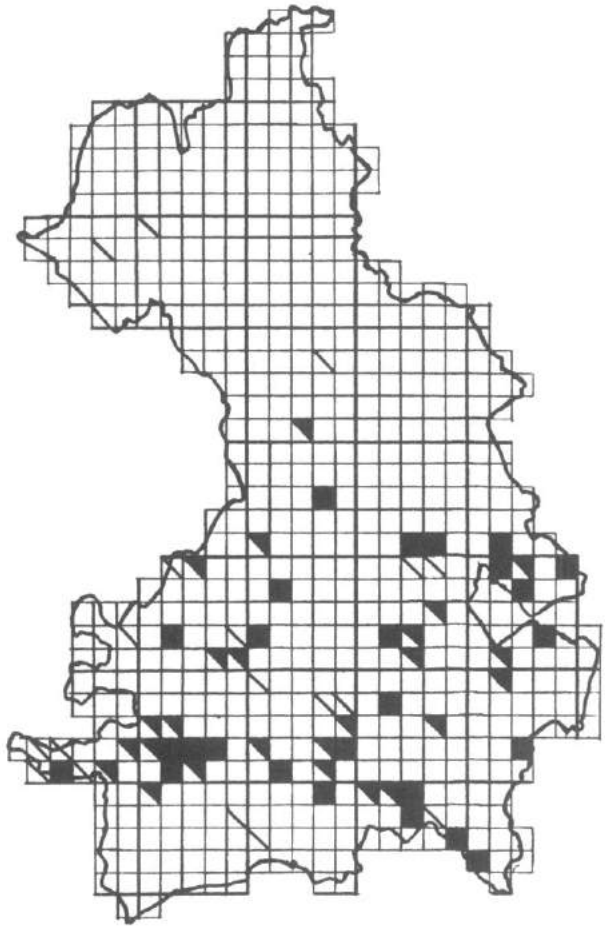


KINGFISHER *Alcedo atthis*

The population of this species is notoriously susceptible to hard winters but numbers can recover relatively quickly. During the survey period winters were generally mild and this is reflected in a stable population of 50 - 80 pairs in the county with relatively high concentrations in the south of the county along the banks of the Cam and its tributaries. It is largely absent from the east of the county where streams and small rivers are in short supply, except in the Chippenham/ Fordham area. In central Cambridgeshire it breeds, though not necessarily annually, along, or near, all of the main river systems and at suitable gravel pits.

Probable/proven breeding was recorded in 71 tetrads (12%) and birds were present in the breeding season in a further 28.

Kingfisher

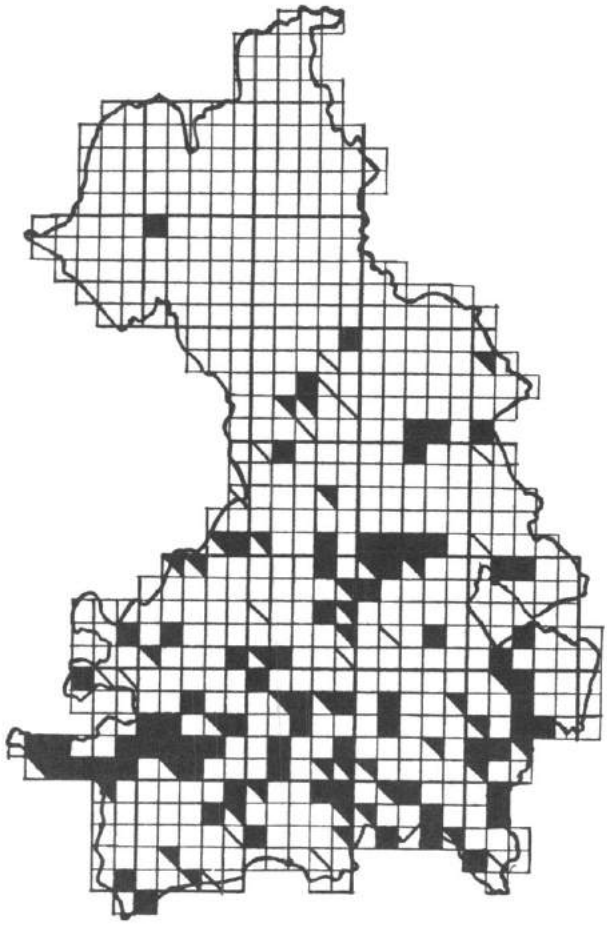


GREEN WOODPECKER *Picus viridis*

Although less widely distributed than the Great Spotted Woodpecker this species appears to have expanded its range considerably since the time of the 1968-72 National Atlas when only six 10km squares were occupied and also since 1980 when a CBC survey noted that it bred at 8-12 sites (Bircham 1980).

It now has a population of 40 - 50 pairs and a measure of the increase is that this species was found in 9 tetrads around Newmarket where none were recorded in the 1980 survey. During the present survey period there was an expansion northwards including colonisation of Wicken Fen where Green Woodpeckers have been absent for many years. Recently there have been records in the mid fens and in the area of Whittlesey. Since this species is associated with grassland and parkland its increase against a trend of habitat loss can probably be explained by a cyclical population trend.

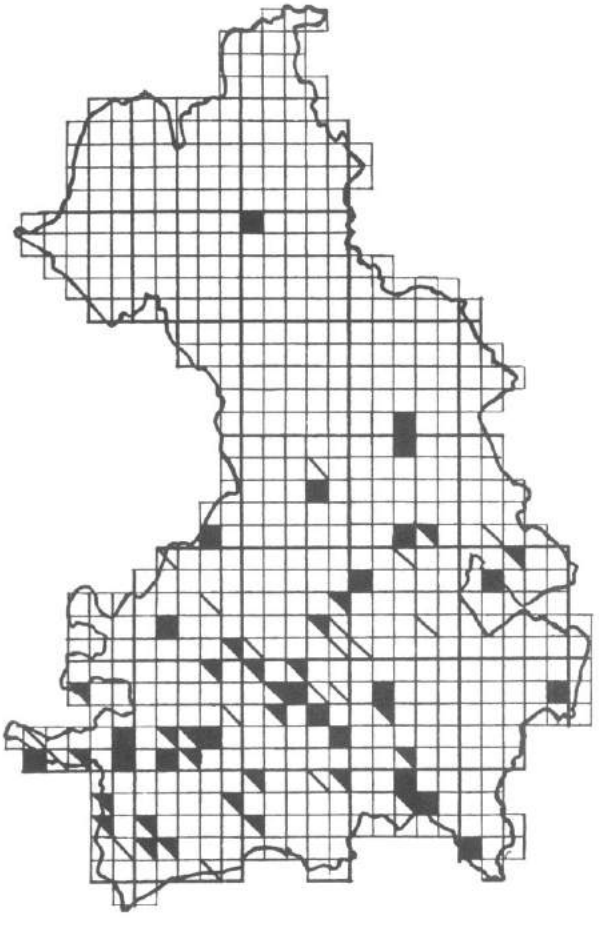
Probable/proven breeding was recorded in 51 tetrads and birds were present in the breeding season in 17 others.



GREAT SPOTTED WOODPECKER *Dendrocopus major*

The 1980 CBC Woodpecker survey reported that this species bred at between 10 and 15 sites (Bircham 1980). It is difficult to determine how far the very significant increase in numbers recorded during the present survey results simply from more intensive observation but it is clear that this species, which now occurs in over a hundred tetrads, is by far the commonest of the three woodpeckers in the county; occurring even in a number of fenland areas as for instance along the Cam, Ouse and Nene Washes. In the north it has been recorded breeding at Whittlesey but there were no records from the area around March or Wisbech. A similar range was revealed by the 1968-72 National Atlas.

Probable/proven breeding was recorded in 111 tetrads (18%) and birds were present in the breeding season in 17 others.

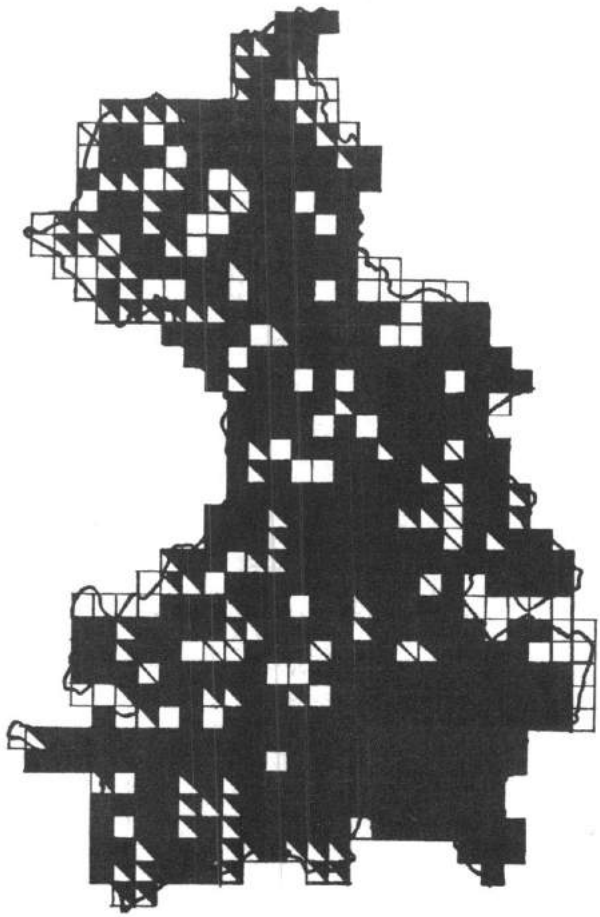


LESSER SPOTTED WOODPECKER *Dendrocopus minor*

The breeding status of this species has fluctuated very markedly during recent decades. In 1980 it was recorded at 10-20 sites (Bircham 1980).

The present survey indicates that it has occurred at over 40 sites but although this would seem to represent a healthy population recent reports suggest that this species is in decline, particularly on the northern fringes of its range as at Wicken Fen where it has suddenly become extremely rare. It is still frequently reported in Cambridge and in the well-timbered areas to the east, west and immediate south of the city which constitutes the most wooded area of the county. A possible cause of both the original expansion and subsequent contraction of range is the result of Dutch Elm Disease which initially provided increased feeding and nesting opportunities and these have diminished as infected trees have either blown down or been removed.

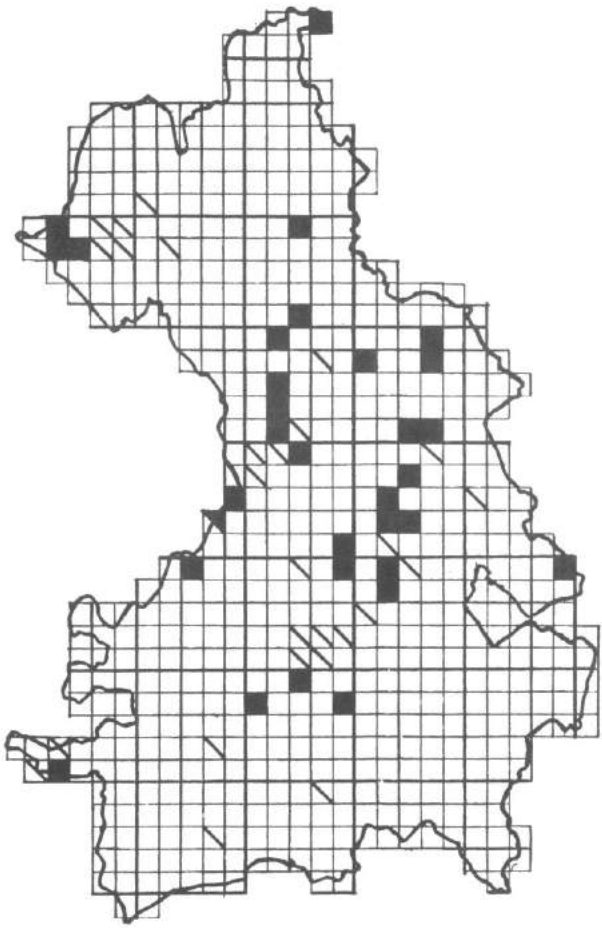
Probable/proven breeding was recorded in 48 tetrads (8%) and birds were present in the breeding season in 16 others.



SKYLARK *Alauda arvensis*

Abundant throughout the county. Unlike many other species the Skylark has expanded its population as a result of the growth in intensive farming. It is noticeable that it breeds commonly in the featureless prairie farming areas to the east and west of March where almost all other species are absent. The Skylark is in fact by far the commonest bird of fenland and the agricultural nature of the county as a whole seems to provide ideal habitat.

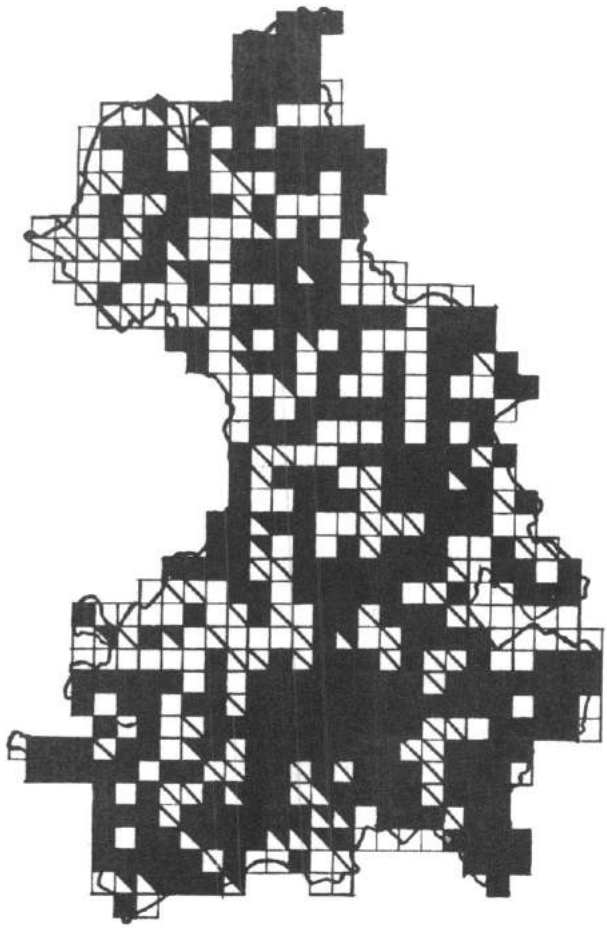
Probable/proven breeding was recorded in 518 tetrads (85%) and birds were present in the breeding season in 12 others.



SAND MARTIN *Riparia riparia*

Although population levels vary significantly from year to year this species seems to have at least partially recovered from the drastic reduction in its numbers that reached a nadir in 1985 (presumably as a result of adverse conditions in its wintering quarters) although numbers remain considerably lower than levels of the 1960s and early 1970s. Sand Martin colonies in Cambridgeshire are generally smaller than those in adjacent counties. There are approximately 100 pairs at Ely Beet Factory and at McCain's Pit Whittlesey, 50 pairs at Fen Drayton GP and 30 pairs at Block Fen GP. Elsewhere, as at Cherry Hinton CP and along the banks of the Cam, the colonies are much smaller (usually less than 20 pairs) and some sites are only used transiently.

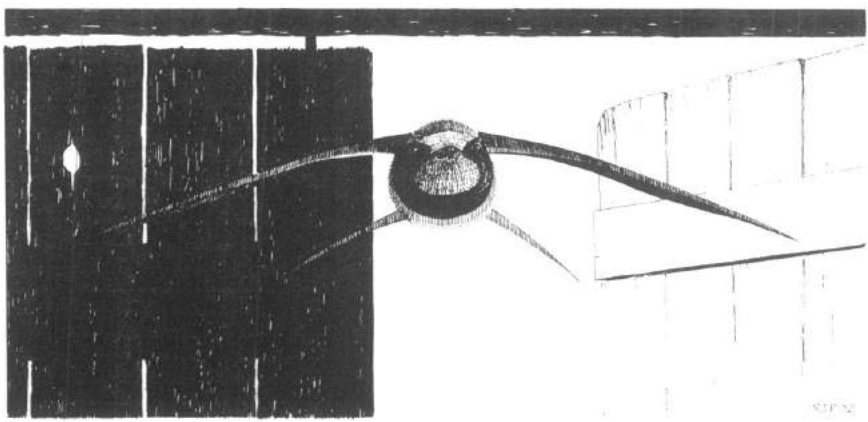
Probable/proven breeding was recorded in 31 tetrads and birds were present in the breeding season in 26 others.



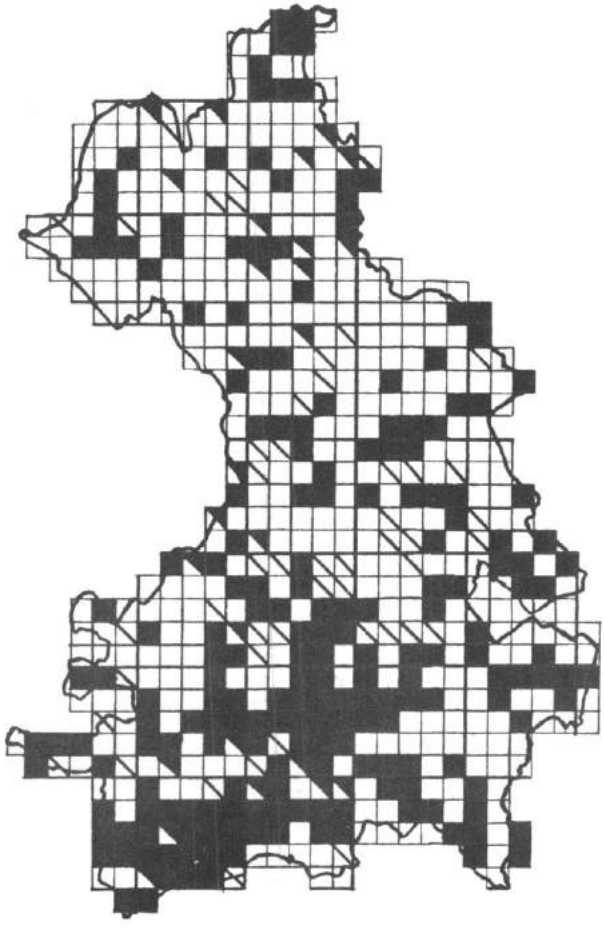
SWALLOW *Hirundo rustica*

Widely distributed throughout the county though rather more thinly in the prairie-farming areas where suitable nesting-sites are in short supply. No doubt a number of sites, especially farm-buildings in remote fenland areas, went unrecorded.

Probable/proven breeding was recorded in 381 tetrads (62%) and birds were present in the breeding season in 67 others.



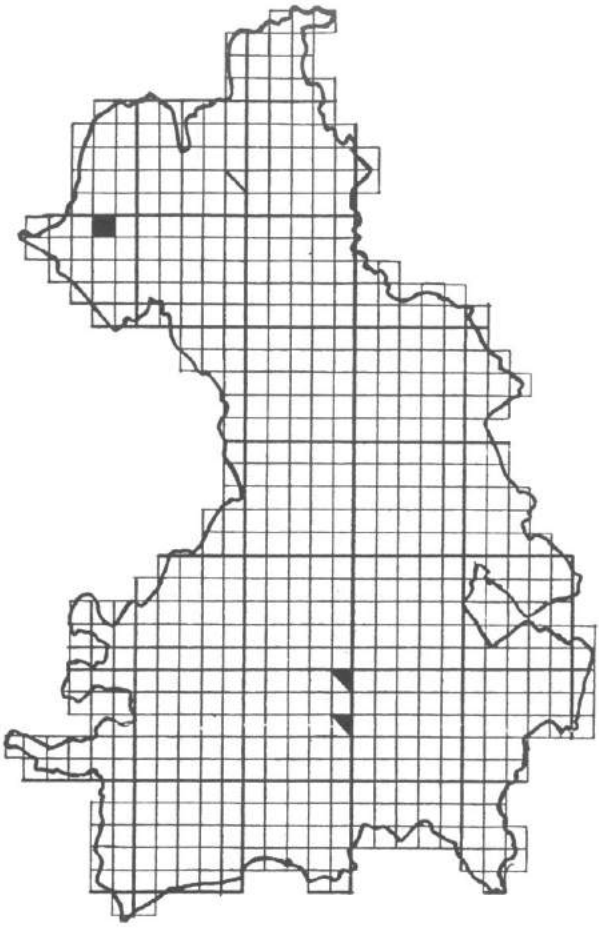
Swallow



HOUSE MARTIN *Delichon urbica*

Fairly well distributed throughout the county, although, like the Swift, this species is absent from sparsely populated areas where suitable nesting sites are limited. Although there are nesting colonies in most villages throughout Cambridgeshire there are a number from which it is unaccountably absent. Perhaps part of the explanation lies in the overall decline in numbers which has resulted from deteriorating conditions in the winter quarters. (Marchant et al)

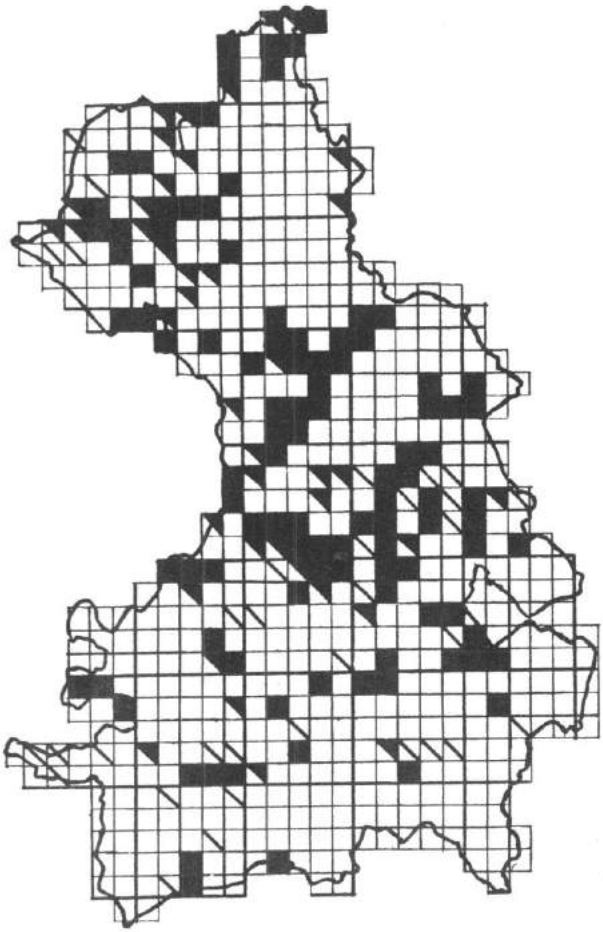
Probable/proven breeding was recorded in 230 tetrads (38%) and birds were present in the breeding season in 45 others.



TREE PIPIT *Anthus trivialis*

Generally a very irregular breeding species within Cambridgeshire. Records usually relate to passage birds and in most years there have been no breeding records at all. This irregular breeding in Cambridgeshire may be associated with population levels in the Breckland of Norfolk and Suffolk, and since the Tree Pipit breeds in woods on sandy soils close to Kennett in the east and Gamlingay in the west these sites might repay closer investigation.

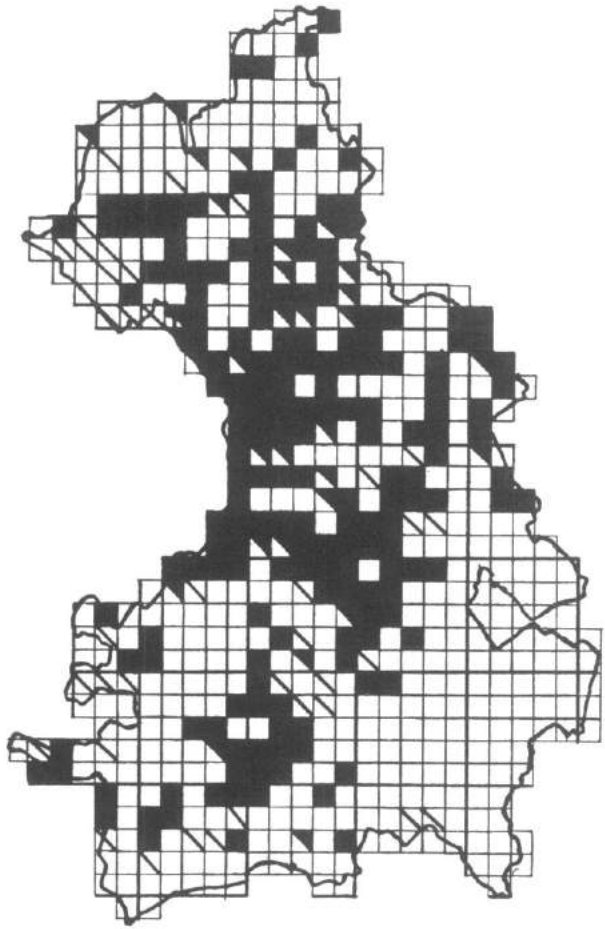
Probable/proven breeding was recorded in 3 tetrads and birds were present in the breeding season in 1 other.



MEADOW PIPIT *Anthus pratensis*

This species is a characteristic bird of open rough grassland and is found in Cambridgeshire predominantly on the washlands and banks of the rivers Cam, Nene and Ouse where it is abundant. Elsewhere in fenland it is in fact not uncommon but much more thinly distributed. The other important areas are on Newmarket Heath, including the racecourse and the two earthworks: the Devil's Dyke and Fleam Dyke. South of Cambridge its breeding distribution is very patchy and determined largely by the presence or otherwise of suitable areas of grassland. In the county as a whole there may be over 1000 breeding pairs, the vast majority of these being on the washland areas.

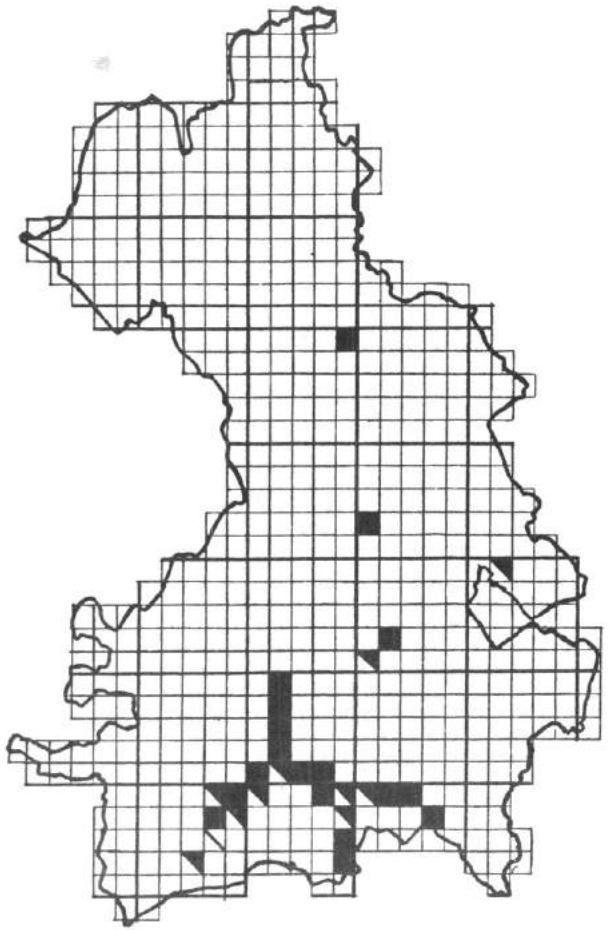
Probable/proven breeding was recorded in 143 tetrads (23%) and birds were present in the breeding season in 32 others.



YELLOW WAGTAIL *Motacilla flava*

The Yellow Wagtail is one of the few species that is commoner in Cambridgeshire than in neighbouring Norfolk. Although it is largely absent from the dry chalklands in the eastern and southern areas it is a characteristic bird of the fenland. Commoner on the Ouse Washes (c 200 pairs) than on the Nene it is frequently encountered in open land between these two sites. Elsewhere in the south and south west of the county it occurs in smaller numbers usually in water-meadows or cornfields close to the Cam or its tributaries. It is also found in the greensand area around Gamlingay and near Papworth well away from the main waterways.

Probable/proven breeding was recorded in 213 tetrads (35%) and birds were present in the breeding season in a further 37.

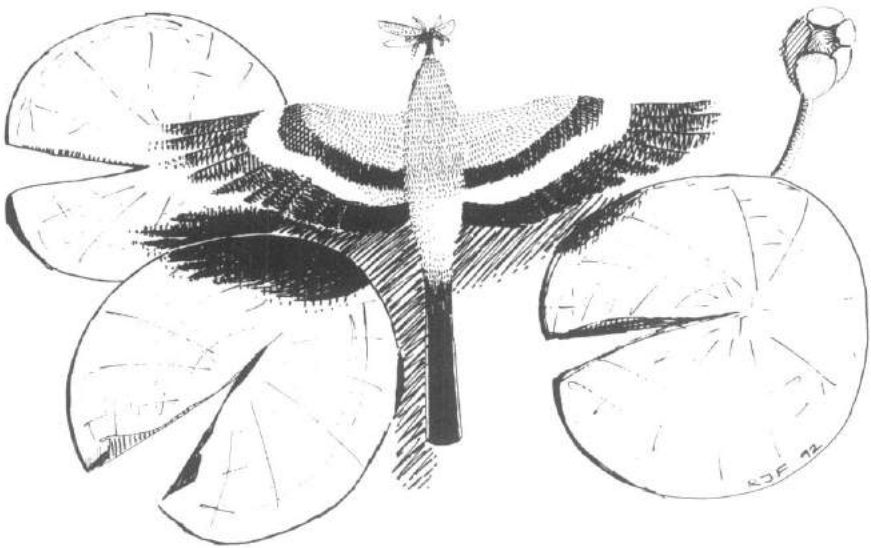


GREY WAGTAIL *Motacilla cinerea*

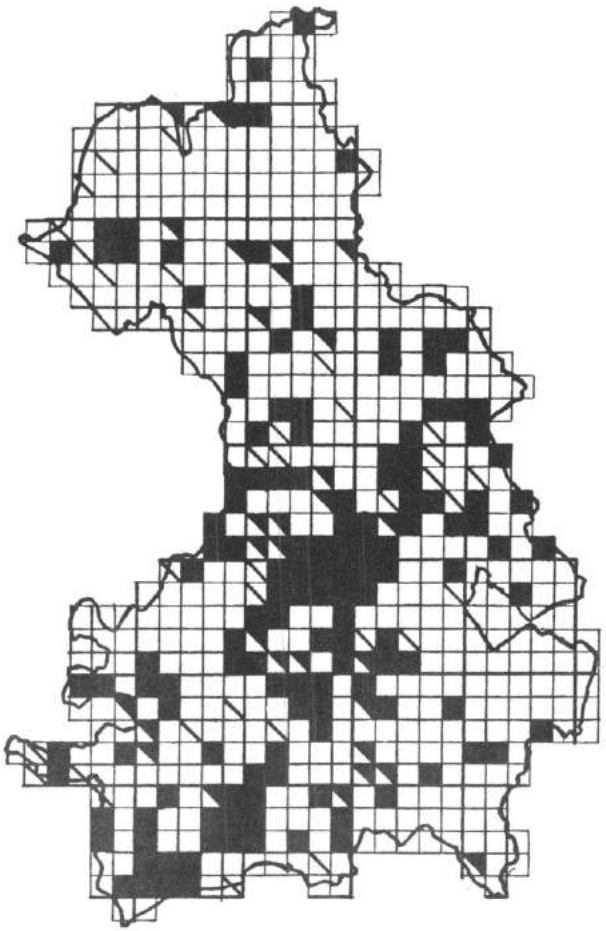
This species appears to be on the increase and it is possible that in some years of the survey as many as 20 pairs bred, an unprecedented number. On one occasion a dozen pairs were found within three days in mid April by the simple expedient of locating and visiting the water mills marked on an O.S. map.

The stronghold lies along the path of the river Cam and the Rhee and the small tributaries thereto. In the area north of Cambridge at least five pairs were located, one pair occupying a known traditional site at Lode. Over the remainder of the county this species is absent due to a lack of suitable habitat.

Probable/proven breeding was recorded in 28 tetrads (5%) and birds were present in the breeding season in one other.



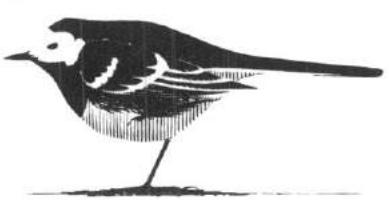
Grey Wagtail

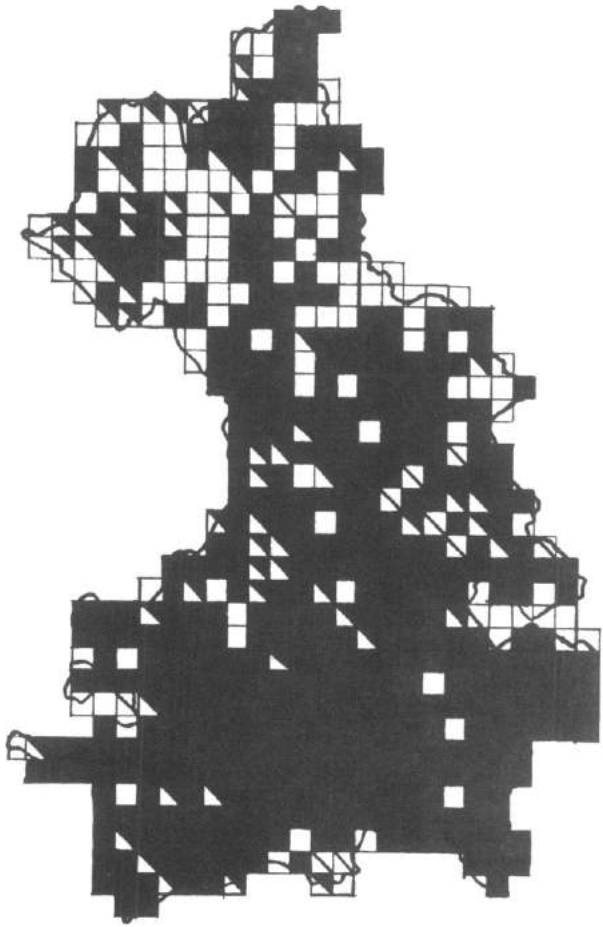


PIED WAGTAIL *Motacilla alba*

Though nowhere abundant the Pied Wagtail is widely distributed throughout both northern and southern areas of the county, often breeding near farms or alongside fenland droves and waterways. In the south-eastern part of the county it is more frequently met with than the Yellow Wagtail but the latter is the commoner species in open fenland country. Although both occur in thinly populated areas of the county the Pied Wagtail shows a certain preference for the vicinity of human habitation.

Probable/proven breeding was recorded in 169 tetrads (28%) and birds were present in the breeding season in a further 24.

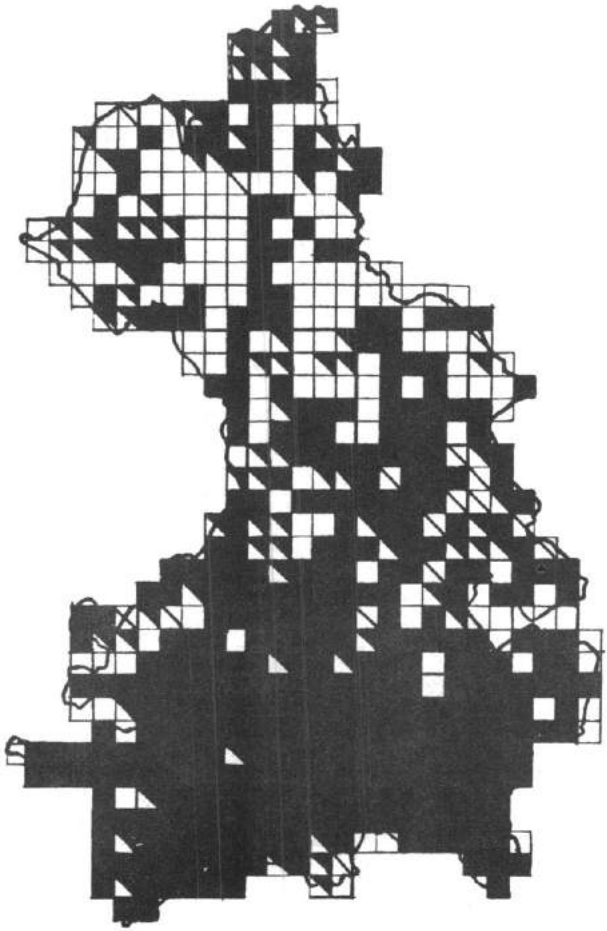




WREN *Troglodytes troglodytes*

This ubiquitous species occurs in almost every tetrad in the county nesting in areas where even Blackbirds and House Sparrows are absent. The Wren population is notoriously adversely affected by hard weather and its present abundance is no doubt partly attributable to a succession of relatively mild winters. The distinctive, energetic song of this species makes it one of the easiest to locate and thus coverage is likely to have been more complete than for less conspicuous species. Although like most species it is less well distributed in fenland areas in general the Wren is one of the commonest birds in the county.

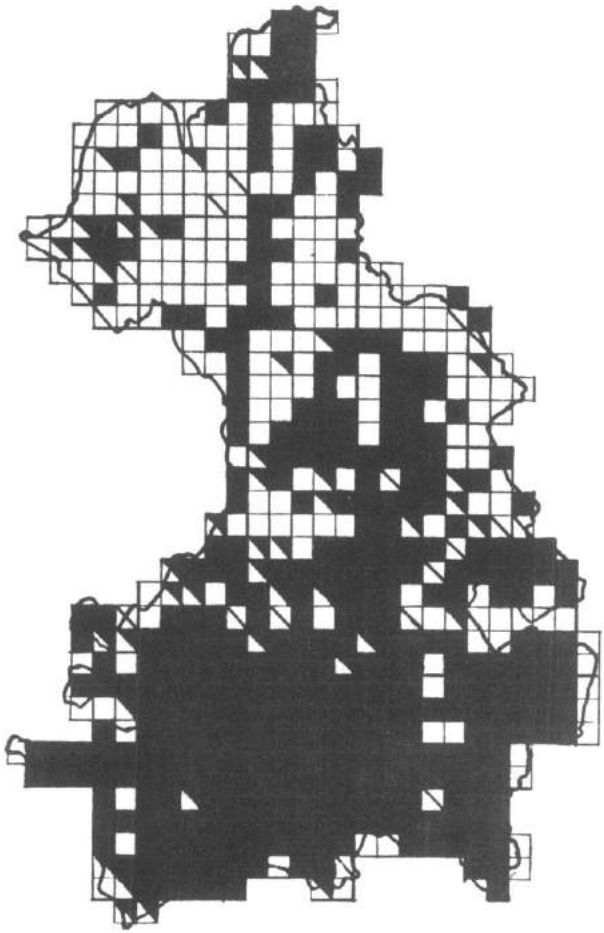
Probable/proven breeding was recorded in 498 tetrads (81%) and birds were present in the breeding season in 10 others.



DUNNOCK *Prunella modularis*

Another of the most widely distributed birds in the county but one which, like the Robin, is absent from the treeless unhedged areas of fenland to the east and west of March. It could also be said that it has adapted less well than the Wren or Blackbird to the changes in the landscape that have resulted from the move to more highly mechanised farming. In the south of the county it remains a most abundant species.

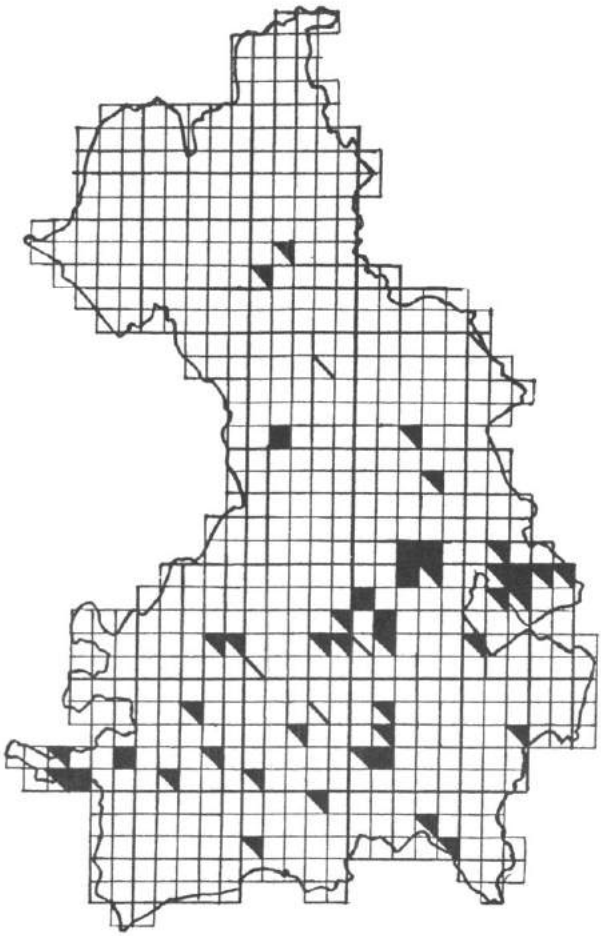
Probable/proven breeding was recorded in 455 tetrads (74%) and birds were present in the breeding season in 15 others.



ROBIN *Erithacus rubecula*

Although very common throughout the county the Robin is less tolerant of the open fenland landscape than the Wren or Blackbird and the typically exposed gardens of small north Cambridgeshire villages often do not provide sufficient cover for nesting sites. As a result Robins are absent from a sizeable number of tetrads in the north of the county especially away from the fenland towns. Overall the distribution is very similar to that of the Dunnock.

Probable/proven breeding was recorded in 405 tetrads (66%) and birds were present in the breeding season in a further 16.

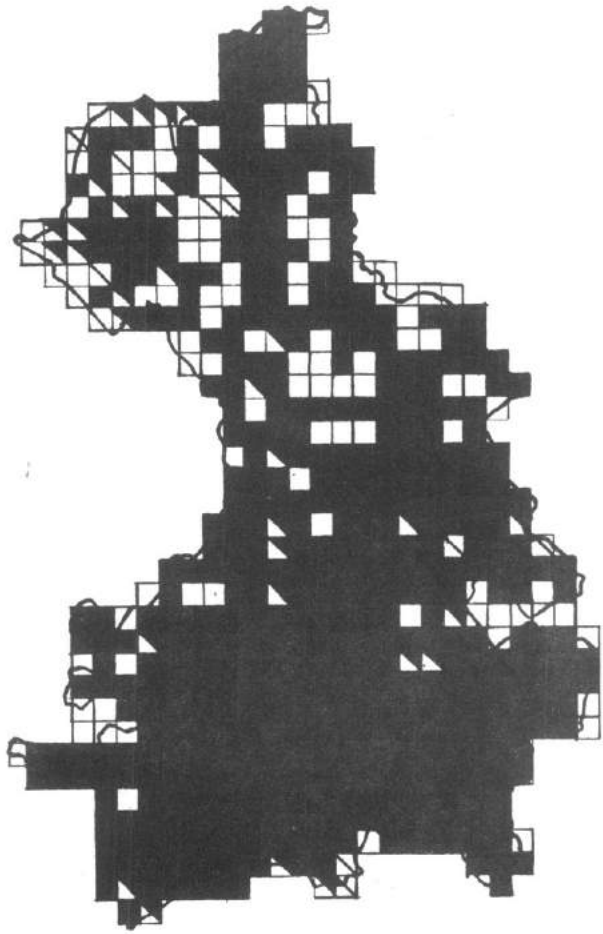


NIGHTINGALE *Luscinia megarhynchos*

As the Nightingale is rarely heard singing after the end of May it may have been overlooked in some areas but there is no doubt that it is still only very locally distributed and often appears in a locality in one year only to desert it the next. Even at favoured sites such as Wicken Fen, Wandlebury, Hayley Wood and Chippenham Fen there are significant variations from year to year. It is very difficult to be precise about the total number of pairs in the county but it probably ranges from around fifteen in an average year to twenty-five in a good year. In some years numbers can be very low and the reason for these gross fluctuations may be that Cambridgeshire is close to the northern fringe of the stronghold of this species in Britain.

Cambridgeshire figures compare very poorly with those of both Suffolk and Norfolk probably because of a shortage of suitable habitat. In general distribution is limited to wooded areas in the southern half of the county. Sites/villages in which Nightingales breed in most years include: Buff Wood, Bartlow, Hildersham, Lode, Landwade, Fulbourn, Overhall Grove, Snailwell and Wimpole.

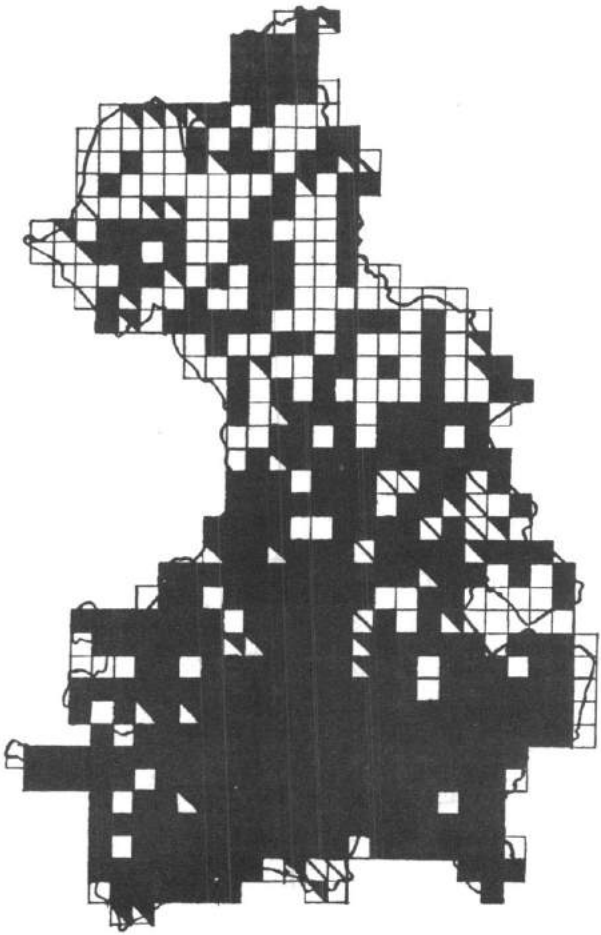
Probable/proven breeding was recorded in 43 tetrads (7%) and birds were present in the breeding season in 4 others.



BLACKBIRD *Turdus merula*

Another of the most widely distributed species. Blackbirds seem able to survive in even the most inhospitable parts of open fenland and with the exception of the Skylark and possibly the House Sparrow this species is probably the most ubiquitous of the smaller birds. Gaps in distribution in fenland areas may in some cases be due to lack of coverage but more frequently the absence of a breeding record reflects the character of the terrain.

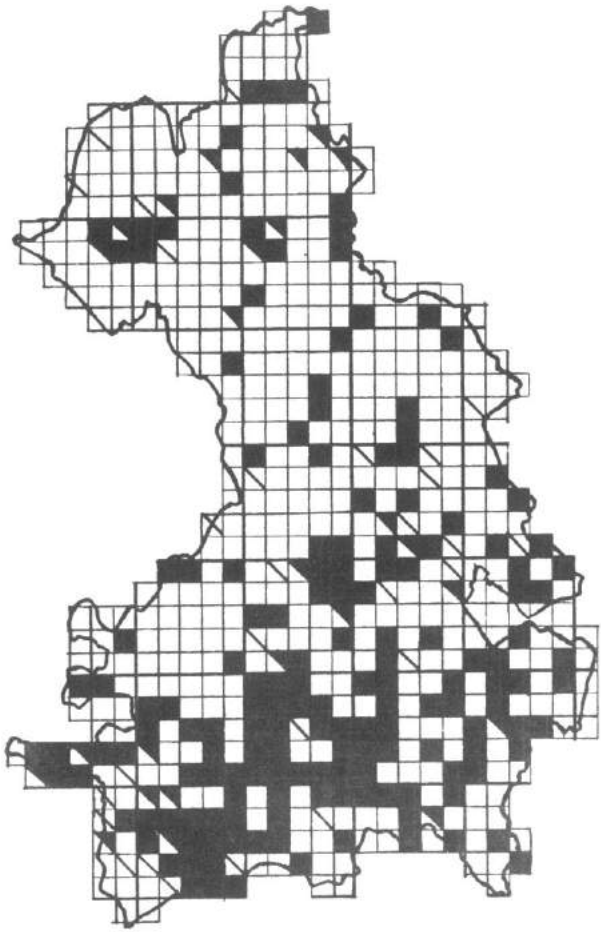
Probable/proven breeding was recorded in 508 tetrads (83%) and birds were present in the breeding season in a further 9.



SONG THRUSH *Turdus philomelos*

A very widespread breeding species though more noticeably thinly distributed in the fenland area especially in the open parts to the east and west of March. National population monitoring has shown a marked decline in this species (Marchant et al) and this has been reflected in the numbers ringed locally, at Wicken Fen for example where annual totals of 80-100 have fallen to around 50 and as low as 16 in 1991. This decline may account for some of the gaps in distribution in those parts of the county where Song Thrushes would normally be found.

Probable/proven breeding was recorded in 440 tetrads (72%) and birds were present in the breeding season in a further 11.



MISTLE THRUSH *Turdus viscivorus*

Widely distributed in the southern half of the county particularly in suburban locations based on grassland. In the north of the county the distribution is patchy and based largely on villages and towns where parkland, small copses and relatively remote patches of woodland provide suitable habitat in what is otherwise an inhospitable area.

Probable/proven breeding was recorded in 187 tetrads (31%) and birds were present in the breeding season in 26 others.

CETTI'S WARBLER *Cettia cetti*

During the period of the present project there was a record of a singing bird at Fowlmere watercress beds during March and April 1990 but breeding was not suspected.

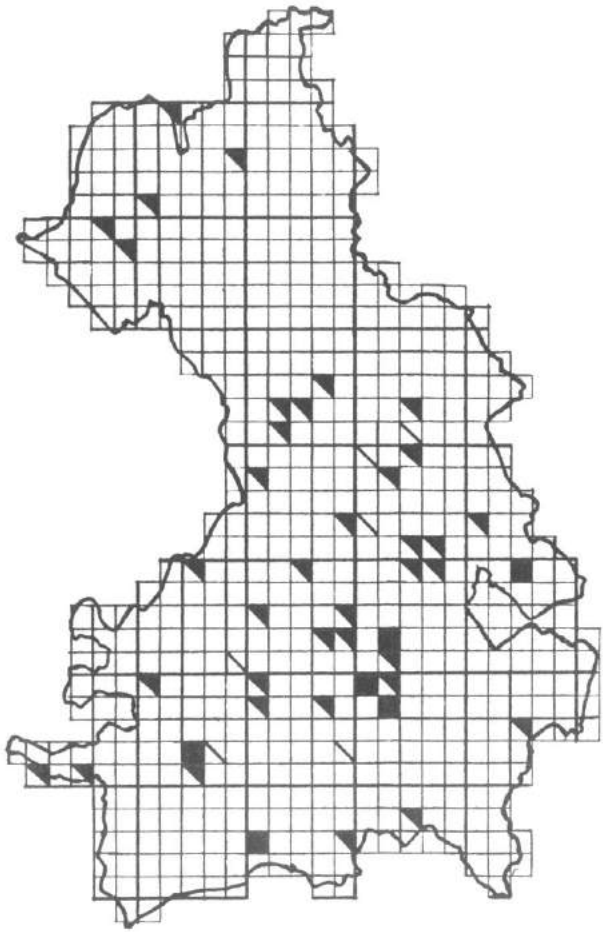
This species bred at Wicken Fen annually between 1980 and 1984 when the subsequent hard winter (1984/5) seems to have killed off this population and to date there has been no recolonisation.

SAVI'S WARBLER *Locustella luscinioides*

An extremely rare breeding species nationally Savi's Warbler was thought to have bred at Wicken Fen in the last century and there have been sporadic records this century almost entirely based on singing birds. During the project singing birds were recorded at Wicken Fen in the years 1990 and 1992 and at Wimblington GP in 1990. In both cases breeding was probable though not proven.

Probable breeding in 2 tetrads.

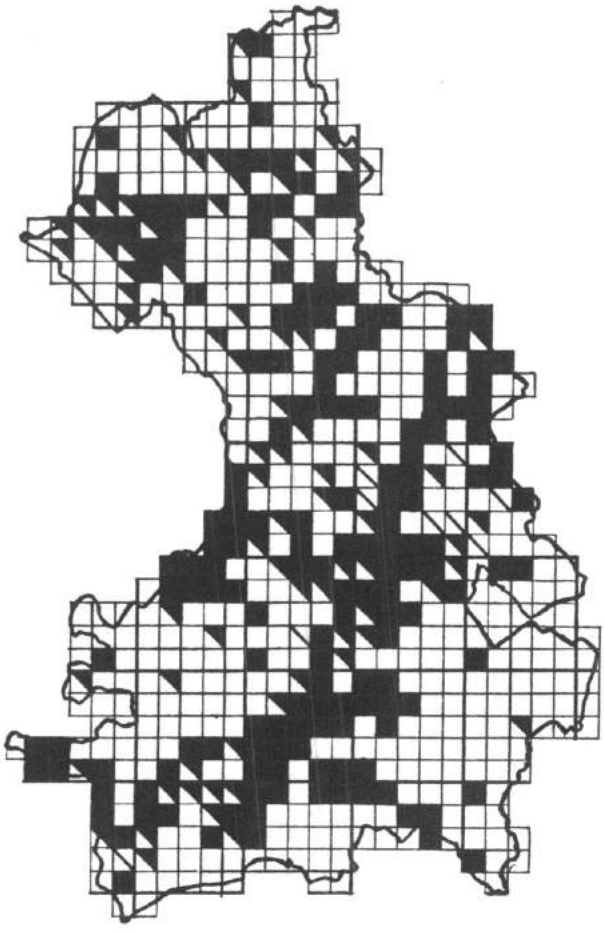
Grasshopper Warbler



GRASSHOPPER WARBLER *Locustella naevia*

The reeling song of this species is usually the only indication of its presence apart from birds caught during ringing. It remains very local and somewhat unpredictable in its choice of breeding sites. It is most reliably found at several traditional sites which are predominantly scrub/wetland such as Chippenham Fen, Fowlmere watercress beds, Fulbourn and Wicken Fens. Some pairs have been recorded as nesting in nettle-beds, hedge-bottoms and the overgrown edges of cornfields (as, for instance, at Caxton). Other records of individual birds reeling in similar locations may well relate to birds on passage. It may be estimated that the current breeding population is between 30-40 pairs.

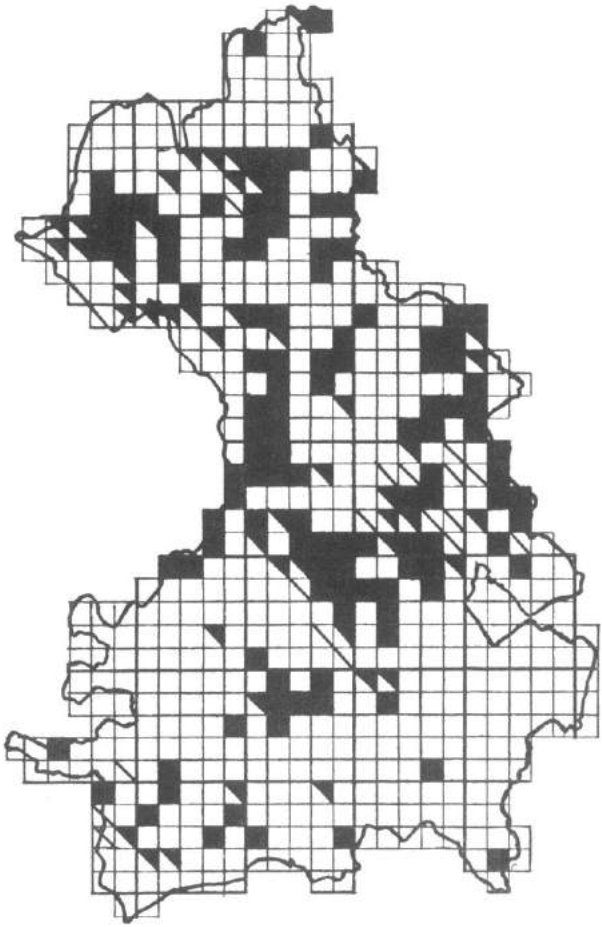
Probable/proven breeding was recorded in 43 tetrads (7%) and birds were present in 6 others.



SEDGE WARBLER *Acrocephalus schoenoboenus*

This warbler is relatively widespread throughout the county and is to be found in high densities in the areas of reedbed/wetland such as at Chippenham, Wicken and Little Wilbraham Fens, Fowlmere watercress beds and in the wet dykes that cross the washlands. The population seems to have declined slightly, probably as a result of drought in winter quarters. In areas away from water such as the chalklands of the south-east, where suitable habitat is scarce, it is only thinly distributed.

Probable/proven breeding was recorded in 242 tetrads (39%) and birds were present in a further 9.

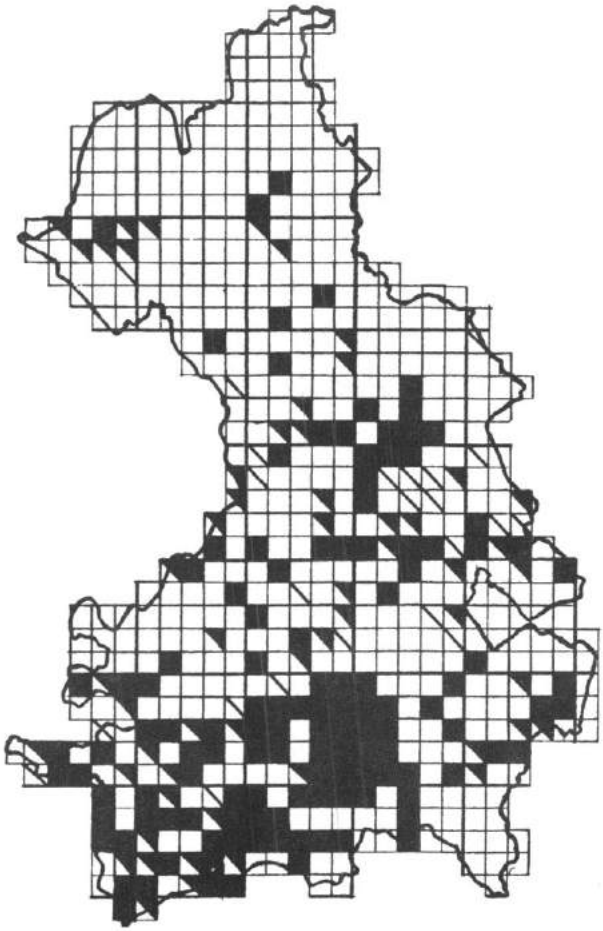


REED WARBLER *Acrocephalus scirpaceus*

This is the only warbler that is more common in the northern half of the county than the southern half. As well as the well-known wetland sites this species is found in fenland drains and waterways, often in open country tolerated by few other species. It is relatively scarce to the west of Cambridge and virtually absent from the chalkland areas of the south-east. Its distribution in the south of the county is closely related to waterways, wetland areas such as the relic fens at Little Wilbraham, Dernford etc, Fowlmere nature reserve and at gravel pits. In recent years the population in Cambridgeshire seems to have declined.

There is a notable division in the distribution with 33% of all tetrads to the north of Cambridge occupied, and only 13% of those on a line with Cambridge and all parts to the south.

Probable/proven breeding was recorded in 165 tetrads (27%) with birds present in the breeding season in a further 17.



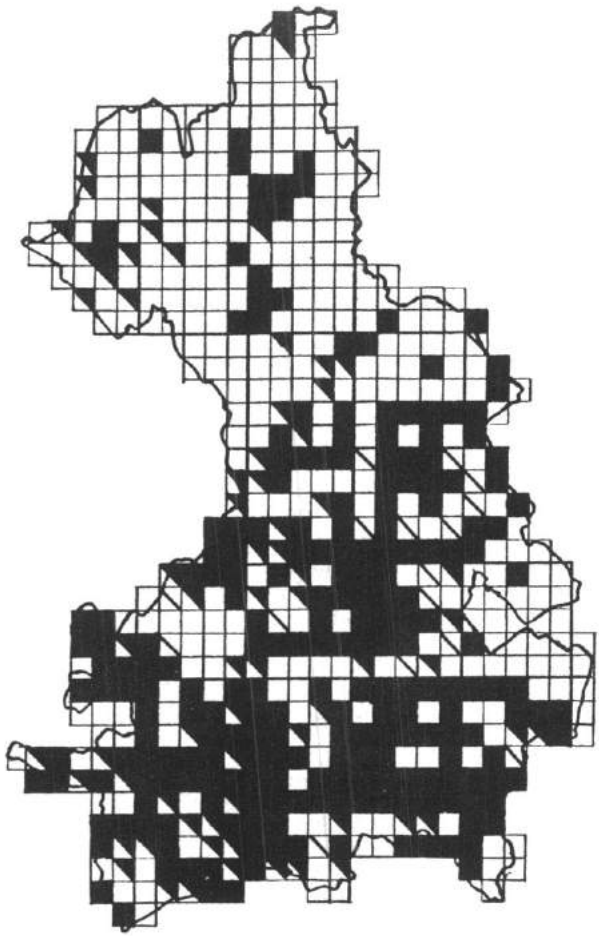
LESSER WHITETHROAT *Sylvia curruca*

Widely distributed around Cambridge and in the surrounding countryside, with relatively high densities in the chalkland area. Although it is now found in fenland areas (as for instance at Wicken, Ely and Chettisham) this species, with its requirement for tall hedges and scrub is markedly less common in the north of the county except along the Nene Washes and in the occasional disused gravel pit.

The divided distribution is best illustrated by the fact that breeding was recorded in only 18% of tetrads north of Cambridge and 53% of tetrads in Cambridge and to the south.

Probable/proven breeding was recorded in a total of 181 tetrads (30%) with birds present in the breeding season in a further 21.

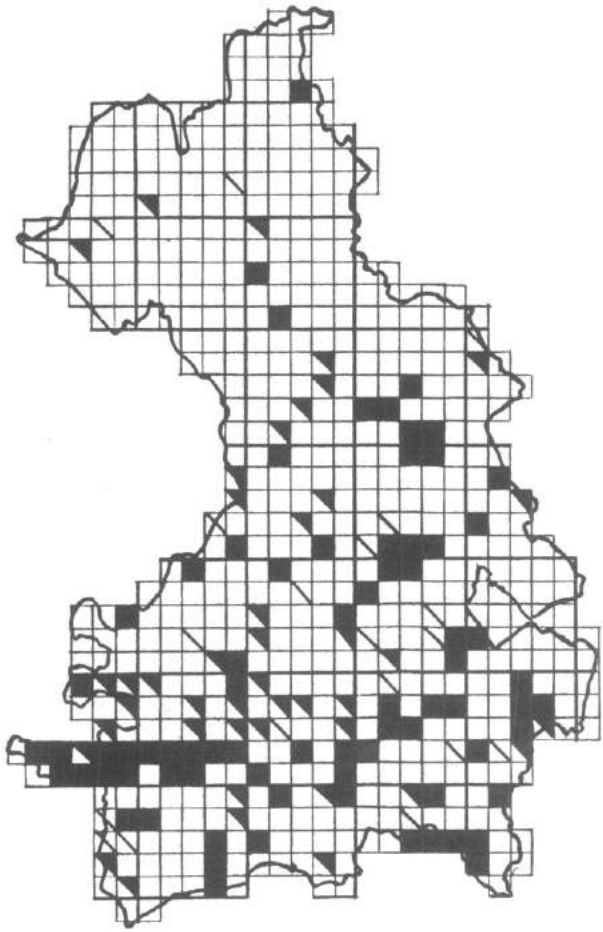
Lesser Whitethroat



WHITETHROAT *Sylvia communis*

After the dramatic collapse of the population in the 1970s this species has partially recovered and is now widespread across the southern two thirds of the county. It is better adapted to the fenland area than Chiffchaff or Blackcap favouring lower scrub and hedges, bushes, nettles or even brambles.

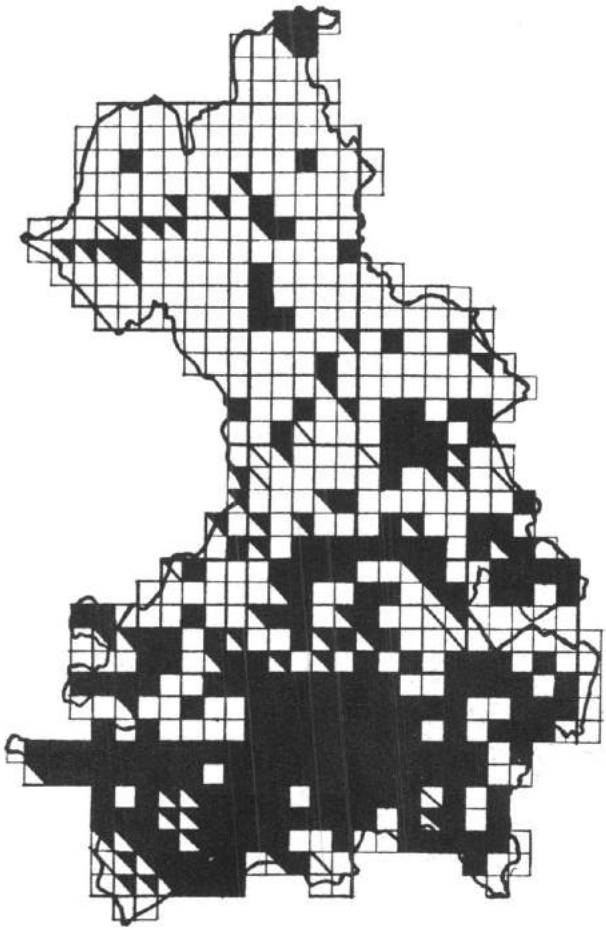
Probable/proven breeding was recorded in 297 tetrads (48%) and birds were present in the breeding season in a further 16.



GARDEN WARBLER *Sylvia borin*

This species has a somewhat scattered distribution but occurs locally throughout most of the southern and central areas of the county and very much more irregularly in the north. Its relatively few fenland breeding sites include Bassenhally Pit, March, Wimblington, Mepal, Chettisham, Haddenham, Isleham, Upware, Wicken Fen and Ely. There are relatively high densities at the latter two locations. In the south of the county it breeds in all the main woodland areas and also in damp marshy areas where bushes or brambles provide sufficient cover as at Fen Drayton GP, Milton GP, Waterbeach GP, Fowlmere nature reserve and Barrington. Its divided distribution is illustrated by the fact that breeding was recorded in only 11% in the tetrads north of Cambridge and in 34% of those including Cambridge and all parts south.

Probable/proven breeding was recorded in 115 tetrads (19%) and birds were present in the breeding season in a further 18.



BLACKCAP *Sylvia atricapilla*

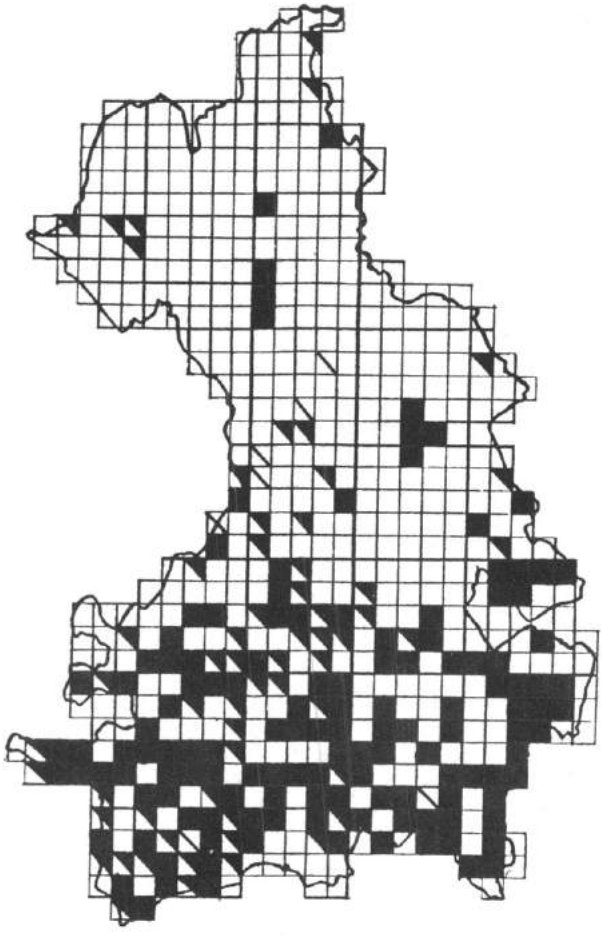
The distribution of the Blackcap is broadly similar to that of the Willow Warbler but it occurs more frequently in large suburban gardens and less frequently along fenland waterways. Although it is hardly surprising that Blackcaps are scarce in open prairie-farming areas the difference in distribution between the north where only 29% of tetrads are occupied and the south where 57% are occupied is striking.

Probable/proven breeding was recorded in 279 tetrads (46%) and birds were present in the breeding season in a further 16.

WOOD WARBLER *Phylloscopus sibilatrix*

Favouring woods on poor soils with sparse understorey it is scarcely surprising that this species is largely absent from Cambridgeshire. During the survey period Wood Warblers which have bred at one or two woodland sites in the past, were recorded singing in Madingley Wood, Wandlebury, Milton GP, Pymore, Burwell and on the Ouse Washes. These records must be considered as category 1 i.e. bird present in the breeding season, and are almost certainly birds on passage.

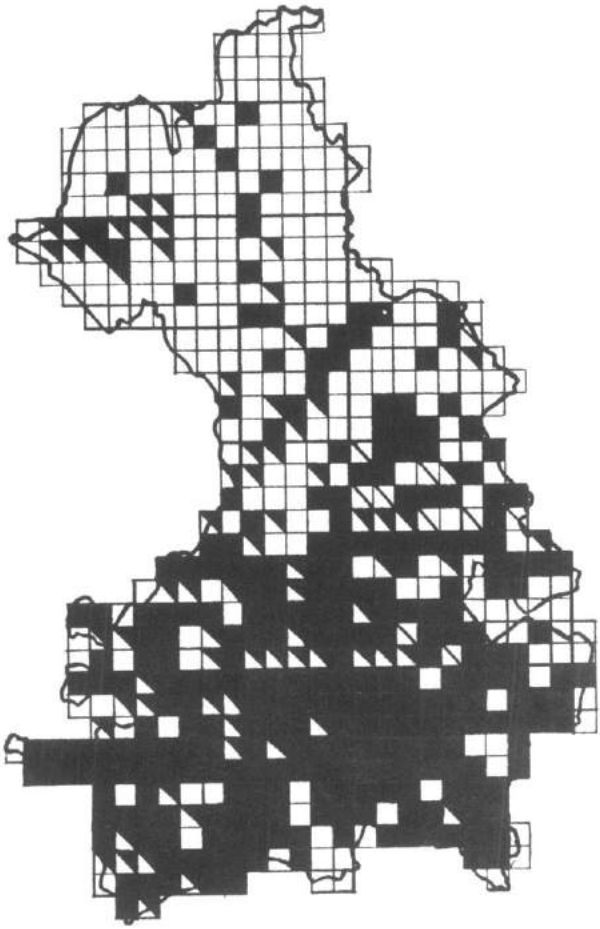
Chiffchaff



CHIFFCHAFF *Phylloscopus collybita*

In the north of the county this species, is even more thinly distributed than the Willow Warbler and Blackcap occurring only very locally around March, Whittlesey and Wisbech where a few tall trees provide suitable singing-posts. In the south of the county, in marked contrast it is widespread and like the Blackcap is not infrequently heard in suburban gardens.

Probable/proven breeding was recorded in 195 tetrads (32%) and birds were present in the breeding season in a further 7.

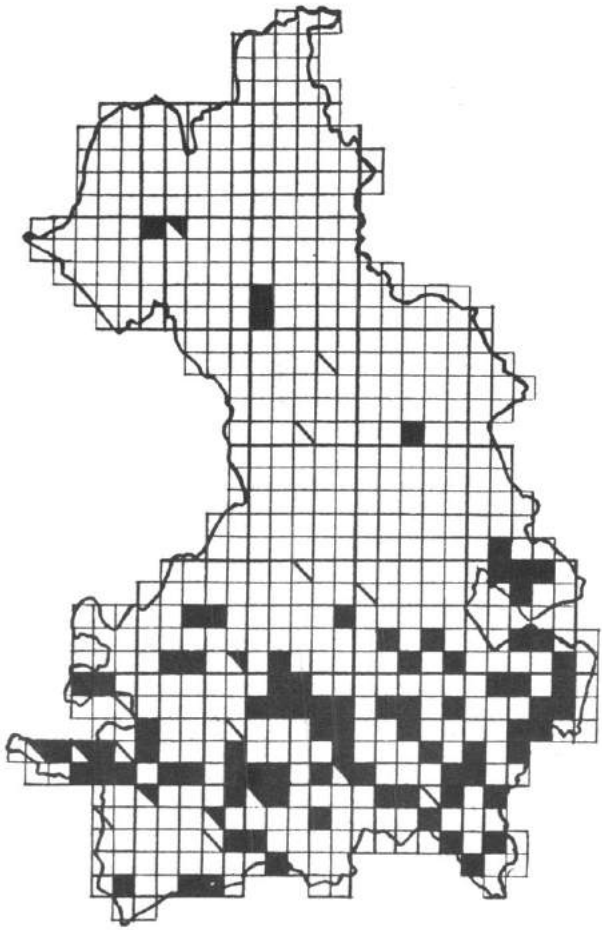


WILLOW WARBLER *Phylloscopus trochilus*

The Willow Warbler is the most widely distributed species of its family in the county being absent only from the urban areas and from the most featureless parts of fenland.

Elsewhere wherever scrub or willow are present, this species breeds.

Probable/proven breeding was recorded in 347 tetrads (57%) and birds were present in the breeding season in a further 9

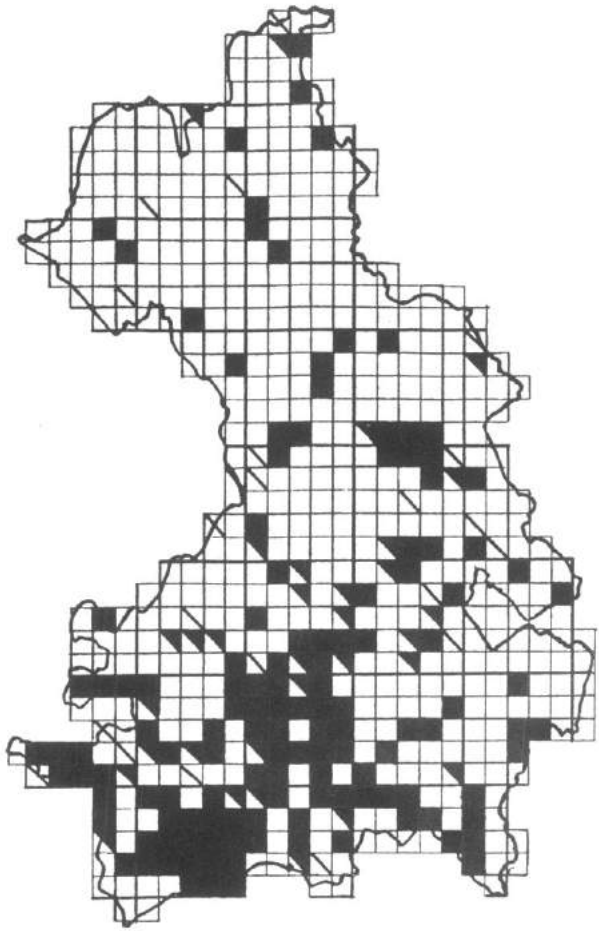


GOLDCREST *Regulus regulus*

The breeding range of this species is largely confined to the southern third of the county, where it is widely distributed associated with the planting of ornamental conifers. It has also been recorded breeding at Eldernell near Whittlesey and Wimblington in the north of the county and may nest within the suburban areas of Wisbech or Chatteris although none were reported during either this project or during the 1968–72 National Atlas. It is virtually absent from arable fenland.

In the south it is predominantly found in gardens, churchyards, mixed woodlands and conifer plantations.

Probable/proven breeding was recorded in 90 tetrads (15%) and birds were present in the breeding season in a further 10.

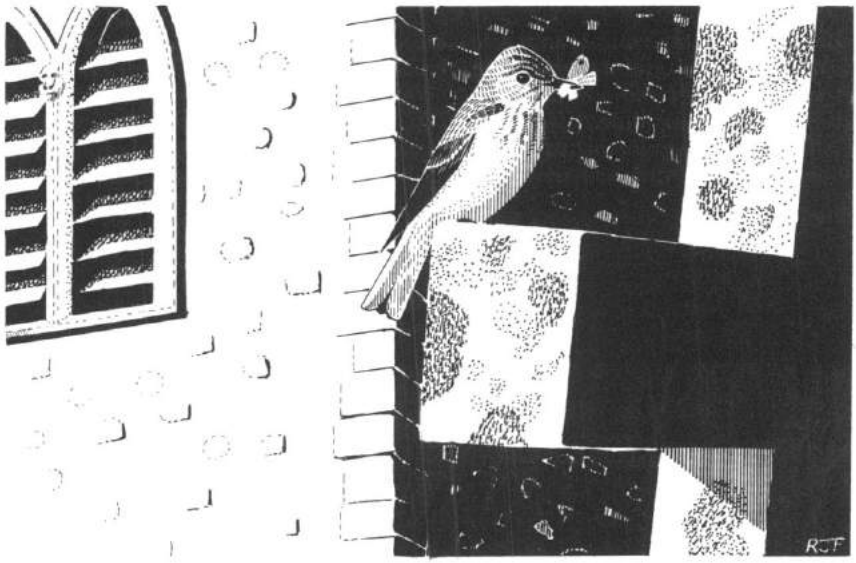


SPOTTED FLYCATCHER *Muscicapa striata*

This species has a south-westerly distribution, however the national population trends suggest that it has been in decline during the period of the project (Marchant et al) and this may be reflected in the results.

Spotted Flycatchers show a marked preference for larger suburban and village gardens, parkland and the fringes of the various watercourses. The relatively poor showing in the south-eastern part of the county may well be due to the timing of the coverage in that area since this species is about the last of the summer migrants to arrive or due to the lack of watercourses in the area south of Newmarket.

Probable/proven breeding was recorded in 162 tetrads (26%) and birds were present in the breeding season in a further 18.

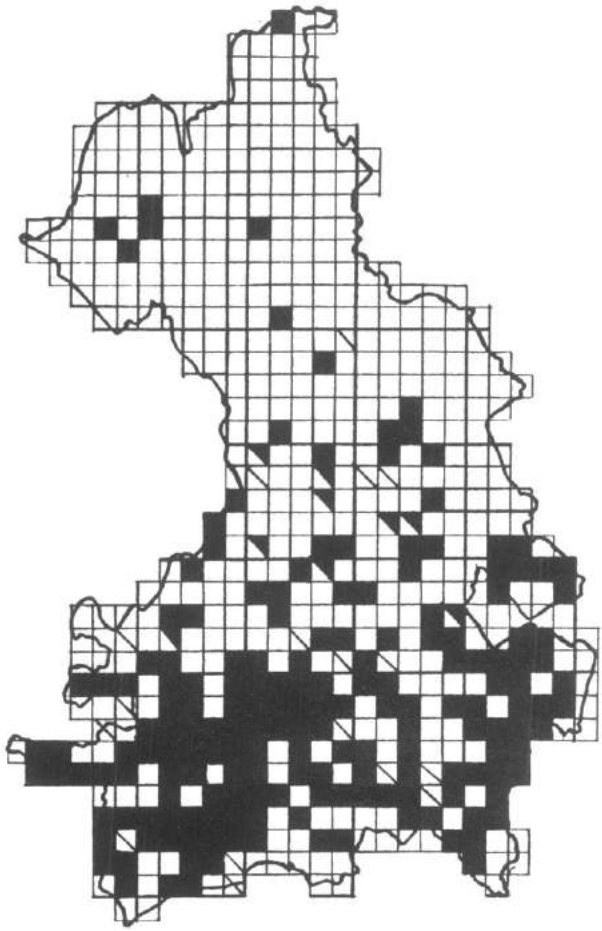


Spotted Flycatcher

BEARDED TIT *Panurus biarmicus*

The breeding status of this species remains precarious and even at Wicken Fen where it has bred regularly since 1983 with a maximum of 5 pairs in 1988 the population remains highly vulnerable to severe winters. A pair bred at Fowlmere watercress beds in 1981 but hopes that colonies might establish there, and at other likely sites such as Ely beet factory or Little Wilbraham Fen have not been realised. Low rainfall in recent years may have been responsible due to the drying out of reedbed sites. In neighbouring Norfolk the expansion of this species' range seems to have halted.

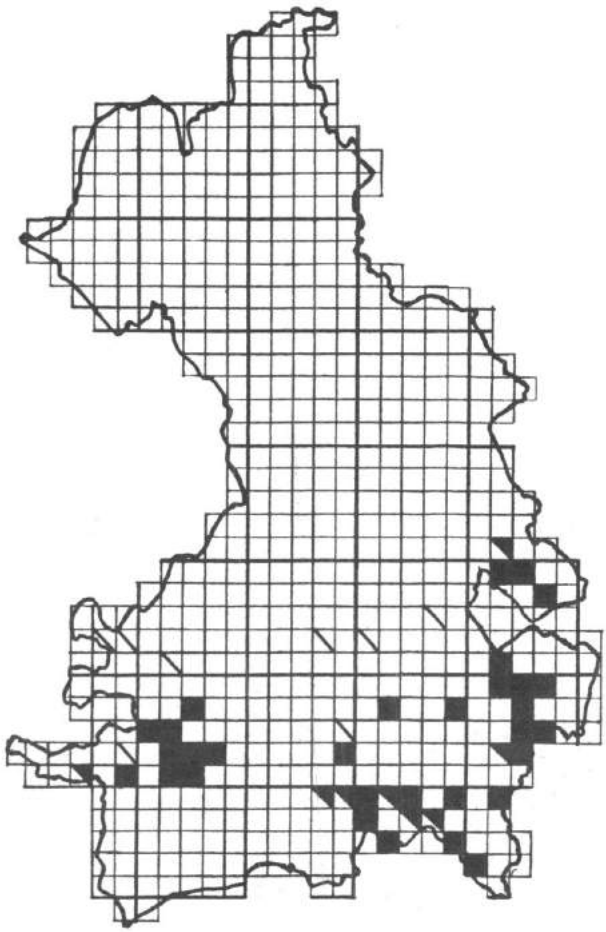
During the survey period possible/probable breeding was recorded in a single tetrad.



LONG-TAILED TIT *Aegithalos caudatus*

Although this species is widely distributed throughout the southern half of the county it is largely absent from the area to the north of the Ouse Washes and is only found where isolated pockets of scrub occur and, more occasionally, in the gardens of large houses in a few fenland towns such as March and Whittlesey. From Ely southwards it becomes more common and the relict fens such as Wicken and Chippenham hold large numbers of this species.

Probable/proven breeding was recorded in 189 tetrads (31%) and birds were present in the breeding season in 15 more.

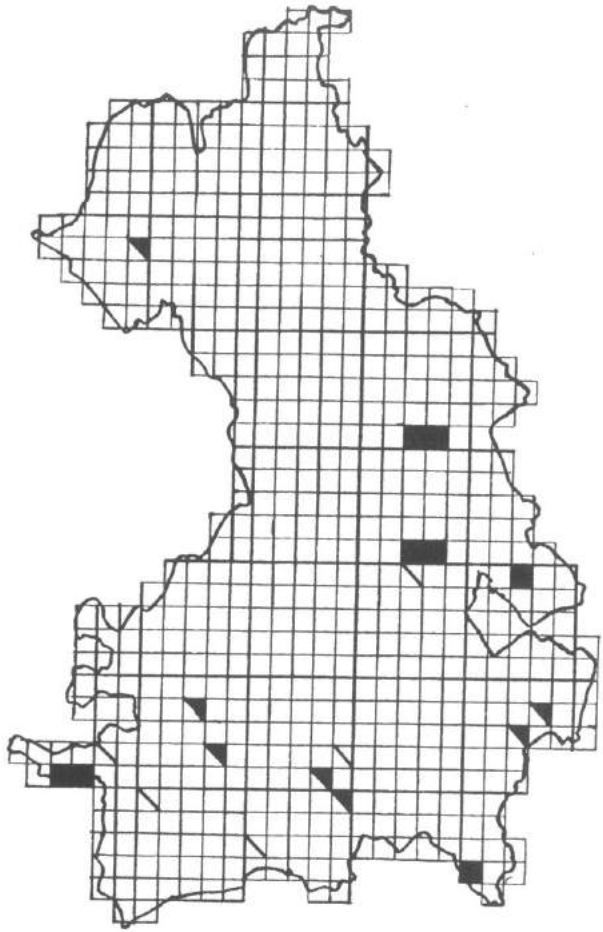


MARSH TIT *Parus palustris*

Although the total number of breeding pairs in the county is certainly less than 150 it is very much more common than the Willow Tit and there are as yet no obvious signs of a decline in its population such as has been noted elsewhere in the country (Marchant et al).

Favoured areas include: Wimpole, Eversden Wood, Wandlebury, Fulbourn, Six Mile Bottom, Chippenham Fen, Stetchworth, Woodditton, Hardwick, Linton, Hildersham, Bartlow, Ten Wood, Great Widgham Wood and Langley Wood.

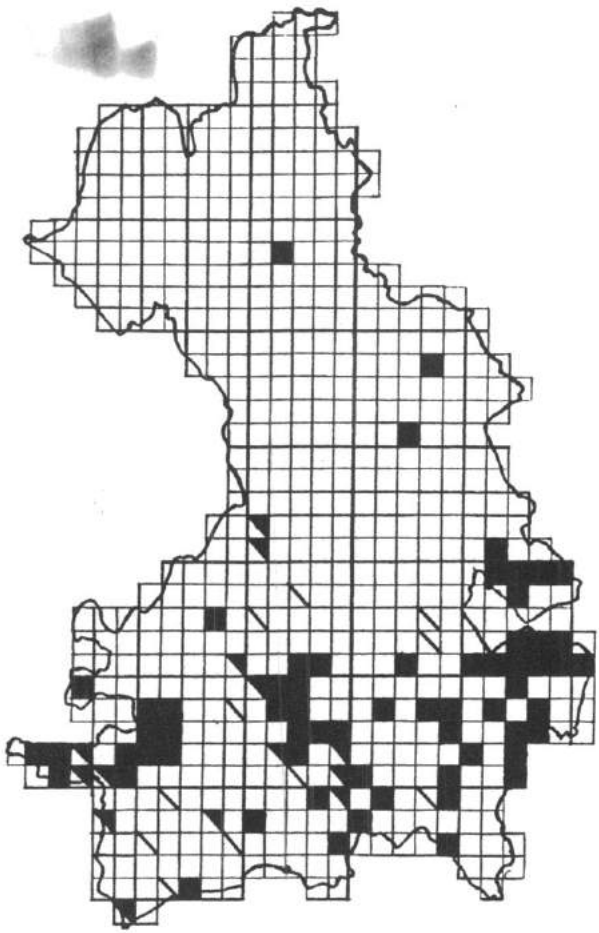
Probable/proven breeding was recorded in 40 tetrads (7%) and birds were present in the breeding season in a further 6.



WILLOW TIT *Parus montanus*

There is no doubt that attempts to estimate the status of this species have been hampered by identification problems with the previous species and it was not recognised as breeding in the county until 1954 at Wicken Fen which is now its stronghold. Favouring wetter woods it is much less common than the Marsh Tit and the total population may be considerably less than 50 pairs. For both Marsh and Willow Tits breeding **densities** in Cambridgeshire are strikingly lower than those recorded in the 1968-72 National Atlas for the country as a whole although the **distribution** in Cambridgeshire remains broadly the same as at that time.

Probable/proven breeding was recorded in 15 tetrads (2%) and birds were present in the breeding season in a further 5.

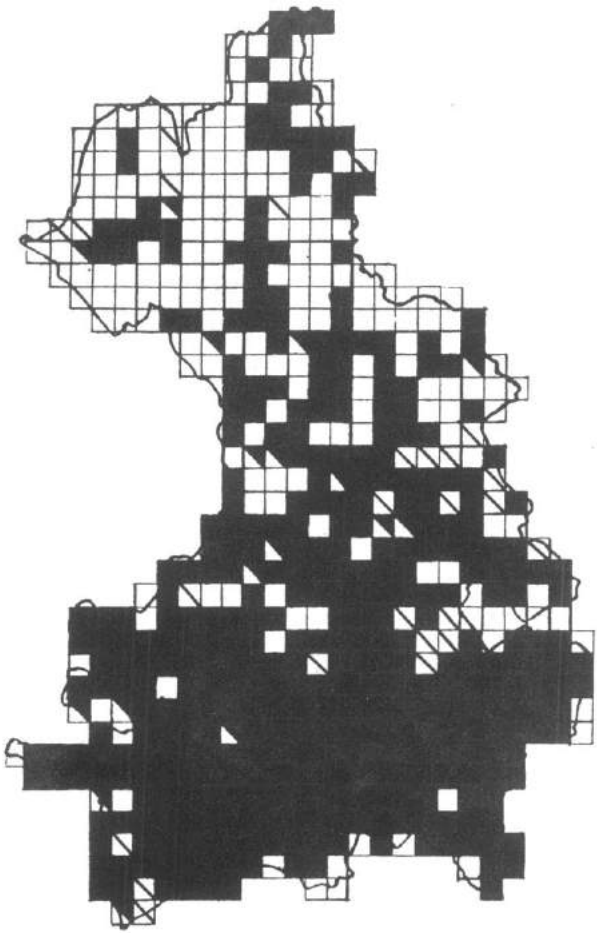


COAL TIT *Parus ater*

The range of this species is not dissimilar to that of the Goldcrest and Marsh Tit, its main centres of population being in woodlands close to the eastern and western boundaries of the county and in the south-east. Unlike the Marsh Tit, however, it breeds mainly in conifers and this preference allows it increasingly to utilise suburban and urban habitat as ornamental conifers mature: indeed as many as 11 pairs have been recorded in the Cambridge University Botanic garden.

It is virtually absent from the northern half of the county being found only in Littleport and March, nesting in churchyard yews. The 1968-72 National Atlas estimated a breeding density of 350 pairs per 10km square nationally; this figure bears no relation to the situation in this county where the total population is probably not much above 500 pairs.

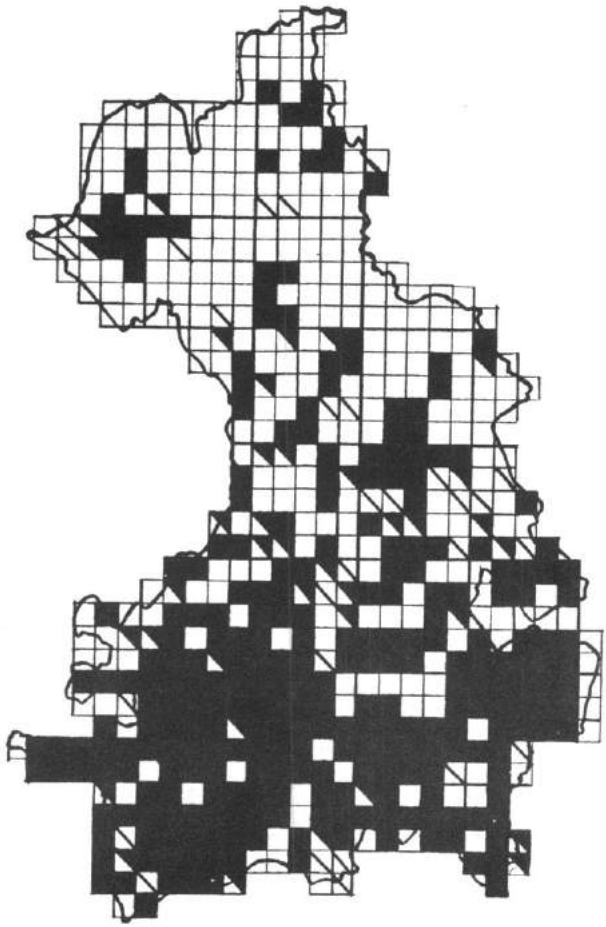
Probable/proven breeding was recorded in 78 tetrads (13%) and birds were present in the breeding season in a further 11.



BLUE TIT *Parus caeruleus*

This species, by far the commonest member of the tit family in the county, is widespread except in the prairie-farming areas of fenland. In the south of the county any gaps in distribution are almost certainly due to a lack of coverage. In the north it is significantly more common than the Great Tit being much better able to survive in small pockets of natural habitat and village gardens.

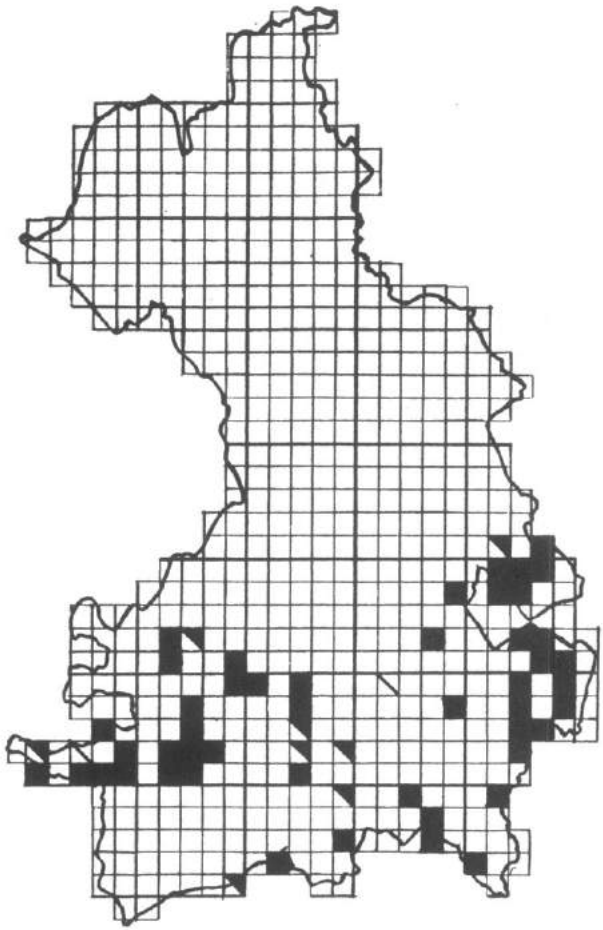
Probable/proven breeding was recorded in 507 tetrads (83%) and birds were present in the breeding season in 24 others.



GREAT TIT *Parus major*

This species is abundant in southern and central areas of the county but more thinly distributed in the north where it occurs chiefly in suburban locations around the small towns: Whittlesey, Chatteris, March and Wisbech. In the smaller fenland villages north of the Ouse Washes it is surprisingly scarce possibly due to the lack of large gardens which elsewhere provide suitable cover and nesting sites. Like most species it is absent from the open farmland to the east and west of March.

Probable/proven breeding was recorded in 313 tetrads (51%) and birds were present in the breeding season in 28 others.



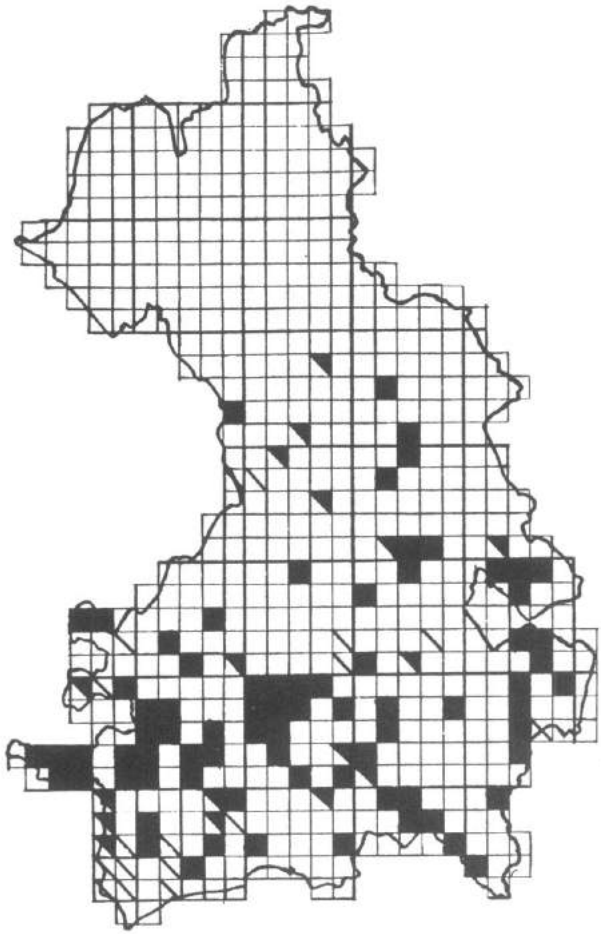
NUTHATCH *Sitta europea*

This species has been the subject of a particularly systematic survey and it is unlikely that more than a handful of sites have been overlooked.

Since the 1968-72 National Atlas showed breeding in only two 10km squares there has been a considerable expansion. Nevertheless the Nuthatch is totally absent from the north of the county, Fordham Wood being its most northerly site. In the south its range corresponds closely to that of other woodland species such as the Coal Tit and Treecreeper though it is more local than both. In general with its preference for mature trees its chief strongholds are the boulder clay woods on the western and eastern perimeters of the county with a small population centred around the 'Backs' in Cambridge, at Little Shelford and at Wandlebury. Favoured localities in the west of the county include Gamlingay, Buff Wood, Hayley Wood, Hardwick Wood, Wimpole, Eversden Wood, Madingley Wood and Overhall Grove.

In the east and south-east it occurs at Chippenham, Newmarket (Warren Hill), Dullingham, Stetchworth, Kirtling, Carlton, Six Mile Bottom, Cheveley, Sparrow's Grove, Out Wood, Leys Wood, Ten Wood, Over Wood and Broad Wood. A recent census indicates that the county population now stands at between 60 and 80 pairs.

Probable/proven breeding was recorded in 56 tetrads (9%) and birds were present in 1 other.



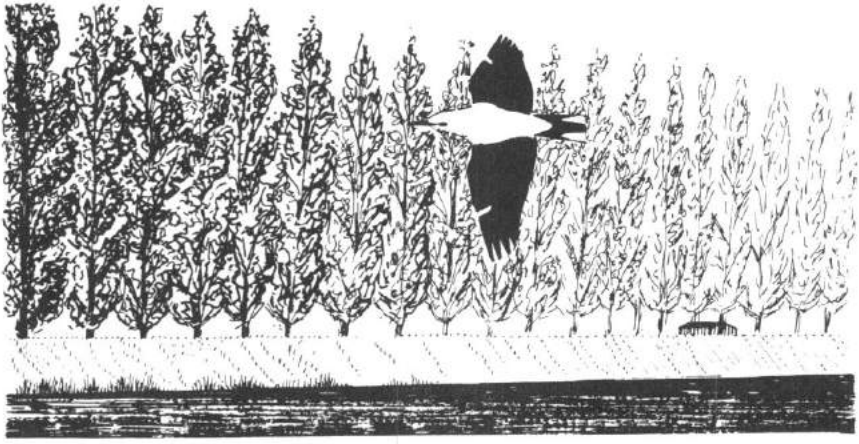
TREECREEPER *Certhia familiaris*

Although the Treecreeper is widely distributed in the southern third of the county it is absent from the northern third and only sparsely scattered across the central third.

This species is relatively unobtrusive and the distribution shown may be an underestimate especially in areas where there were no resident fieldworkers. However, there can be no disguising the fact that large tracts of the county remain entirely unsuitable for a species that is highly dependent on mature woodland.

The 1968-72 National Atlas showed a similar distribution in Cambridgeshire but estimated national breeding densities of 50-100 pairs per 10 km square whereas the total population in this county is unlikely to exceed 400 pairs.

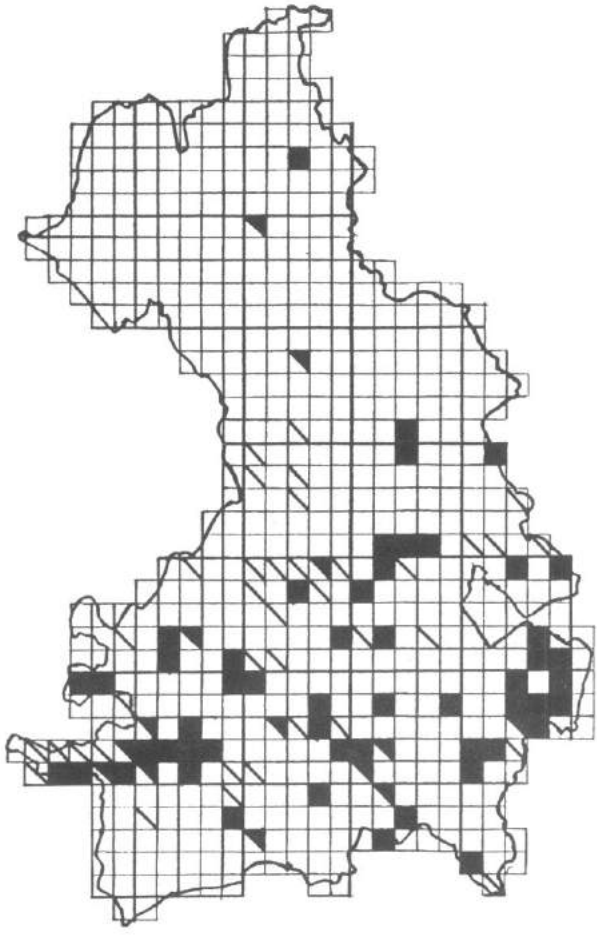
Probable/proven breeding was recorded in 94 tetrads (15%) and birds were present in the breeding season in a further 16.



GOLDEN ORIOLE *Oriolus oriolus*

Although this species was first recorded breeding in East Anglia around 1967 the first breeding record in Cambridgeshire did not occur until 1982. Since that date Golden Orioles have bred regularly in fenland plantations of black poplar cultivars where they are often remarkably unobtrusive. The present county population of 2-4 pairs, breeding in three areas, may have stabilised and unattached males have been recorded both at breeding and other sites. It is too early to be confident that this population will remain: the limited life of the plantations may be the determining factor and replacement planting is required to retain this species. Recent studies indicate that Golden Orioles require about 400 black poplars per breeding territory.

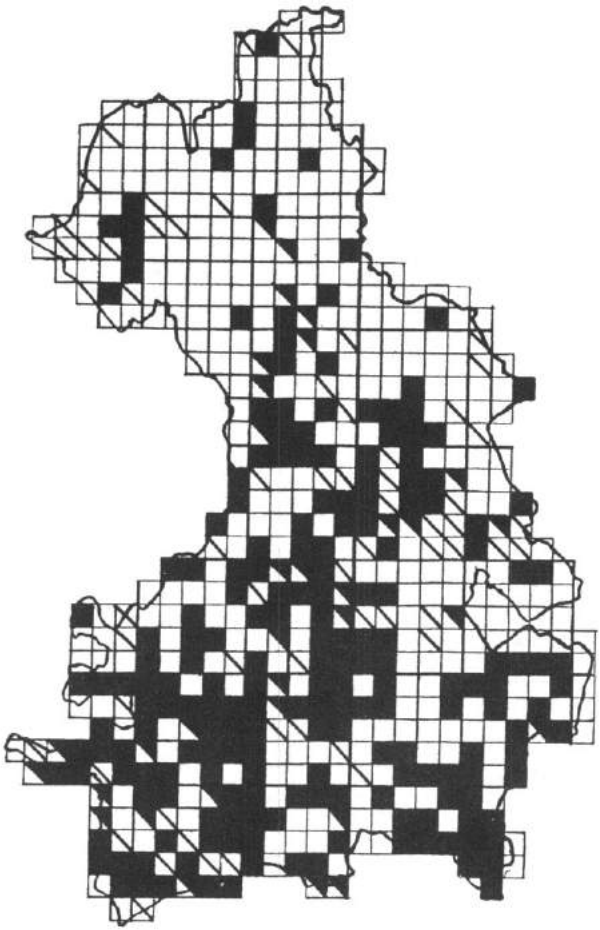
Probable/proven breeding was recorded in 5 tetrads and birds were present in the breeding season in a further 3.



JAY *Garrulus glandarius*

The Jay is the least common member of the crow family in Cambridgeshire (in marked contrast to Norfolk where it is widespread), a direct consequence of the lack of extensive woodland. This species is rarely found north of a line from Fen Drayton to Isleham although there is a healthy population at Wicken Fen which falls just to the south of that line. Its strongholds are on the eastern and western fringes of the county where the greatest amount of woodland is located, a distribution very similar to that recorded in the 1968-72 National Atlas.

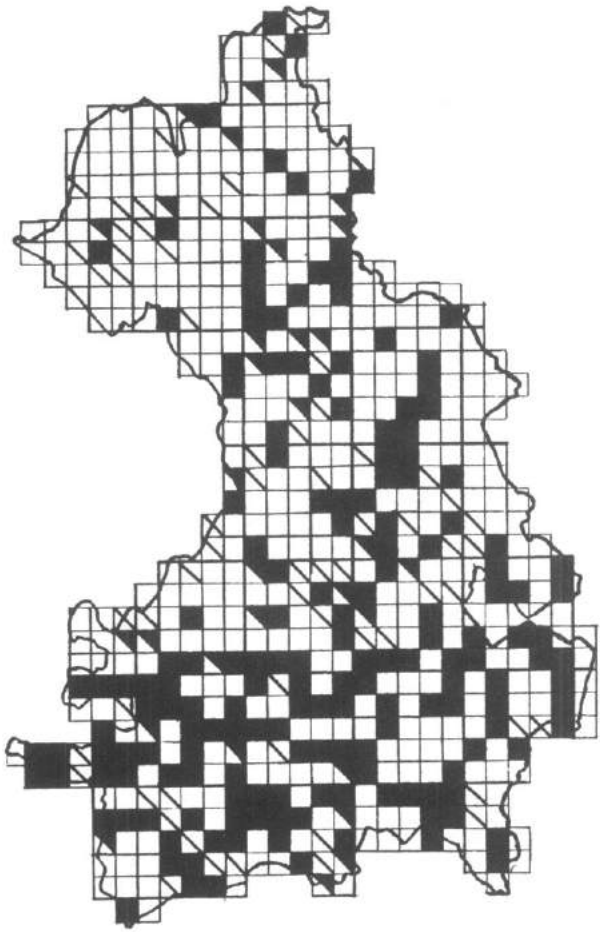
Probable/proven breeding was recorded in 67 tetrads (11%) and birds were present in the breeding season in 33 others.



MAGPIE *Pica pica*

The Magpie has increased considerably in recent years probably at least in part as a result of the decline of the gamekeeper. In the 1960s it was rare with perhaps only a handful of pairs countywide. It is now to be found across the county including parts of the fenland area where the distribution is notably more patchy. Unlike the Jay the Magpie has moved into suburban habitat and can be found close to most cities and towns. Twenty five years ago this species was uncommon in Cambridgeshire. Easy (1989) in his countywide survey of corvids found 150 Magpie nests and the breeding population is now at least double that figure.

Probable/proven nesting was recorded in 234 (38%) tetrads and birds were present in the breeding season in 59 others.

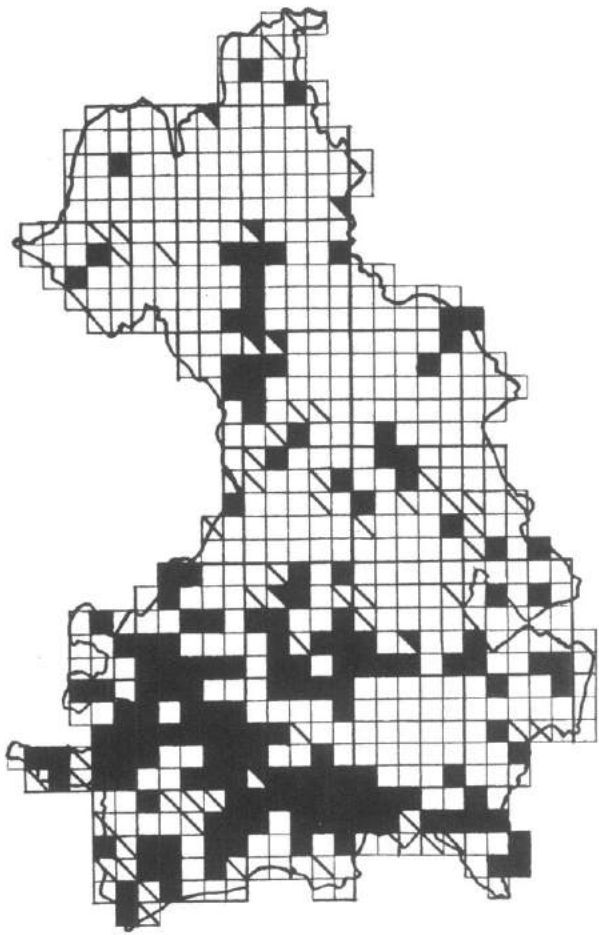


JACKDAW *Corvus monedula*

The distribution of this species closely resembles that of the Magpie except that it is slightly more common than the latter in the fenland area and the gaps in its distribution are less pronounced. It is generally associated with human habitation and has successfully colonised urban habitat. In rural areas it is a successful breeding species wherever suitable nesting sites such as churches or hollow trees can be found.

Probable/proven breeding was recorded in 202 tetrads (33%) and birds were present in the breeding season in 63 others.

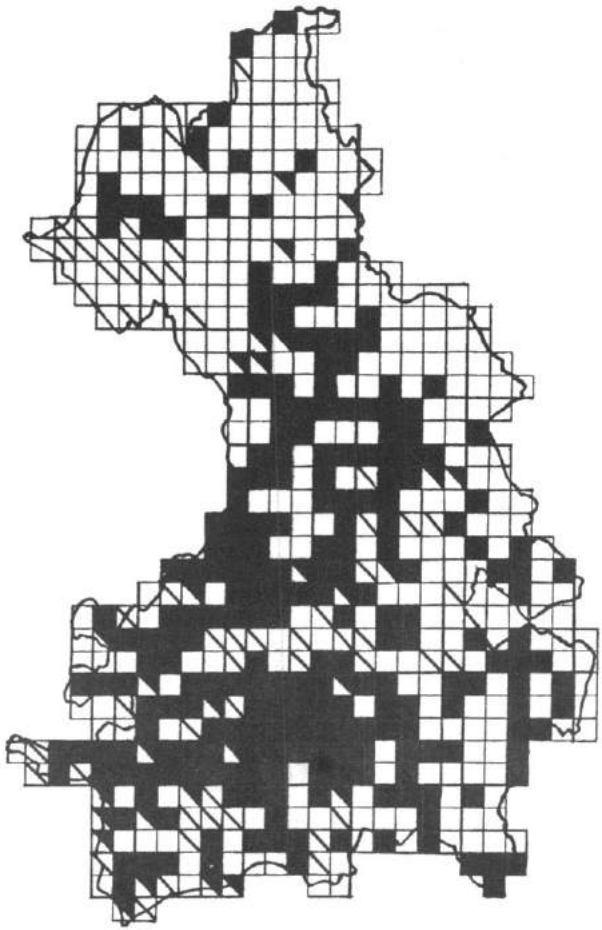
Rook



ROOK *Corvus frugilegus*

The Rook seems to be recovering from the drastic decline in the county's population that accompanied the spread of Dutch Elm disease, but apart from a string of rookeries between Chatteris and March, and Littleport and Brandon Creek it is now largely absent from the fenland area. In the southern half of the county its distribution is considerably greater in the west than the east (for example TL55) where the open chalk arable land provides little opportunity for feeding and few suitable sites for nesting colonies. Due to changes in agricultural practice in much of Cambridgeshire Rooks are now very dependent on small patches of grassland, paddocks, recreation grounds etc and their breeding distribution reflects this.

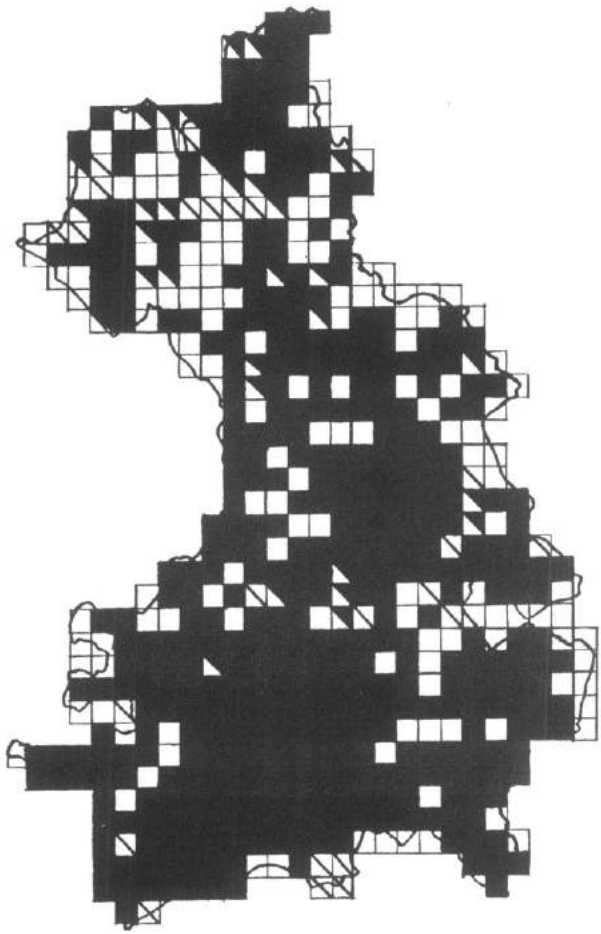
Probable/proven breeding was recorded in 168 tetrads (27%) and birds were present in a further 46.



CARRION CROW *Corvus corone*

While the Rook has declined there can be no doubt that the Carrion Crow has increased and is now the most widely distributed corvid in the county. Wherever sufficiently mature trees exist this species seems to be able to breed and it is particularly successful around both the Ouse and Nene Washes. Like the Rook it is less well distributed in the south-eastern part of the county much as it was at the time of the 1968-72 National Atlas which estimated an average breeding density of 250 pairs/10km square nationally, much higher than in Cambridgeshire today even after the recent expansion. It is also absent from open areas of fenland.

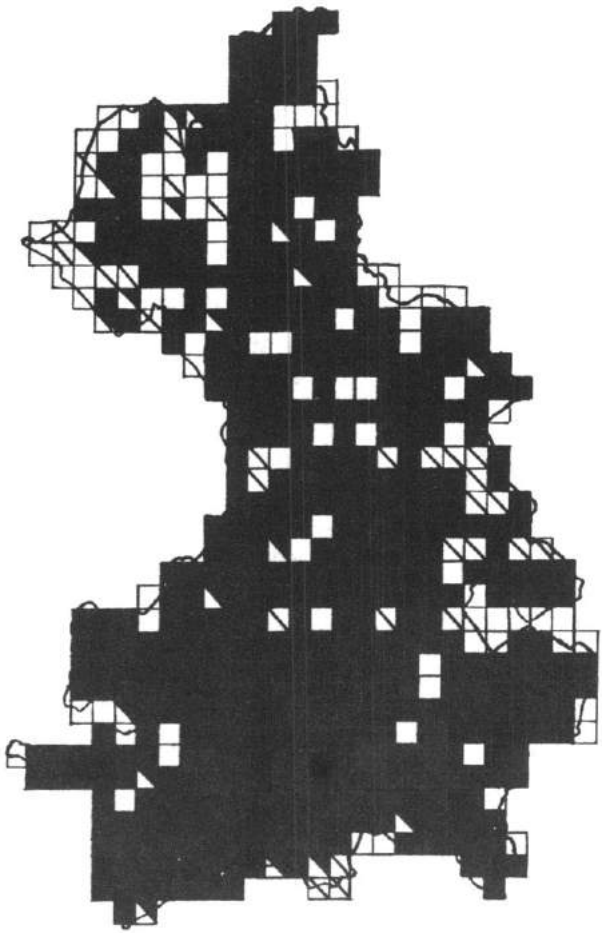
Probable/proven breeding was recorded in 264 tetrads (43%) and birds were present in a further 51.



STARLING *Sturnus vulgaris*

There are very few tetrads in the county that do not hold at least one pair of Starling; the only areas where it does not seem to nest being in the featureless parts of fenland to the west of March. Elsewhere it is ubiquitous and most frequently found around human habitation but quite able to nest in trees or derelict buildings. It is likely that most of the gaps in the southern part of the county are due to lack of coverage rather than a genuine absence of this species.

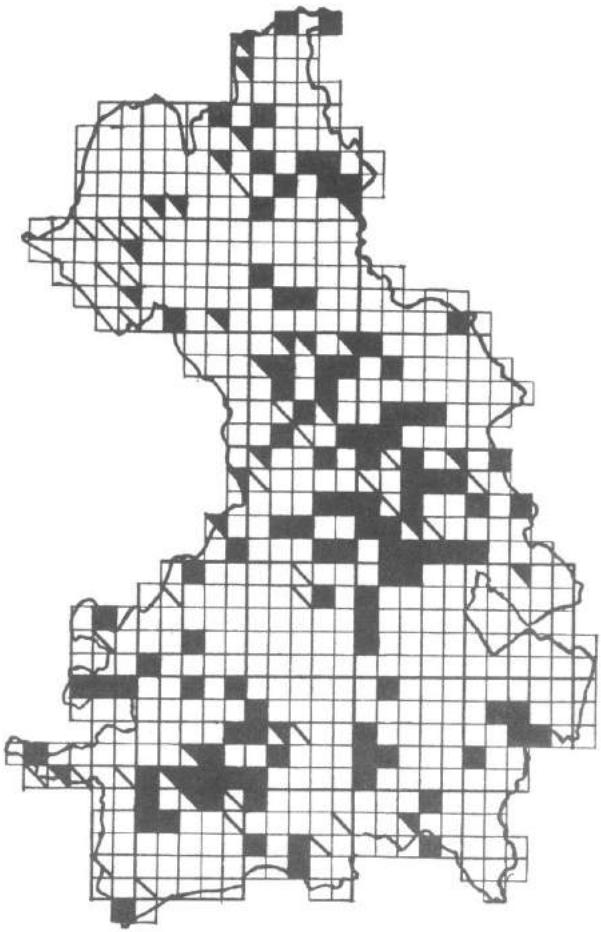
Probable/proven breeding was recorded in 453 tetrads (74%) and birds were present in the breeding season in a further 22.



HOUSE SPARROW *Passer domesticus*

This most ubiquitous of birds was recorded breeding in almost every tetrad in the county. With its strong associations with human habitation if its distribution has a gap it is is some of the most inhospitable parts of fenland where farm-buildings are few and far between.

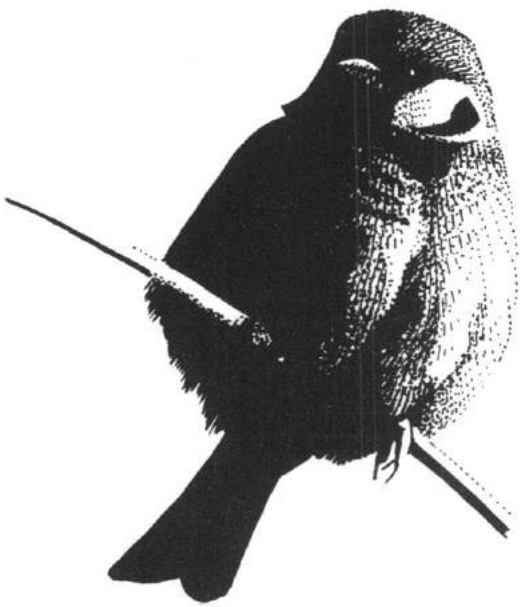
Probable/proven breeding was recorded in 504 tetrads (82%) and birds were present in the breeding season in a further 27.



TREE SPARROW *Passer montanus*

The Tree Sparrow occurs in small numbers in almost all areas of the county from the northern to the southern boundaries, showing a certain preference for overgrown hedges along fenland droves and for pollarded willows along the banks of the washes and the waterways. Overall these rather local populations give the appearance of a patchy distribution. Marchant et al (1990) have shown that this species is in alarming decline nationally and populations in Cambridgeshire seem to have declined dramatically if numbers at Wicken Fen are anything to go. Annual ringing totals at Wicken have fallen from 100+ in the early 1970s to single figures in recent years. This would be an interesting species to re-assess in ten years time.

Probable/proven breeding was recorded in 130 tetrads (21%) and birds were present in the breeding season in a further 29.

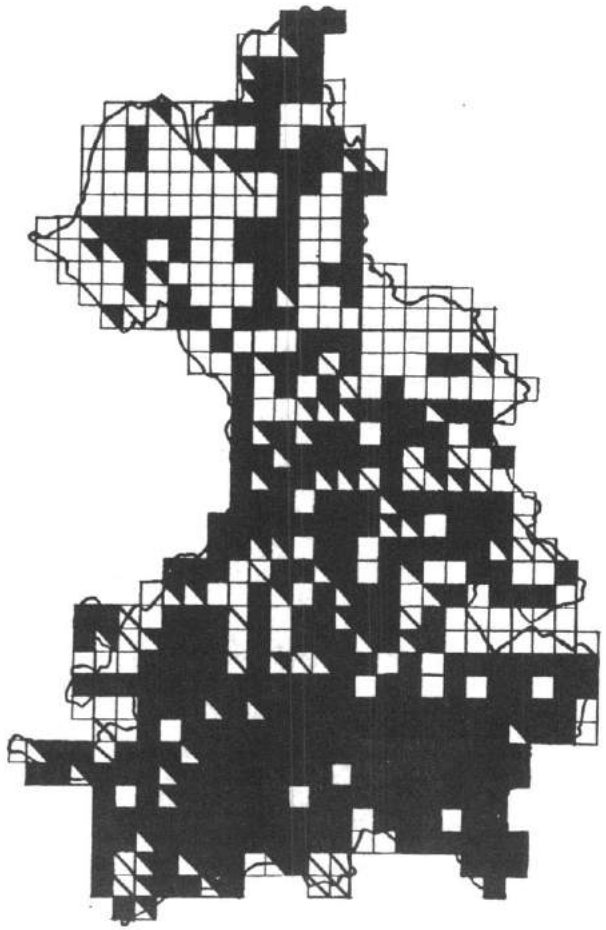


Tree Sparrow

CHAFFINCH *Fringilla coelebs*

This species was recorded breeding in almost every tetrad to the south of the Ouse Washes. In fenland areas the distribution is, understandably, more patchy and it is largely absent from areas to the east and west of March. It is commonly found in the fruit-growing area to the west of Wisbech but in many northern villages, where there are few, if any, mature gardens it is less well distributed than the Greenfinch and even, in some areas, than the Goldfinch.

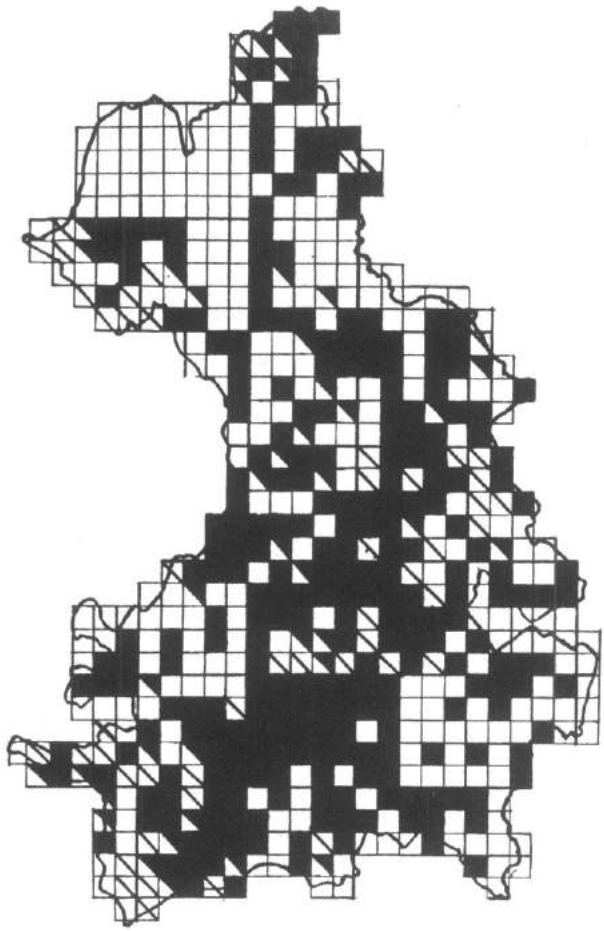
Probable/proven breeding was recorded in 452 tetrads (74%) and birds were present in the breeding season in a further 12.



GREENFINCH *Carduelis chloris*

The distribution of the Greenfinch closely resembles that of the Chaffinch. It is ubiquitous in most areas of the county and though rather more infrequent north of the Ouse Washes is still a good deal more common than the Chaffinch in the fens especially in areas near human habitation. Like the Chaffinch it shuns the prairie farmland but is very common in urban and village gardens.

Probable/proven breeding was recorded in 415 tetrads (68%) and birds were present in the breeding season in a further 28.

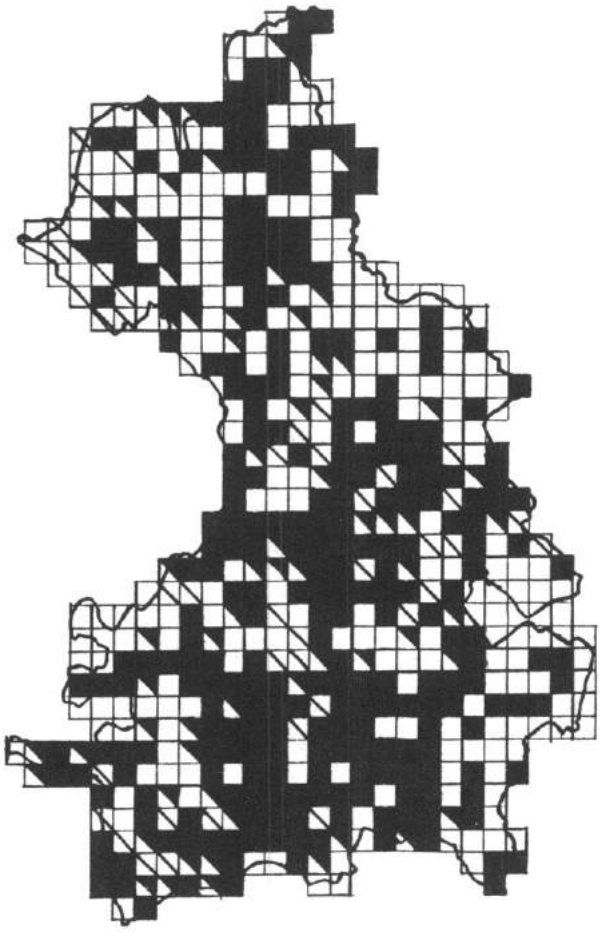


GOLDFINCH *Carduelis carduelis*

The Goldfinch is widely distributed throughout the county and though largely absent from prairie farmland it is a particularly characteristic species of fenland villages. Comparison with the maps for the two previous species shows that it is considerably less common than either the Chaffinch or the Greenfinch.

Changes in agricultural practices such as increasing autumn-sown cereals and the consequent loss of stubble feeding areas in winter, appear to have led to a diminution of numbers nationally (Marchant et al).

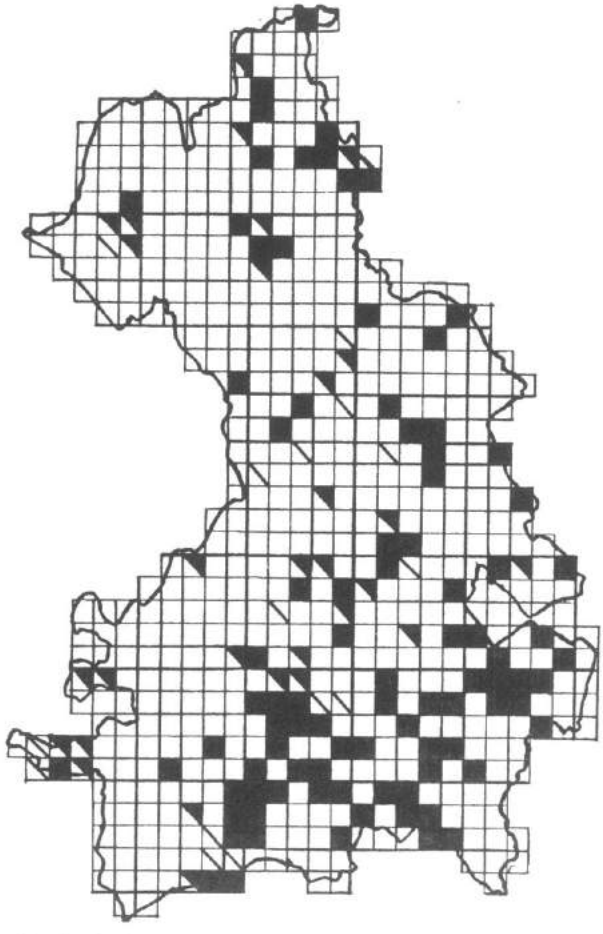
Probable/proven breeding was recorded in 309 tetrads (50%) and birds were present in the breeding season in a further 45.



LINNET *Carduelis cannabina*

This species has a pattern of distribution similar to the previous finch species, being abundant and widely distributed. The Linnet is more tolerant of the open fenland country than the others and thus has a wider distribution in that area. However, it is not as widespread in the south as the other species.

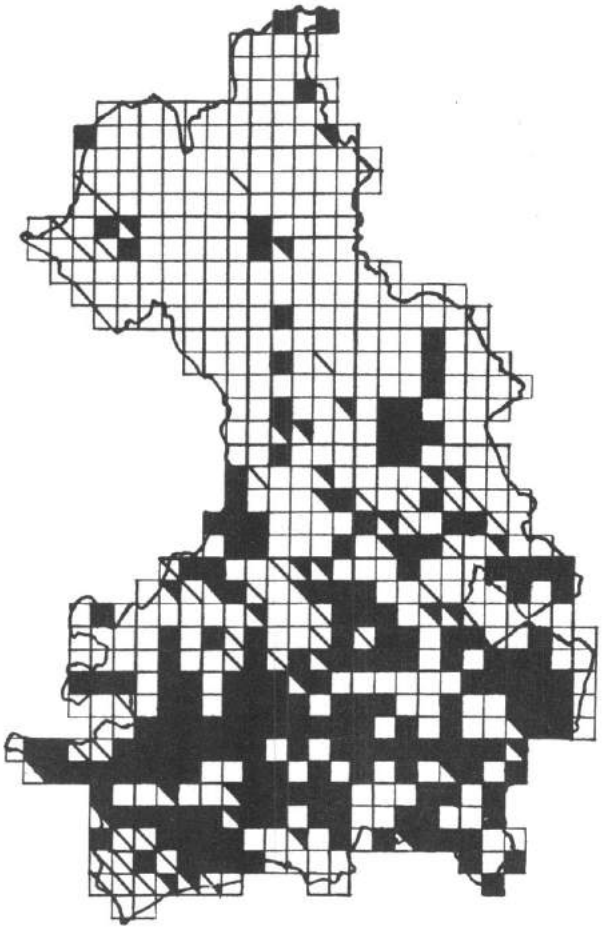
Probable/proven breeding was recorded in 345 tetrads (56%) and birds were present in the breeding season in a further 40.



REDPOLL *Carduelis flammea*

After a massive increase in the population in the late 1960s this species has now reverted to its former status. Although distinctly less common than other finches, Redpolls occur locally throughout the county in alder carrs, woods, thorn thickets, willows alongside rivers, and increasingly in suburban and rural gardens. In the northern half of the county this species is now quite common around March, Wisbech, Begdale, Upwell, Friday Bridge, Chatteris and Ely but elsewhere, except along the Nene and Ouse Washes they are generally absent. In the south it is more widely distributed particularly along the shallow valleys of the Cam and the Granta.

Probable/proven breeding was recorded in 121 tetrads (20%) and birds were present in the breeding season in a further 13.



BULLFINCH *Pyrrhula pyrrhula*

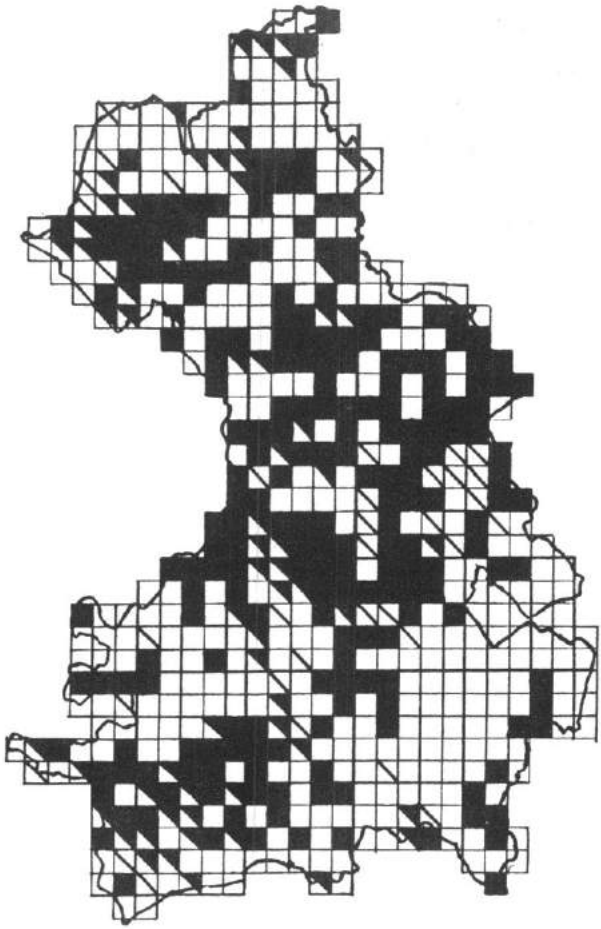
There is a very marked north/south divide in the distribution of this species. In the southern half of the county it occurs in the majority of the tetrads; in the northern half it is extremely scarce, even in the fruit-growing areas. In the central area it is more local but occurs wherever there is suitable scrub or mature hedgerow, as at Wicken Fen where there is a particularly healthy population.

Probable/proven breeding was recorded in 212 tetrads (35%) and birds were present in the breeding season in a further 38.

YELLOWHAMMER *Emberiza citrinella*

A common bird of arable farmland this species is easily the most widely distributed and common of the buntings being found in all areas apart from the inhospitable parts of the fenland to the east and west of March. In southern and central Cambridgeshire it is virtually ubiquitous and where there are gaps in the map it is most likely that this species was missed rather than it being genuinely absent.

Probable/proven breeding was recorded in 410 tetrads (67%) and birds were present in the breeding season in a further 13.

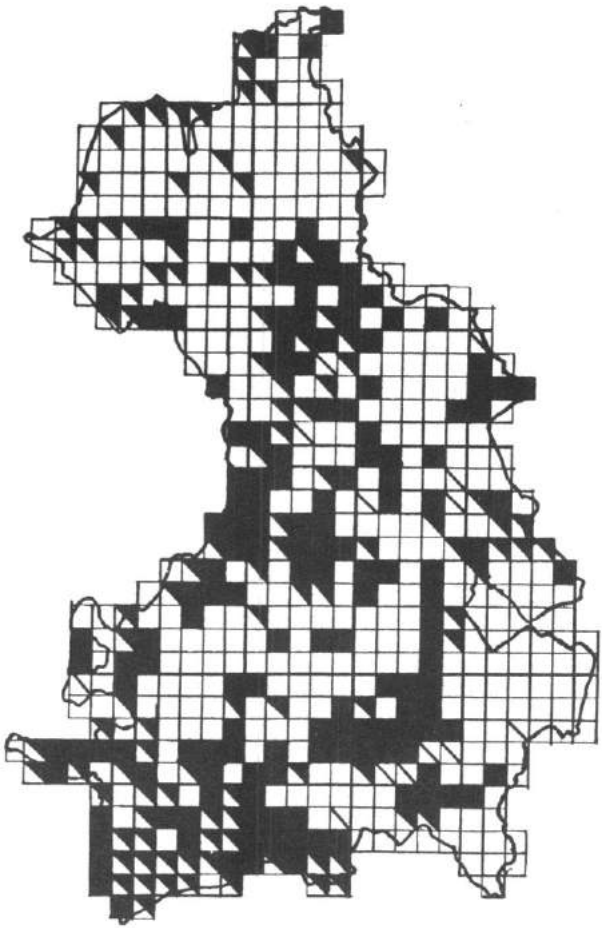


REED BUNTING *Emberiza schoeniclus*

Together with such species as Yellow Wagtail and Meadow Pipit the Reed Bunting belongs to a small group of birds which have adapted particularly well to the fenland landscape and which are much more widely distributed in Cambridgeshire than in neighbouring Norfolk. Unlike the Reed Warbler the Reed Bunting nests in a wide variety of habitats and is frequently found in dry ditches, patches of willowherb alongside fenland drains and even in fields of oilseed rape, sometimes well away from water. It remains, nevertheless, relatively uncommon in the chalklands of the south-east and the horse-paddock country around Newmarket. Although it breeds throughout most of the rest of the county it is particularly abundant along the Ouse and Nene Washes and at wetland sites such as Fowlmere watercress beds, Wicken Fen, Fen Drayton GP and along the banks of the rivers: Cam, Great Ouse and Lark.

Probable/proven breeding was recorded in 281 tetrads (46%) and birds were present in the breeding season in a further 33.

Reed Bunting



CORN BUNTING *Miliaria calandra*

Although the range of this species is reported to be contracting nationally (Marchant et al) there is, as yet, little sign of any serious decline in Cambridgeshire, although the population may well have fallen. It remains a familiar sight throughout many parts of Cambridgeshire and its monotonous jingling song can be heard from telegraph wires and gateposts in much of fenland and on arable land in western and southern areas, even occurring within two miles of Cambridge city centre as for instance near Addenbrooke's Hospital and Cherry Hinton. There are some large areas from which it is absent possibly where intensive farming methods have eliminated food supply or due to a lack of song-posts or suitable nesting habitat and recent decline in the area of barley cultivation, a favoured crop, will have played a part. A noticeable decline in the numbers at winter roosts in recent years may suggest that this species is beginning to show in Cambridgeshire the same trend that has been emerging nationally.

Probable/proven breeding was recorded in 262 tetrads (43%) and birds were present in the breeding season in a further 11.

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APPENDIX ONE

SPECIES ALSO RECORDED IN THE COUNTY DURING THE BREEDING SEASON WITH NO EVIDENCE OF BREEDING

There are a number of species which were recorded in the county during the breeding season but were not involved in any definite attempt at breeding and they are listed below with an indication in parenthesis of the reason for their presence.

Most of these species are known passage-migrants (p-m) or birds which have wintered in the county and have delayed their return to breeding grounds for one reason or another, often due to injury (w-v). Some of these species are recorded singing [s]; though this is usually a temporary phenomenon it is possible that some of these species may breed in exceptional circumstances. There are some species which are known vagrants (v) and finally there are species whose presence is due to a feral population (f).

Slavonian Grebe	*Podiceps auritus*	(p-m)
Gannet	*Sula bassana*	(v)
Shag	*Phalacrocorax aristotelis*	(w-v)
Bittern	*Botaurus stellaris*	(w-v)
Night Heron	*Nycticorax nycticorax*	(v)
Squacco Heron	*Ardeola ralloides*	(v)
Little Egret	*Egretta garzetta*	(v)
Purple Heron	*Ardea pupurea*	(v)
Spoonbill	*Platalea leucorodia*	(v)
Glossy Ibis	*Plegadis falcinellus*	(v ?f)
Pink-footed Goose	*Anser brachyrhynchus*	(f)
Barnacle Goose	*Branta leucopsis*	(f)
Ruddy Shelduck	*Tadorna ferruginea*	(v or escape)
Blue-winged Teal	*Anas discors*	(v or escape)
Red-crested Pochard	*Netta rufina*	(v or escape)
Common Scoter	*Melanitta nigra*	(w-v or p-m)
Goldeneye	*Bucephala clangula*	(w-v)
Red-breasted Merganser	*Mergus serrator*	(w-v)
Buzzard	*Buteo buteo*	(p-m)
Osprey	*Pandion haliaetus*	(p-m)
Red-footed Falcon	*Falco vespertinus*	(v)
Merlin	*Falco columbarius*	(w-v p-m)
Crane	*Grus grus*	(v)
Avocet	*Recurvirostra avosetta*	(p-m)
Dotterel	*Charadrius morinellus*	(p-m)

Golden Plover	*Pluvialis apricaria*	(w-v p-m)
Grey Plover	*Pluvialis squatarola*	(p-m)
Knot	*Calidris canutus*	(p-m)
Sanderling	*Calidris alba*	(p-m)
Little Stint	*Calidris minuta*	(p-m)
Temminck's Stint	*Calidris temminckii*	(p-m)
Curlew Sandpiper	*Calidris ferruginea*	(p-m)
Dunlin	*Calidris alpina*	(p-m)
Jack Snipe	*Lymnocryptes minimus*	(p-m)
Bar-tailed Godwit	*Limosa lapponica*	(p-m)
Whimbrel	*Numenius phaeopus*	(p-m)
Curlew	*Numenius arquata*	(p-m)
Spotted Redshank	*Tringa erythropus*	(p-m)
Greenshank	*Tringa nebularia*	(p-m)
Green Sandpiper	*Tringa ochropus*	(p-m)
Wood Sandpiper	*Tringa glareola*	(p-m)
Common Sandpiper	*Actitis hypoleucos*	(p-m)
Turnstone	*Arenaria interpres*	(p-m)
Red-necked Phalarope	*Phalaropus lobatus*	(p-m)
Long-tailed Skua	*Stercorarius longicaudus*	(v)
Great Skua	*Stercorarius skua*	(v)
Mediteranean Gull	*Larus melanocephalus*	(v)
Little Gull	*Larus minutus*	(p-m)
Common Gull	*Larus canus*	(w-v p-m)
Lesser Black-backed Gull	*Larus fuscus*	(w-v p-m)
Herring Gull	*Larus argentatus*	(w-v p-m)
Great Black-backed Gull	*Larus marinus*	(w-v p-m)
Kittiwake	*Rissa tridactyla*	(p-m)

(For most Gull spp some records were of immatures which were present in summer)

Sandwich Tern	*Sterna sandvicensis*	(p-m)
Arctic Tern	*Sterna paradisaea*	(p-m)
Little Tern	*Sterna albifrons*	(p-m)
Whiskered Tern	*Chlidonias hybridus*	(p-m)
Black Tern	*Chlidonias niger*	(p-m)
Ring-necked Parakeet	*Psittacula krameri*	(f)
Short-eared Owl (bred in 1985)	*Asio flammeus*	(w-v)
Hoopoe	*Upupa epops*	(v)
Red-throated Pipit	*Anthus cervinus*	(v)

Black Redstart (last bred in 1985)	*Phoenicurus ochruros*	(p-m)
Redstart	*Phoenicurus phoenicurus*	(p-m)
Whinchat	*Saxicola rubetra*	(p-m)
Wheatear	*Oenanthe oenanthe*	(p-m)
Ring Ouzel	*Turdus torquatus*	(p-m)
Fieldfare	*Turdus pilaris*	(w-v p-m) [s]
Redwing	*Turdus iliacus*	(w-v p-m) [s]
Marsh Warbler	*Acrocephalus palustris*	(p-m) [s]
Firecrest	*Regulus ignicapillus*	(p-m) [s]
Pied Flycatcher	*Ficedula hypoleuca*	(p-m)
Brambling	*Fringilla montifringilla*	(w-v p-m) [s]
Siskin	*Carduelis spinus*	(w-v p-m) [s]
Twite	*Carduelis flavirostris*	(w-v)
Common Crossbill	*Loxia curvirostra*	(wanderer! has bred)
Hawfinch	*Coccothraustes coccothraustes*	(?resident has bred)

APPENDIX TWO

COMPARISONS OF BREEDING DENSITIES

The Table shows a comparison of the percentage of the total number of tetrads (613 Cambs) in which breeding was recorded (using categories 2 probable and 3 proven breeding) in Cambridgeshire and neighbouring counties and Oxfordshire which although somewhat dissimilar in overall topography is included since the survey was conducted more recently. Minimum inclusion level of 5% in Cambridgeshire. Arranged in descending order:

	Cambs 1988-92	Norfolk 1980-85	Hunts 1979-82	Beds 1968-77	Herts 1967-73	Oxon 1985-88
Skylark	85	95	96	91	84	92
Blackbird	83	96	99	94	98	99
Blue Tit	83	89	86	81	92	95
House Sparrow	82	91	98	90	94	88
Woodpigeon	81	89	95	83	88	93
Wren	81	90	91	89	88	97
Dunnock	74	92	93	98	89	93
Starling	74	90	95	89	95	91
Chaffinch	74	89	86	78	86	98
Song Thrush	72	92	96	92	97	84
Greenfinch	68	76	87	82	87	84
Yellowhammer	67	85	88	85	85	95
Pheasant	66	85	91	63	70	80
Robin	66	90	87	88	93	96
Swallow	62	88	86	62	88	71
Willow Warbler	57	75	71	70	84	94
Linnet	56	64	91	73	77	59
Mallard	52	53	72	38	50	53
Great Tit	51	85	78	70	87	93
Goldfinch	50	68	78	61	74	58
Moorhen	49	76	81	58	67	62
Turtle Dove	48	66	88	56	68	39
Whitethroat	48	50	70	56	80	74
Collared Dove	47	35	72	37	32	77
Blackcap	46	42	63	54	74	82
Reed Bunting	46	26	79	54	50	39
Carrion Crow	43	20	63	38	67	74
Corn Bunting	43	6	47	48	49	50
Kestrel	39	31	55	24	35	30
Sedge Warbler	39	32	51	28	35	25
Cuckoo	38	67	61	54	57	72
House Martin	38	70	57	50	78	62
Magpie	38	22	18	25	51	73
Yellow Wagtail	35	13	39	16	8	31
Bullfinch	35	37	68	60	75	52
Red-legged Partridge	33	78	89	52	44	52
Jackdaw	32	20	49	34	51	66
Chiffchaff	32	50	47	52	76	74

	Cambs 1988-92	Norfolk 1980-85	Hunts 1979-82	Beds 1968-77	Herts 1967-73	Oxon 1985-88
Mistle Thrush	31	51	47	39	65	68
Long-tailed Tit	31	31	45	38	31	48
Lesser Whitethroat	30	17	41	36	36	51
Pied Wagtail	28	34	60	37	42	38
Stock Dove	27	26	56	27	40	58
Swift	27	44	41	24	43	32
Reed Warbler	27	22	39	13	12	11
Rook	27	20	42	41	72	60
Spotted Flycatcher	26	35	70	42	80	49
Lapwing	23	40	74	44	45	52
Meadow Pipit	23	20	24	14	12	8
Tree Sparrow	21	22	66	55	70	22
Mute Swan	20	15	22	14	17	17
Grey Partridge	20	30	32	40	50	35
Redpoll	20	22	40	29	28	1
Coot	19	21	28	24	19	28
Garden Warbler	19	23	41	31	43	45
G.S Woodpecker	18	23	26	21	30	49
Tawny Owl	17	29	46	40	53	37
Great-crested Grebe	15	7	15	10	5	8
Sparrowhawk	15	3	2	2	3	22
Goldcrest	15	35	20	26	39	39
Treecreeper	15	20	32	26	40	39
Tufted Duck	13	13	23	12	6	11
Coal Tit	13	27	27	24	46	34
Kingfisher	12	6	11	10	12	13
Little Owl	11	10	32	19	38	32
Jay	11	27	27	19	39	31
Canada Goose	9	9	9	6	2	18
Nuthatch	9	18	7	11	27	26
Snipe	8	17	13	6	7	5
Barn Owl	8	10	9	8	12	6
Green Woodpecker	8	12	31	17	25	39
L.S. Woodpecker	8	9	21	12	14	10
Little Grebe	7	6	13	11	14	16
Hobby	7	1	1	2	2	3
Redshank	7	9	10	5	3	5
Nightingale	7	14	15	15	16	6
Grasshopper Warbler	7	8	11	20	25	8
Marsh Tit	7	16	29	20	28	31
Shelduck	5	13	6	-	-	-
Sand Martin	5	8	10	9	12	3
Grey Wagtail	5	3	2	2	9	7

Reasons for low overall Cambridgeshire figures

The percentage breeding distribution figures for common birds in Cambridgeshire particularly those at the top of the table, are almost invariably around 10% lower than those for the other counties quoted. There are several possible reasons for this phenomenon.

1. It may be due to a less intensive coverage in Cambridgeshire, but this seems unlikely.

2. It may be a reflection of a recent nationwide diminution of the population of common birds in the countryside since most of the other surveys were conducted some time ago, however, the data from the Oxfordshire Atlas, which was the most recent, would not support this view.

3. The most likely explanation is the inhospitability of the large areas of open fenland farmland which comprise around 30% of the total area of the county. When this area is excluded most of the common species produce figures more comparable to those of neighbouring counties.

Differences between counties

Most of the differences in the table, allowing for the above effect of the 'fenland dilution factor', are reflections of the differing topography and/or the changes that have taken place in the status of certain species that have been documented nationally (Marchant et al 1990) such as Sparrowhawk, Tree Sparrow, Song Thrush etc.

A few species do comparatively well in Cambridgeshire, Great Crested Grebe, Mute Swan, Kestrel, Meadow Pipit, Sedge Warbler, and Reed Warbler being the best examples, and of these most are well provided for within the county in the ditches, small reedbeds and drains.

The shortage of woodland is responsible for the poor figures for many species (Willow Warbler, Great Tit, Jay etc) likewise the diminishing grassland (Rook, Lapwing etc).

Comparison with Huntingdonshire

In general the most surprising feature of the comparisons is the very high percentage distribution of most species in neighbouring Huntingdonshire which also has a (small) part of fenland. The most likely explanation for that phenomenon is that Huntingdonshire is, topographically, a more homogeneous county, with more woodland within its area of fenland (Holme Fen, Woodwalton Fen) and no relatively dry area such as the Cambridgeshire chalk. Some effects will be due to the fact that the Huntingdonshire survey was conducted ten years earlier than the Cambridgeshire survey and there is also the possibility that, the county being smaller, the organisers achieved a better coverage.

APPENDIX THREE

ESTIMATES OF THE BREEDING POPULATION AND 10 KM SQUARE DENSITIES FOR COMMON SPECIES

The table below is set out to show how the final estimated figure was arrived at.

Column 1. is the number of 10 km squares in which breeding was probable/ proven.

Column 2. is the number of TETRADS in which breeding was probable/ proven.

Column 3. is the estimated number of pairs per occupied TETRAD.

Column 4. is the approximate total number of pairs in the county.

Column 5. is the estimated density of pairs per occupied 10km square in Cambridgeshire with those given by Sharrock in the 1968-72 National Atlas in brackets for comparison.

	No 10kms	No Tetrads	Prs/ tetrad	total prs	10 km density	
Little Grebe	18	43	2	86	5	(5-10)
Great Crested Grebe	16	92	1.5	138	9	(4-5)
Mute Swan	19	123	1	123	7	(2-3)
Canada Goose	19	54	2	108	6	(14-16)
Mallard	24	319	4	1276	53	(25-50)
Tufted Duck	21	80	1	80	4	(3-4)
Sparrowhawk	18	94	1	100	5	(5-8)
Kestrel	24	239	1	239	7-10	(28-30)
Red-legged Partridge	24	205	10	2000	80	(100-200)
Partridge	23	122	5	610	26	(250)
Pheasant	24	405	10	4000	160	(160)
Moorhen	24	301	5	1500	60	(90)
Coot	22	117	4	500	25	(34-40)
Lapwing	24	141	3	432	18	(60-70)
Snipe	16	49	5	245	15	(25-35)
Redshank	14	43	1.5	65	5	(20-25)
Stock Dove	24	166	4	664	27	(50-100)
Woodpigeon	24	497	45	22365	938	(1000)
Collared Dove	24	289	8	2312	96	(25-30)
Turtle Dove	24	293	4	1152	48	(100)
Cuckoo	24	235	1.5	352	14	(5-10)
Barn Owl	15	49	1	49	3	(2-4)
Little Owl	17	68	1.5	102	5	(5-10)
Tawny Owl	20	102	1.6	160	8	(10-20)
Swift	24	164	10	1640	64	(33)
Kingfisher	20	71	1	80	4	(3-5)
Green Woodpecker	14	51	1.5	76	5	(10-20)
G.S. Woodp	21	111	1.5	167	8	(15-20)

	No 10kms	No Tetrads	Prs/ tetrad	total prs	10 km density	
L.S. Woodp	16	48	1.25	60	4	(5-10)
Skylark	24	516	37	19200	800	(500-1000)
Swallow	24	381	10	3810	159	(260)
House Martin	24	230	10	2300	106	(100-200)
Meadow Pipit	23	143	8	1156	50	(1000)
Yellow Wagtail	22	213	2.5	550	25	(25)
Pied Wagtail	24	165	4	676	30	(150)
Wren	24	498	60	29880	1245	(3000)
Dunnock	24	455	47	21600	900	(1500)
Robin	24	405	53	21600	900	(1500)
Nightingale	14	43	1	43	3	(10-20)
Blackbird	24	508	56	28448	1185	(2000)
Song Thrush	24	440	30	13200	550	(1000)
Mistle Thrush	24	187	4	778	32	(100-200)
Grasshopper Warbler	20	43	1.5	64	3	(10)
Sedge Warbler	24	242	8	1936	80	(100)
Reed Warbler	23	165	12	1980	86	(50-100)
Lesser Whitethroat	23	188	2	376	16	(25-50)
Whitethroat	24	297	7	2304	96	(200)
Garden Warbler	23	115	3	345	15	(30-50)
Blackcap	24	279	8	2208	93	(100)
Chiffchaff	22	199	6	1194	54	(100)
Willow Warbler	24	347	25	8675	361	(1000)
Goldcrest	18	90	15	1350	75	(500)
Spotted Flycatcher	24	162	2	324	14	(30)
Long-tailed Tit	23	189	4	756	33	(50)
Marsh Tit	8	40	3	120	15	(50-100)
Coal Tit	18	78	11	828	46	(350)
Blue Tit	24	507	47	24640	1000	(2000)
Great Tit	24	302	31	9600	400	(1000)
Nuthatch	11	47	1.5	78	6	(20)
Treecreeper	18	93	4	369	20	(50-100)
Jay	20	64	3	192	10	(50)
Magpie	24	234	4	936	39	(100)
Jackdaw	24	199	15	2985	124	(160)
Rook	24	168	30	5040	210	(480)
Carrion Crow	24	264	3	792	32	(250)
Starling	24	452	47	21244	900	(1000-2000)
House Sparrow	24	504	47	24000	1000	(1000-2000)
Tree Sparrow	24	130	4	520	21	(150)
Chaffinch	24	452	42	19200	800	(2000)
Greenfinch	24	415	15	6225	259	(300-500)
Goldfinch	24	309	4	1206	51	(100)
Linnet	24	345	15	5175	280	(300-500)
Redpoll	23	121	4	484	21	(100)
Bullfinch	23	212	7	1484	64	(200)
Yellowhammer	24	410	10	4100	170	(300)
Reed Bunting	24	239	6	1434	59	(300)
Corn Bunting	24	242	4	968	40	(24)

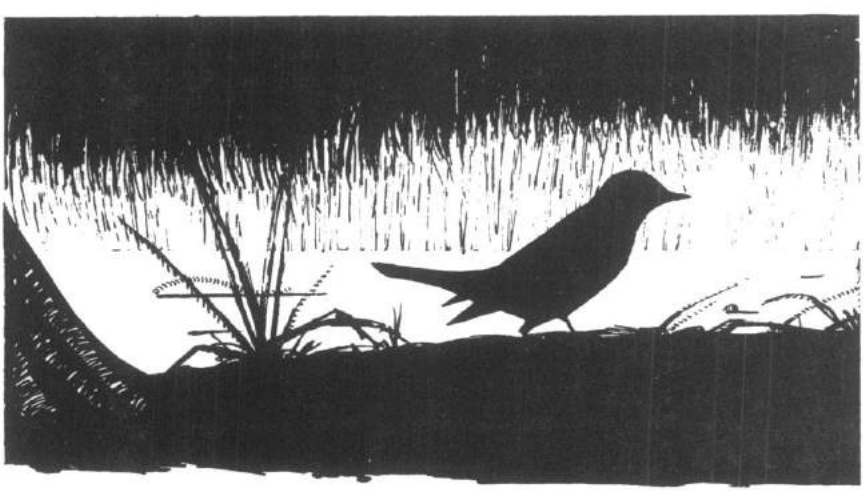
COMMENT

Methods of calculation.
The figures in column 1 & 2 are from the data presented in this book. The one conjectural figure is that in column 3 (estimated pairs per occupied tetrad). This figure, which determines the figures in the other two columns, is an estimate based on fieldwork, detailed study of maps and taking into account recent data from the Cambridge Bird Club records.

Low figures for Cambridgeshire.
The figures for Cambridgeshire show a much lower estimated density than national figures drawn, for this purpose, from Sharrock's estimates in the 1968-72 National Atlas. There are some exceptions, mostly wetland species: Great-crested Grebe, Mute Swan, Mallard, Yellow Wagtail, Reed Warbler and Corn Bunting.

The reasons for low figures in the county are a) small amounts of woodland, lack of hedgerow in the north and paucity of urban and suburban habitat and b) national declines in certain species such as Tree Sparrow, Song Thrush, Spotted Flycatcher etc.

Warnings!
First, these figures must be interpreted with some caution since they hang upon the breeding density per tetrad figure which is itself only an ESTIMATE. Secondly, while we have used the number of tetrads in which the birds were recorded breeding, it must be remembered that this was over a *five-year period* and as some species will not have occupied a tetrad in every year this may lead to an OVER-ESTIMATE.



Nightingale

APPENDIX 4

LIST OF SITES OF ORNITHOLOGICAL INTEREST

This list contains sites that are, or may be, of ornithological interest in old Cambridgeshire arranged in alphabetical order of parish. It includes Sites of Special Scientific Interest (SSSI's) and Nature Reserves (NR's).

NOTE
Most of these sites are private property with no right of access for the general public; where the site is open to the public there is an asterisk before its name.

Parish	Site	Grid Ref	10km square
Abington Piggotts	Downhall Wood	305438	TL 35
Arrington	Decoy Pond Wood	318522	TL 35
Babraham	*Roman Road SSSI	526521	TL 55
	Signal Hill Plantation	516515	TL 55
	Copley Hill Plantation	510530	TL 55
	Chalk Pit Plantation	516506	TL 55
	Reservoir	520508	TL 55
	Meg's Mount New Wood	511523	TL 55
	Babraham Hall (parkland)	514607	TL 55
Balsham	Balsham Wood	588496	TL 54
Balsham/Fulbourn	*Fleam Dyke SSSI, NR	537557	TL 55
Barrington	Barrington Pit	383492	TL 34
	Cement Pit	395508	TL 35
	Hill Plantation	376508	TL 35
	Clunch Pit	379506	TL 35
	*Bulbeck Mill Wood and Meadows NR	395494	TL 34
	Bartlow disused railway	590449	TL 54
Barton	Rifle Range	409569	TL 45
Benwick	River Nene/Whittlesey Dyke	341937	TL 39
Bottisham	Hall (parkland)	550615	TL 56
	Street Way/Heath Road	572586	TL 55
Bottisham-Horningsea	Lower Cam Washes	505649	TL 46/56
Bourn	Airfield Wood	345586	TL 35
	Crow Dean Lane Wood	317596	TL 35
	wood	316557	TL 35
	Bourn Wood	313556	TL 35

Parish	Site	Grid Ref	10km square
Boxworth	Honeyhill Wood	352606	TL 36
	New Wood	341612	TL 36
	Grange Moat Wood	348638	TL 36
	*Overhall Grove SSSI, NR	337630	TL 36
Brinkley	Brinkley Wood	615554	TL 65
Burrough Green	Park Wood SSSI	641546	TL 65
	Out Wood/Plunder Wood SSSI & Sparrow's Grove	660549	TL 65
Burwell	disused brick pit	577699	TL 56
	disused clay pit	607685	TL 66
	Reach Lode	565664	TL 56
	Caldecote Stinnage's Wood	348580	TL 35
Cambridge	*Botanic Garden	455573	TL 45
	*Coe Fen	448574	TL 45
	*Paradise NR	446573	TL 45
	*Coldham's Common	476586	TL 45
	chalk pits	480573	TL 45
	*Hobson's Brook	454569 - 455557	TL 45
	Bird Sanctuary	437587	TL 45
	Bolton's Pit	435575	TL 45
	Trinity & St John's Fellows gardens	443585	TL 45
	*Grantchester Meadows	440570	TL 45
Carlton	Lopham's Wood	653516	TL 65
	Carlton Wood	655530	TL 65
Castle Camps (Camps End)	Langley Wood SSSI	607424	TL 64
Chatteris	Block Fen Pits	432835	TL 48
	Golf Course	411850	TL 48
Cherry Hinton	The Brook	473594 - 484567	TL 45
	*The Spinney NR	487560	TL 45
	Cement Pits	478575	TL 45
Cheveley	Long Hill	655640	TL 66
	Blackthorn Wood	689591	TL 65
	Brakebed Wood & Park	675616	TL 66
	Bushy Wood	690592	TL 65
	Castle Wood	678613	TL 66
	Gorse Covert/Nutting Grove	696597	TL 65
	Old Hollow Ash Wood	669632	TL 66
	Osier Wood	689593	TL 65
	Warren Hill	660632	TL 66

Parish	Site	Grid Ref	10km square
Chippenham	Heath Plantation	681694	TL 66
	Isleham Plantation	658711	TL 67
	Mixed Plantation	676693	TL 66
	Red Lodge Plantation	672697	TL 66
	River Kennett	679708	TL 67
	Stannel Wood	673691	TL 66
	Chippenham Park	66-69-	TL 66
	*Chippenham Fen NR	648697	TL 66
Chrishall Grange	woodland-farmland	455425	TL 44
	*Icknield Way	444424	TL 44
Conington	Conington Hall	319665	TL 36
Cottenham	Gravel Pits	478707	TL 47
	Cottenham Lode	478709 - 435684	TL 46/47
	Old West River	480711	TL 47
Croydon	Gilrag's Wood	299477	TL 24
	Rouse's Wood	310477	TL 34
	Wilds	303512	TL 35
Croxton	Turtlow Plantation	262590	TL 25
	Croxton Park	256595	TL 25
Dry Drayton	Blackthorn Spinney	368614	TL 36
Dullingham	disused gravel pit	608581	TL 65
	Great Widgham Wood	665553	TL 65
	Little Widgham Wood	662556	TL 65
	Dullingham House Park	625584	TL 65
Earith-Welney	*The Ouse Washes SSSI NRs (part in old Cambs)	398756 - 527915	TL 39/59
Elm	Guyhirn Heronry	378013	TF 30
Eldernell	access to Nene Washes	318991	TL 39
	disused gravel pit	311989	TL 39
Elsworth	Swansley Wood	305608	TL 36
	Elsworth Wood	313617	TL 36
Eltisley	woodland	275587	TL 25
Ely	*Roswell Pits NR	550805	TL 58
	River Washes various	538770	TL 57
	do	545793	TL 57
	Beet Factory settling-beds	562804	TL 58
	*Chettisham Meadow SSSI NR	541830	TL 58

Parish	Site	Grid Ref	10km square
Fen Drayton	Gravel Pit complex	336697	TL 36
	Fen Drayton/Swavesey/Over River Ouse	343705	TL 37
Fordham	Abbey Woods	632695	TL 66
	*Hall Yard Wood SSSI NR	634695	TL 66
Fowlmere	*Watercress beds SSSI NR	406454	TL 44
Fulbourn	*Woods and Meadows SSSI NR	539560	TL 55
	disused railway	541543	TL 55
	Fulbourn/Teversham/Little Wilbraham Fen(s)	517581 - 515595	TL 55
Gamlingay	brick pits	231513	TL 25
	Great Heath Wood	226512	TL 25
	sewage works	231510	TL 25
	*Cinques Common NR	226529	TL 25
	*Gamlingay Wood NR	242535	TL 25
Girton	pit beside A1307	416616	TL 46
Grantchester	*Byron's Pool	436546	TL 45
	*Riverside Meadows	435560	TL 45
Great Abington	Abington Park	525493	TL 54
	Bush Park	519462	TL 54
Abington/Hildersham	railway line	543474	TL 54
Great Chishill	Barnard's Wood	436386	TL 43
	Monkshole Wood	435380	TL 43
Gt Chishill/Heydon	*Icknield Way	415419	TL 44
Great Eversden	Eversden Wood SSSI	345532	TL 35
Great Shelford	Gog Magog Golf Course SSSI	490540	TL 45
	*Nine Wells	461542	TL 45
	*Beechwoods NR	485545	TL 45
	King's Mill	457515	TL 45
Great Wilbraham	Gt Wilbraham Common	535576	TL 55
Guilden Morden	Hook's Mill Woods	270453	TL 24
Guyhirn-Stanground	Nene Washes	398029 - 201978	TF30/TL29
Haddenham-Cottenham	Old West River	437721	TL 47

Parish	Site	Grid Ref	10km square
Haddenham	meadows and ponds	458769	TL 47
	ponds and wood	467763	TL 47
Hardwick	Hardwick Wood NR	354575	TL 35
Harlton	Clunch Pit Wood	390520	TL 35
Harlton/Haslingfield	Lord's Bridge	395544	TL 35
Harston	pit	421519	TL 45
	Mill	418508	TL 45
Haslingfield	Haslingfield Pit	409518	TL 45
	Lord's Bridge railway	395544	TL 35
	Cam meadows	432534	TL 45
Hatley	disused railway line	261520	TL 25
	Buff Wood SSSI	281504	TL 25
	Hatley Park	275510	TL 25
Hauxton	Gravel Pits	435519	TL 45
	Mill	432528	TL 45
Heydon-Chishill	*Icknield Way	415419	TL 44
	Heydon chalk pit/farmland	432409	TL 44
	Heydon Grange Golf Course	419424	TL 44
Hildersham	Hildersham Wood SSSI	535457	TL 54
	Hall Grounds	539485	TL 54
	alder carr	544487	TL 54
	Furze Hills SSSI NR	554484	TL 54
	*Roman Road (see Fulbourn)		
Hinxton	Mill	493453	TL 44
Horningsea-Waterbeach	Lower Cam Washes	505649	TL 56
Horseheath	Horseheath Lodge Woods	593475	TL 54
	grassland and pond	623475	TL 64
Ickleton	Ickleton Mill	497440	TL 44
	Grange-farmland, woodland	463424	TL 44
	Coploe Hill-scrub	493426	TL 44
Impington	Lake by the A45	450620	TL 46
Isleham	River Lark and banks	647758	TL 67

Parish	Site	Grid Ref	10km square
Kennett	Gravel Pit	685687	TL 66
	Hall woodland	701689	TL 76
	disused gravel pit	709682	TL 76
	Half Moon Plantation	791688	TL 76
Kingston	*Bourn Brook NR	356557	TL 35
	Kingston Wood SSSI	325540	TL 35
Kirtling	Lucy Wood	685569	TL 65
	Tower's Wood Moat	686574	TL 65
	Banstead's Wood	703548	TL 75
Knapwell	Knapwell Wood NR	331608	TL 36
	Childerley Hall	356617	TL 36
Landbeach	Landbeach Gravel Pits	489680	TL 46
Landwade	Hall Park	623676	TL 66
Linton	Mill and meadows	565465	TL 54
	Barham Hall Plantation	572461	TL 54
	Borley Wood	580486	TL 54
	Rivey Wood	565478	TL 54
	wood	565464	TL 54
	Cow Gallery Wood	551475	TL 54
	alder carr SSSI	543459	TL 54
Litlington	*track - Street Way	315420	TL 34
Little Abington	chalk pit	530500	TL 55
Little Chishill	wood	424370	TL 43
Little Downham	*Chettisham Meadows SSSI	537836	TL 58
	open grassland and scrub	526823	TL 58
Little Gransden	*Hayley Lane	293530	TL 25
	*Hayley Wood SSSI NR	291529	TL 25
Littleport	River Little Ouse	622892	TL 68
	disused brick pit	566853	TL 58
	River Ouse washes	576864	TL 58
	access to Ouse Washes		
Little Shelford	deciduous wood	460513	TL 45
	Maggots Hill Copse	440506	TL 45
Little Thetford	River Cam washes	536757	TL 57

Parish	Site	Grid Ref	10km square
Lode	disused pit	452650	TL 46
	pond	520627	TL 56
	*Anglesey Abbey (Nat.Trust)	530620	TL 56
Longstowe	Longstowe & Bourn Woods	314555	TL 35
Madingley	Hall Park	395605	TL 36
	Madingley Wood	401596	TL 45
	Lady bush Close Wood	411604	TL 46
	Madingley Brick Pits SSSI	404615	TL 46
	wood	401596	TL 45
Manea	Colony Pits	512918	TL 59
	Purl's Bridge Pits	478871	TL 48
	pit	482891	TL 48
	access to Ouse Washes NR		
	*Welches Dam	468860	TL 48
March-Benwick	River Nene	390964	TL 39
March	Whitemoor Railway Pits	408004	TF 40
	*Norwood Road NR	417980	TL 49
	Gray's Moor Pits	414005	TF 40
Melbourn	Bury-meadows woodland etc	375440	TL 34
Mepal	Gravel Pits beside A142	425830	TL 48
	Fortrey's Hall Heronry	443825	TL 48
	access to Ouse Washes	440813	TL 48
Milton	*Gravel Pits/Country Park	480620	TL 46
	Sewage Farm	475615	TL 46
	Chesterton Fen	482612	TL 46
Newmarket	*Devil's Dyke SSSI	610621	TL 66
	Warren Hill Wood	660637	TL 66
Oakington	Airfield-scrub	410650	TL 46
Odsey	Odsey railside wood	293384	TL 23
	Hall-parkland	294379	TL 23
Orwell	Clunch Pit SSSI	364506	TL 35
	*Mare Way	358523	TL 35
Over	Mare Fen	382712	TL 37
	Lode NR	388733	TL 37
Oxlode	access to Ouse Washes	485861	TL 48

Parish	Site	Grid Ref	10km square
Pampisford	Hall-parkland	509485	TL 54
	meadows	518492	TL 54
	West Green Plantation	490485	TL 44
Papworth Everard	wood & scrub	288632	TL 26
	*Papworth Wood SSSI NR	290630	TL 26
Papworth St Agnes	Ermine St. Wood	271654	TL 26
	Lettenbury Hill Wood	268660	TL 26
Pymore	access to Ouse Washes NR	501881	TL 58
Rampton	*Giant's Hill	431680	TL 46
Reach	*Devil's Dyke (see Burwell)		
	Reach Lode	547689	TL 56
	disused railway	572650	TL 56
Sawston	Hall-meadows SSSI & woods	490488	TL 44
	Deal Grove	486502	TL 45
	Dernford Fen SSSI	473505	TL 45
Shepreth	Corner Pits	398475	TL 34
	*L-Moor NR	385475	TL 34
Shingay-cum-Wendy	Rouse's Wood	310477	TL 34
Six Mile Bottom	Hare Park	583595	TL 55
	farmland –		
	Weston Colville	580560 – 610540	TL 55-65
Snailwell	Poplar plantation	636675	TL 66
	wood with moat	640677	TL 66
	meadows SSSI	638678	TL 66
Soham	*Greenhills NR	609723	TL 67
	Clay Pits	607773	TL 67
	disused pits	590712	TL 57
	East Fen Common	602732	TL 67
	meadows and ponds	585738	TL 57
	North Horse Fen Common	588760	TL 57
	Qua Fen Common	598740	TL 57
	*meadows reserve SSSI	612725	TL 67
Stapleford	chalk pit scrub	486528	TL 45
	Gogs Chalk pit	484539	TL 45
	*Wandlebury/Magog Trust	495535	TL 45

Parish	Site	Grid Ref	10km square
Steeple Morden	Morden Grange Plantations	305396	TL 33
	Gatley End & Cheney Water	296409	TL 24
Stetchworth	Park	642595	TL 65
	Basefield Wood	650570	TL 65
	Combers Wood	652578	TL 65
	Little Chittlings Wood	656575	TL 65
	Marmers Wood	645574	TL 65
	Pickmore Wood	653582	TL 65
Stetchworth-Newmarket Heath		613619	TL 66
Stow-cum Quy	*Quy Fen SSSI	515628	TL 56
Stetham/Wicken	Cam Washes (Dimmock's Cote)	537723	TL 57
	River Old West washes	502721	TL 57
Sutton	flood meadows	398758	TL 37
	Sutton Gault	435905	TL 49
Swaffham Bulbeck	Sanger Wood (new planting)		
	Swaffham Bulbeck Lode	522671	TL 56
Swaffham Prior	House parkland	565638	TL 56
Swaffham Prior/Upware	Cam Washes (Upware)	530692	TL 56
Swavesey	Swavesey Lode	350693	TL 36
	*Mare Fen NR	358693	TL 36
	reedbed & scrub	361695	TL 36
Tadlow	River Cam & meadows	283464	TL 24
Teversham	Teversham Fen (see Fulbourn)		
	Airport - grassland	495579	TL 45
Thriplow	Townsends Spring Wood	438469	TL 44
	The Moor	460482	TL 44
	*Meadows SSSI NR	437470	TL 44
Tydd St. Giles	North Level Drain	451177	TF 41
	River Nene bank	464165	TF 41
	Foul Anchor	466178	TF 41
Upware	North Pit SSSI	548725	TL 57
	Commisioner's Pit	539709	TL 57
	Cam Washes (see Swaffham Prior)		

Parish	Site	Grid Ref	10km square
Waterbeach	Gravel Pits (Landbeach Marina)	480680	TL 46
	Cam Washes	52-68-	TL 56
	Lower Cam Washes	505649	TL 56
Wentworth	wood	476785	TL 47
Westley Waterless	Cambridge Hill	602572	TL 65
	Hungry Hill Plantation	598572	TL 55
	Ladies Grove/Hay Wood	622558	TL 65
Weston Colville	Great Covens/ *Lower Wood NR	625528	TL 65
	Hill Crofts	618526	TL 65
	pit	604535	TL 65
Westwick	Hall Farm parkland	420654	TL 46
West Wickham	Leys Wood	628492	TL 64
	Cadges Wood	640494	TL 64
	disused chalk pits	601492	TL 64
	Hare Wood	622479	TL 64
	Over & Lawn Woods SSSI	634484	TL 64
Whaddon	Wimpole basin	336484	TL 34
Whittlesey	Waterfall Pit	234974	TL 29
	Decoy Farm Pits	288985	TL 29
	McCain's Pit	237968	TL 29
	King's Dyke Pit	240976	TL 29
	Turning Tree Bridge Pits	284956	TL 29
	Bassenhally Pit SSSI	286985	TL 29
	*Latersey LNR	282966	TL 29
Whittlesford	Raynor's Grove	466486	TL 44
	Ash Plantation	446485	TL 44
	Gravel Pits	464494	TL 44
	Park Wood SSSI	470488	TL 44
	Mill	478485	TL 44
Wicken	*Wicken Fen NR (Nat Trust)	555700	TL 57
Wilburton	*Dog House Grove NR	481745	TL 47
Willingham	Belsar's Hill	422702	TL 47
Wimblington	Gravel Pits	437910	TL 49
Wimpole	*Hall parkland (Nat Trust)	332517	TL 35
	belts	340524	TL 35
	Cobbs Wood	348515	TL 35

Parish	Site	Grid Ref	10km square
Wisbech St. Mary	reedbed & pond	382053	TF 30
Witcham	Hythe Barn Green Lane	460815	TL 48
Wood Ditton	Link's Covert	635609	TL 66
	*Ditton Park Wood	666569	TL 65
	Charcoals Wood	658576	TL 65

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TL 29
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If there is any person who contributed to the Atlas whose name does not appear on this list please accept my apologies.

In the course of the project many people offered help but I have included in this list only those people from whom I have received data.

Some additional information was taken from the Cambridge Bird Club records.