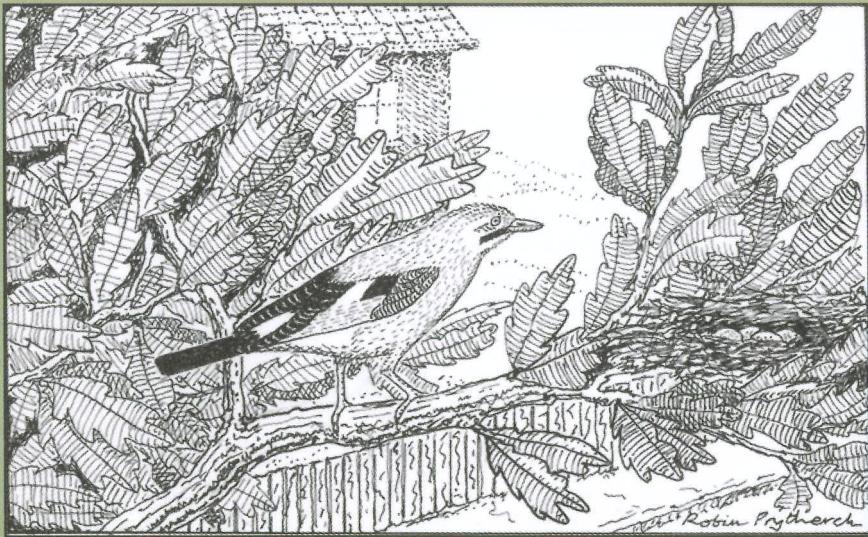


BRISTOL ORNITHOLOGY

THE JOURNAL OF THE BRISTOL ORNITHOLOGICAL CLUB



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The Breeding Season Atlas of the Birds of Bristol 2000-2008
Paradise lost: the palaeornithology of the Avon wetlands

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Cover: Jay *Garrulus glandarius* approaching its well hidden nest (RJP).

Preface

The bulk of this issue is given over to two papers on the birds of our local area. The atlas of the birds of the city of Bristol is the result of a survey carried out from 2000 to 2008 by a relatively small group of people. Almost every tree and bush in the City must have been scrutinised during the study and it was only difficulty of access that prevented full coverage. The resulting paper by Richard Bland and John Tully is impressive and a credit to all those who took part.

The paper by Matthew Rogers looks back a lot farther, to the Middle Ages, to look at the possible status of the wetland birds of that period. Then, wetlands were more widespread and even the line between wet land and dry land was much less certain than it is now. He paints a vivid picture of how it was then and also the changes that have happened to the wetlands and birds that lived in them.

With this issue we have adopted the latest version of the British List as published by The British Ornithologists' Union, using the vernacular names. The taxonomy of birds is under constant review and the results of ongoing DNA analysis. Changes to the order of the non-passerines have been with us for several years and now changes to the order of the passerines have been made. This is a substantial 'shuffle' which, we hope, will settle into usage for many years to come, although there will doubtless be some minor changes.

Jane Cumming, Lyndon Roberts and Robin Prytherch
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ISSN 0950-2750. Published by the Bristol Ornithological Club, 2010 (c/o 23 Caledonia Place, Clifton, Bristol BS8 4DL). Printed by C&S Print Services Ltd, Weston-super-Mare, N. Somerset.

The Breeding Season Atlas of the Birds of Bristol 2000-2008

R.L. Bland and J. Tully

Introduction

In 2000 a decision was taken to carry out a standard British Trust for Ornithology (BTO) Breeding Bird Survey (BBS) in every one km square in the city of Bristol. 113 squares were surveyed, and four squares, in Avonmouth Docks, (ST5177, ST5180, ST5078 and ST5079), to which there is no public access, were visited with permission once annually 2003-2008, but the BBS system was not used here. The BBS method is to walk two parallel 1000 metre transects through a one-km square, counting every bird seen or heard using the square, and to do this twice between 1 April and 30 June, once before 15 May and once after. The primary object of the methodology is to measure population change in common species from year to year, but it can also be used to estimate actual populations. The transects are as straight as can be achieved, and there is no attempt to seek out specific habitats, or to try to identify every species in the square.

The maps that illustrate the species distribution use a standard measure of frequency, the rate per hour at which birds are seen. This measure ensures that squares can be compared from year to year, and with each other. Because some birds are very obvious, whereas others are very elusive, the rate-per-hour does not show population differences, but it does show where species are concentrated.

Although every square was visited at least four times, and had a minimum of one hour of observation, 31 squares (27%) were visited 18 times, and had as much as 31 hours of observation. The total time spent was 976 hours. 180,290 birds were counted at a rate of 185 per hour. 31 observers, listed at the end, have contributed to this study, which continues to monitor change. The greatest difference that spending more time creates is to increase the number of species detected, but it may tend to reduce the overall rates, partly through the operation of chance factors, and partly reflecting changes in the population of the square over time. Figure 1 demonstrates that three hours of observation ensures that two thirds of the breeding population will be found. The maps (Figure 2) indicate the squares that had the least time spent, and those with the most.

Overall rates varied from 54 birds an hour in ST5279, in Avonmouth, a square with hardly any public access, to 376 an hour in ST5972, the city centre, with an overall city average in all squares of 185 birds an hour.

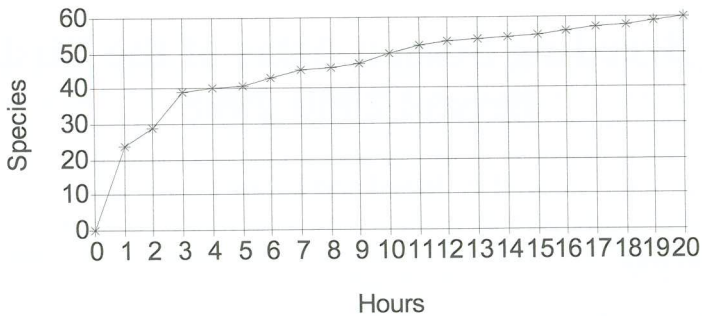


Fig. 1 Number of species seen compared with time spent per square.

Total species recorded by the survey were 96, of which 72 definitely bred, 19 were migrants or vagrants, and 5 were summering non-breeders. Of the 72 breeding species, 22 species were universally distributed, and 38 used specialist habitats, mainly water or woodland.

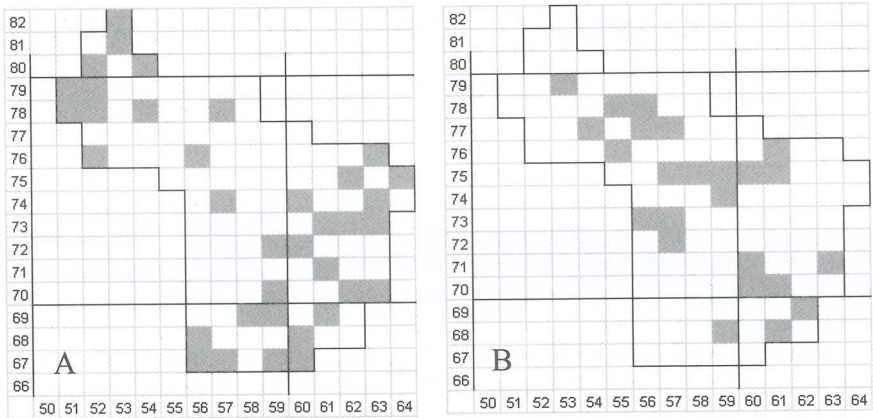


Fig. 2 A Squares, shaded, where coverage was three hours or less. B Squares, shaded, where coverage was 15 hours or more. The outlined area of one km. squares indicate Bristol and the 113 squares surveyed (see also Fig. 4).

Because 80 squares had three or more hours of observation, and the survey provided accurate figures for the frequency of observation as a rate per hour, it is possible to say with confidence that the distribution figures for all common species are accurate. There were four species whose distribution may have been under-estimated, Sparrowhawk (scientific names are given in the Species List), Great Spotted Woodpecker, Stock Dove and Pied Wagtail. The 33 squares that

had less than three hours time spent were inevitably those that had the least varied habitats, and their average numbers of species per square was 28.6. By contrast the 33 squares that had the most time spent had an average of 40.6 species a square. The average number of species per square overall was 34.6. This is similar to the average number per tetrad found in the current (2007 to 2011) BTO Atlas.

There were also a number of species which were proved to breed but were not found during the formal surveys. In particular, the species seen in the parts of Avonmouth Docks covering four squares (mentioned earlier), have been added to the maps and are commented on.

Weather and population

Every species will react to weather variations in its own way, but in general cold winters cut over-winter survival, especially of the smallest species, and cold and wet summers can damage the breeding-season, and hence productivity, especially of species that are single brooded. The years 2000-2008 saw a succession of mild winters, and all were above the long-term average of 7.5°C except for 2006-7 (Table 1). Two summers, 2003 and 2006 were more than 2°C above the long term average, and three, 2002, 2007 and 2008 were 0.8°C below. These latter two summers were also exceptionally wet with over 35% above normal rainfall, and both had very poor breeding seasons for some species. 2003 was drier than average, 2000, 2007 and 2008 were seriously wet years, with flooding in some parts of the country.

Table 1 Seasonal temperature and rainfall 2000-2008. *Av long* = long term average (in Bristol since 1853).

Temp °C						Rain mm					
	Wi	Sp	Su	Au	Yr		Wi	Sp	Su	Au	Yr
2000	8.8	13.1	20.3	14.3	14.1	2000	104	96	75	156	1250
2001	8.0	12.5	20.1	15.0	13.8	2001	89	68	83	73	832
2002	8.8	13.5	19.4	14.8	14.2	2002	98	67	64	101	1058
2003	7.7	14.9	22.2	15.1	15.0	2003	74	49	67	52	759
2004	8.3	13.5	20.6	14.6	14.3	2004	106	62	69	94	945
2005	8.3	13.1	20.9	15.2	14.3	2005	61	60	56	113	896
2006	7.1	12.7	22.4	16.1	14.6	2006	61	89	61	103	952
2007	9.0	14.9	19.4	14.9	14.5	2007	123	112	77	55	1107
2008	9.1	13.3	19.4	13.6	13.7	2008	118	94	101	102	1150
<i>Av long</i>	7.5	12.9	20.2	13.9	13.6	<i>Av long</i>	78	60	73	87	894
30 yr av	7.9	12.9	20.3	14.4	13.9	30 yr av	85	64	66	92	923

Habitat Structure

The habitats in the city were analysed under six headings: estuarine, fresh water, woodland, open grassland (parks and sports fields), residential and business/industry. Table 2 shows the overall structure.

Table 2 Habitats. The first two rows show the approximate area in ha. of six major habitats and their percentage, and the second two rows show the number of one km. squares which have that habitat and the percentage within the squares. The total area is 11,300 ha.

	Estuary	Water	Wood	Open	Residential	Industry
Ha	165	135	320	2685	6000	1995
%	1	1	3	24	53	18
No	15	20	31	95	98	55
%	13	18	27	84	87	49

As important as the basic areas of different habitat are the proportion of squares containing some of each habitat. Bristol is exceptionally fortunate in having a series of rivers running in narrow gorges with wooded sides running through it. Remarkably there are still two squares with no development at all, and 36 (32%) that have 40% or more of their area that is undeveloped. The figures for water are for open water areas, and do not include the number of squares with streams or estuary.

The 6000 hectares of residential land have 120,000 dwellings on them, and include approximately 2000 hectares of garden. The huge significance of gardens as wildlife habitat is often ignored. Their great merit is their vast

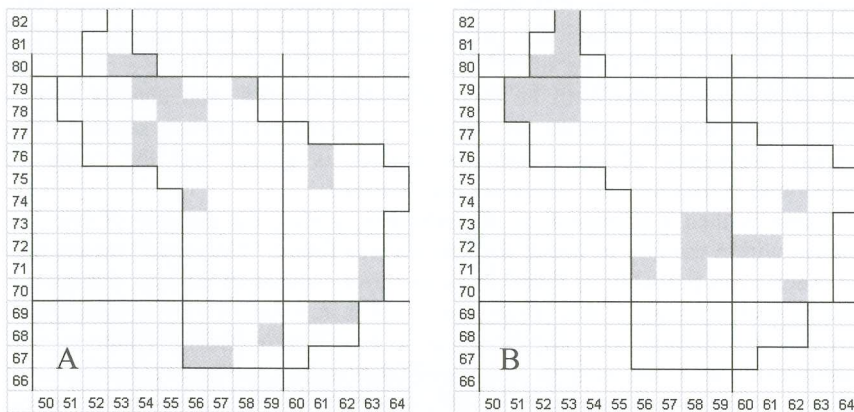


Fig. 4 A Squares (shaded) that have less than 50% of the area developed. B Squares (shaded) that have more than 50% used for business and industry.

variety, which ensures an astonishing variety of invertebrate life, and hence of food for birds throughout the year. The Bristol Council Quality of Life survey (see City of Bristol web site) estimated that 40% of gardens have ponds, which add a further dimension to their biodiversity. Bird breeding density in residential areas, despite the disturbance, and the dangers from cats, tends to be very high compared with farmland.

Table 4 (see Appendix) lists the squares and shows the proportion of major habitats in each. The proportion of squares used for development, business and industry are shown in Figure 4.

Species List

After the name of each species the letter B indicates that it bred (ie an egg was laid) in the city at least once in the survey period. For each species there is a comment first on **population**, giving recent national (Bird Facts on BTO website) and local change, and a population estimate for the total of breeding pairs in the city, and the population density, as well as comment, where appropriate, on non-breeding birds. The population estimates are based on our knowledge of the city habitats, on the normal densities for woodland established by the Common Bird Census and on specific work we have done on urban densities. They aim to be conservative and are given as a single figure rather than a range because they can then be changed in the light of population changes measured by the Breeding bird Survey. For Feral Pigeon, in particular, the non-breeding population is very much larger than the breeding one.

There follows a comment on the **frequency** of the species given for those species that are widely distributed. Frequency measures the number of birds an hour seen in the course of the survey throughout the city. The survey took 976 hours, and the average frequency is defined as the total number of birds counted divided by the time taken. It is not the same as population because some birds are elusive whereas others are prominent, but it is a very simple way of comparing the same species in different areas or habitats. It gives a very good idea of the species that will be seen in an hour's walk, and enables simple comparisons between species, as well as comparisons between seasons. The average frequency of each common species is given, and the range of frequencies across the city, which are also mapped.

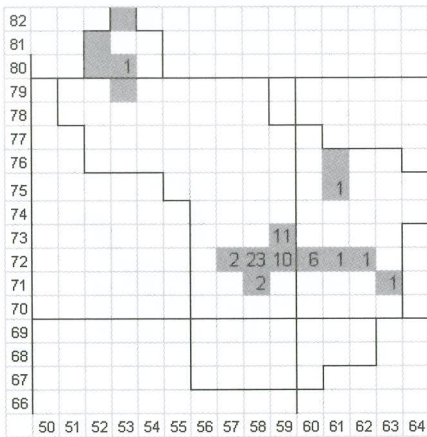
There is then a comment on **distribution**, giving the number of one km squares within the city in which the species was found. "Universal" means that the species can probably be found in almost every square of the city, though the specific methodology of this survey may miss it in some. We try to distinguish between distribution and numbers, so it is different from "common and widespread", as a bird may be universally distributed but quite rare. The total number of squares in the city is 113, so that the number is close to the percentage figure. Finally there is a comment on **conservation**, noting, where relevant, actual or potential threats to the species, and those changes which would benefit it.

The map for each species shows, by shading, all squares in which the species was found during the survey, and also the frequency figure where it is one or more. This gives a clear indication of the areas in the city where it is most and least common.

If a species is present in any of the four squares covering Avonmouth docks, which were surveyed, but not using the standard technique, it is indicated by a P.

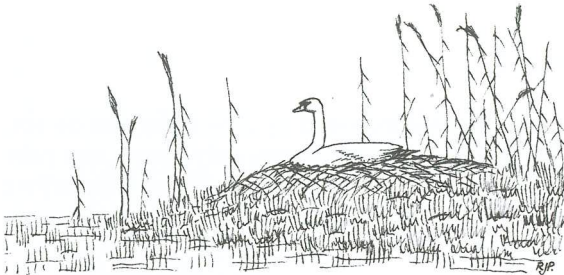
MUTE SWAN *Cygnus olor* **B**

Population Nationally the population has increased by 89% in the past twenty five years, and locally by 60% since 1994, but Bristol's population is stable, limited by the accessible open water. In recent years the breeding population has been two or three pairs, and recent breeding success has been poor. In the past, up to half a dozen pairs have bred successfully. In the summer there were c.50 non-breeding birds present, most of them in the City Docks and up to 100 lived there in the winter.



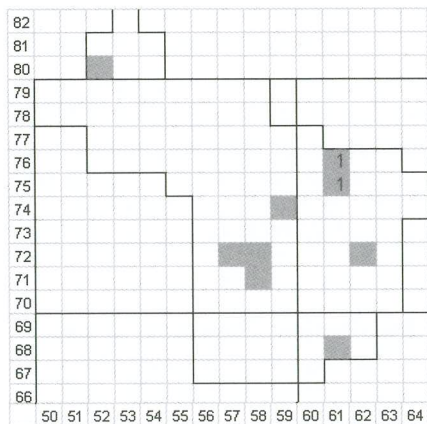
Distribution Present in 16 squares; in the City Docks throughout the year and on lakes in Eastville Park, St. Georges Park, and Avonmouth Sewage Works, as well as on the upper Avon (the freshwater stretch from Netham to Hanham).

Conservation Islands in lakes are essential, and there is need for well protected wild areas on the banks of the Avon. They suffer greatly from human persecution, but also there is intense competition for breeding sites.



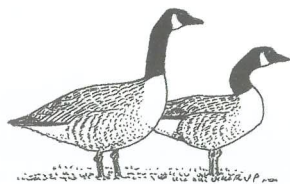
CANADA GOOSE *Branta canadensis* **B**

Population Nationally the population has doubled in the past decade, and locally the breeding population on Chew Valley Lake has had to be carefully controlled. They are prepared to nest on quite small waters, and locally golf course lakes have provided a useful habitat. In Bristol probably two pairs tried to breed most years and up to ten birds were present.



Distribution Present in nine squares. There is a pair in City Docks, another tried to breed at Avonmouth Sewage Works, and they were also seen at Duchess Pond and Eastville Lake.

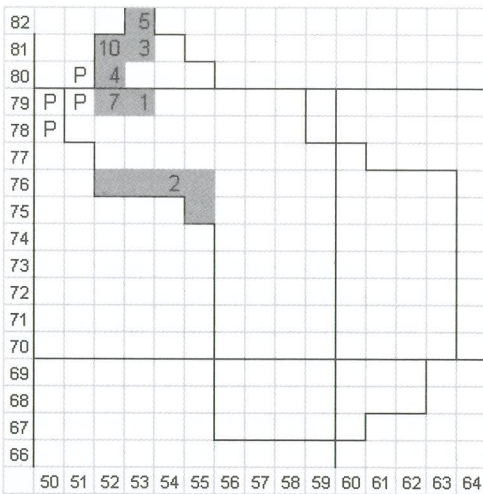
Conservation Though they are an attractive species, they can easily dominate small waters, and can create serious damage to turf.

EGYPTIAN GOOSE *Alopochen aegyptiaca*

There is quite a large feral population in eastern England. One was present on Duchess Pond in 2006.

SHELDUCK *Tadorna tadorna* **B**

Population Nationally the population has increased by 21% in the past decade, but it is probably stable in the Bristol region. In Bristol only one or two pairs probably bred in the Avonmouth area. Non-breeding birds are present in varying numbers on the River Severn coast and along the Avon as far as Sea Mills, with a maximum of about 30 birds.

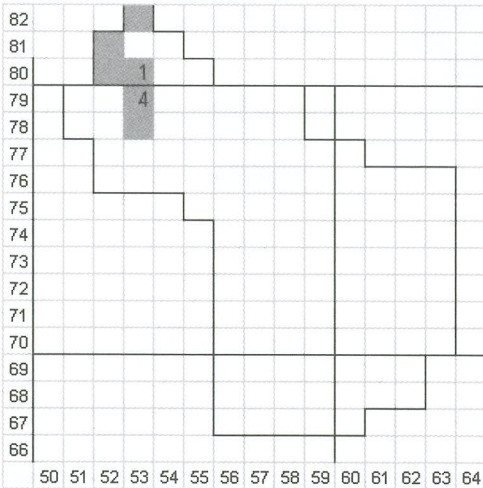


Distribution Present in 11 squares.

Conservation They breed in rabbit holes, and then need access to the estuary. Further urban intensification especially in the Avonmouth region is a threat.

GADWALL *Anas strepera* B

Population They are a rare breeding bird in Britain, whose numbers have expanded remarkably in recent years. In Bristol there was a breeding population of perhaps five pairs, and about 20 birds were present. They are a recent addition to the breeding birds of the city of Bristol.



Distribution Present in six squares in Avonmouth area.

Conservation They have been attracted by the increase in the number small ponds, often associated with development.

GOLDENEYE *Bucephala clangula*

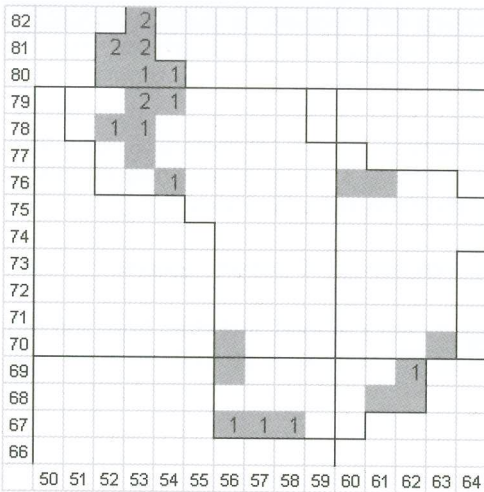
One record of a summering bird at Avonmouth Sewage Works.

RUDDY DUCK *Oxyura jamaicensis*

One record from Avonmouth Sewage Works.

PHEASANT *Phasianus colchicus* **B**

Population Nationally the population has increased by 92% in the past 25 years and locally by 61% since 1994. Because very large numbers are bred for shooting, it is impossible to know the size of the “wild” population nationally. However there was a very small, and safe, population in the city, of perhaps 20 pairs.



Distribution It was present in 23 squares, all on the fringes of the city, but quite frequent around Avonmouth.

Conservation Wild areas with long grass, and plenty of cover are essential. Apart from urban intensification, the chief threat is posed by the city’s Red Foxes *Vulpes vulpes*.

CORMORANT *Phalacrocorax carbo*

Population Nationally its population has grown by 34% in the past decade helped by the spread of fishing lakes, and this is true locally as well. It bred on Steep Holm, where there are 90 pairs and on Denny Island. Probably up to 30 birds were present in the city most of the year.

Distribution Seen in 43 squares, more or less every square with possible

feeding habitat in it. They fed regularly in the City Docks, New Cut, on both the tidal and upper River Avon as far as Hanham, on the River Frome, and on lakes including Eastville and St George. They were often seen in flight across the city to and from the Severn Estuary.

Conservation Fishermen regard them as a pest, but their primitive appearance always excites interest in the City. Clearer water would make their life easier, and an abundance of fish is essential.

LITTLE EGRET *Egretta garzetta*

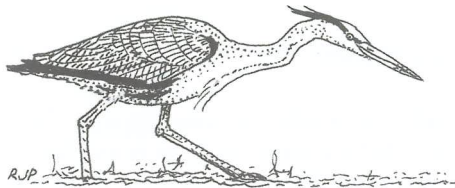
There were only two records of birds on the coast in two squares north of Avonmouth. This species is increasing rapidly.

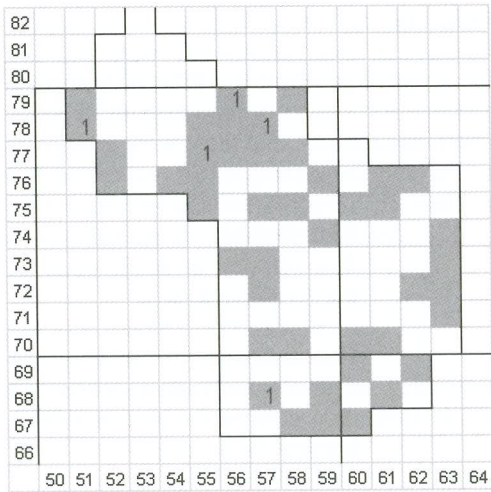
GREY HERON *Ardea cinerea* **B**

Population Nationally there has been a 69% increase in the past 25 years in England and locally there has been an increase of 82% since 1994. This has been largely caused by the run of warm winters since 1995-6. Within the city they bred at Eastwood Farm, where there is a large heronry of *c.*25 pairs and just outside the city on the River Avon bank at Pill, where there were five pairs. Within the Bristol region there are *c.*130 pairs. They feed throughout the city on garden ponds, lakes and ditches, and the Avon and other rivers.

Distribution Birds hunting for food were seen in 52 one km. squares.

Conservation Provided there is a good supply of food, including frogs and fish, and we do not have a harsh winter, they will continue to do well.



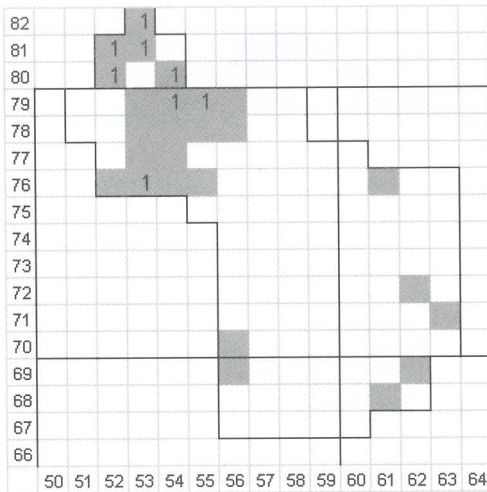


Distribution It was found in 43 squares with gaps around Avonmouth, and the City Centre, but its elusive nature has the consequence that sightings underestimate its actual numbers.

Conservation It has taken well to urban living, though deaths from striking windows at high speed are an unavoidable hazard. It does need tall trees for nest sites.

BUZZARD *Buteo buteo* **B**

Population Nationally there has been a 300% increase in the past 25 years and locally its population has been expanding very rapidly in the past twenty years. It thrives best where there is a good population of small mammals and plenty of Rabbits *Oryctolagus cuniculus*. It has been slow to find suitable territories within the city boundary, but there are now up to five resident pairs.

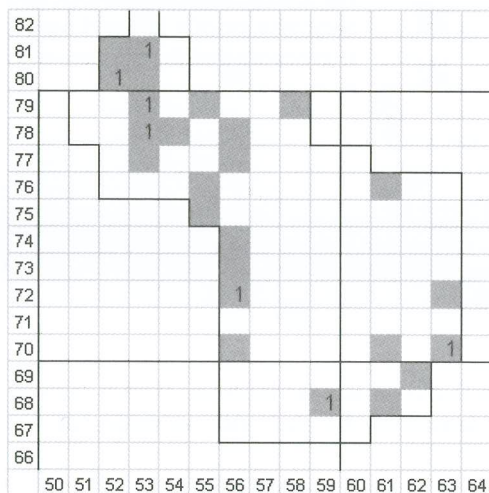


Distribution It has been seen in 26 squares, in most of the greener areas of the city, including the upper River Avon, and River Frome valley, but it is most frequent in the River Trym valley and around Avonmouth.

Conservation The maintenance of dense woodland within the city is essential.

KESTREL *Falco tinnunculus* **B**

Population. Nationally there has been a 21% fall in the past 25 years and locally there appears to have been a decline, though the evidence is inconclusive. In Bristol thirty years ago it bred in a variety of unused buildings, but is now restricted to the outskirts of the city, and commonest in the wasteland around Avonmouth and the tidal River Avon banks, and Hengrove park. Perhaps ten pairs nested in the city. They need rough grassland where they find much of their food.



Distribution Present in 25 squares, mostly on the fringes of the city.

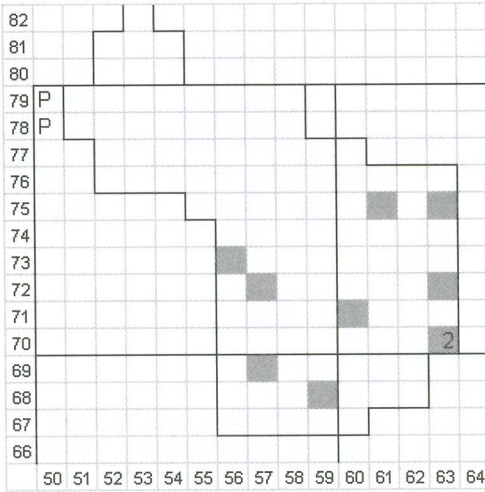
Conservation Waste land and rough grassland are essential, and threatened by urban intensification.

HOBBY *Falco subbuteo*

Two records of single birds on the edge of the city.

PEREGRINE *Falco peregrinus* **B**

Population Nationally and locally there has been rapid expansion in the past twenty years. The most famous site in the River Avon Gorge has produced some 49 chicks since 1990, and this progeny has spread across the region. There are probably three other sites within the city boundary, which is close to the maximum possible, as they are highly territorial. They feed mostly on Feral Pigeons, but will take a huge range of other birds, and have been shown to hunt at night, using the city's lights to illumine their prey.

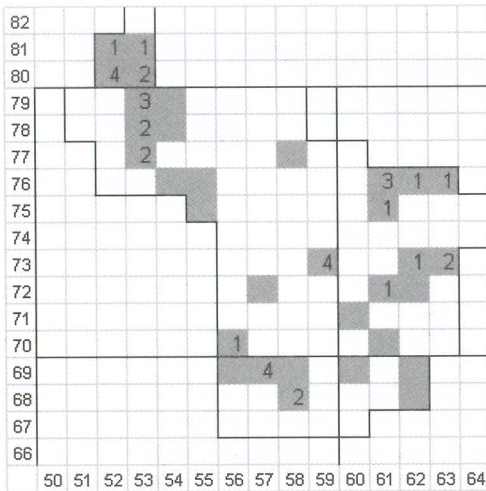


Distribution They were seen in just nine squares during the survey, because they are quite elusive during the breeding season.

Conservation Safe breeding sites are essential, but the City has a large number of cliffs, and they take readily to buildings. It is probable that the population is close to saturation.

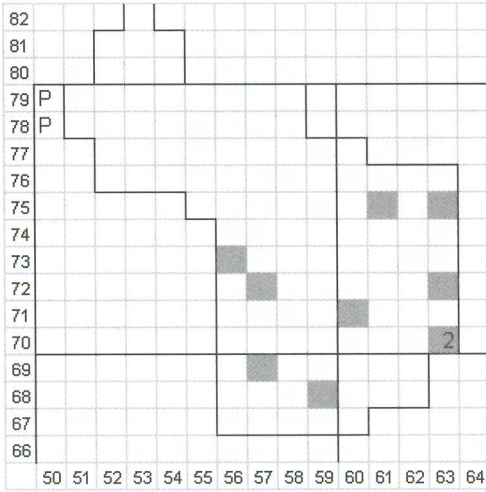
MOORHEN *Gallinula chloropus* B

Population Nationally there has been a 3% increase in the past 25 years, and locally the population has shown a fairly substantial increase. Within the city about 100 pairs probably bred, a density of 3.1 pairs per occupied one km square.



Distribution Present in more or less all fresh water habitats, including very small ponds on the River Malago, Clifton Zoo, Sneyd Park reserve, on the upper River Avon, in the City Docks, and in the rhines around Avonmouth. They were seen in 32 squares.

Conservation The building of new ponds in association with developments has assisted them.

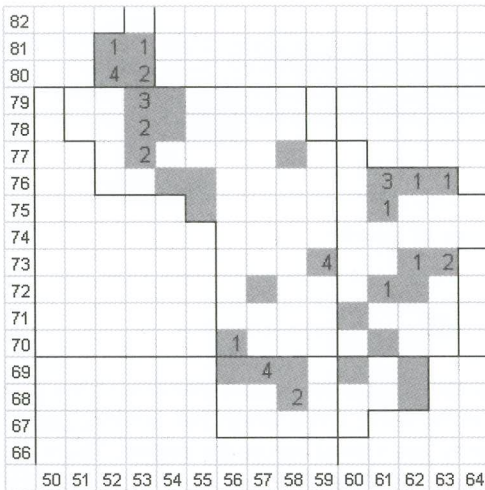


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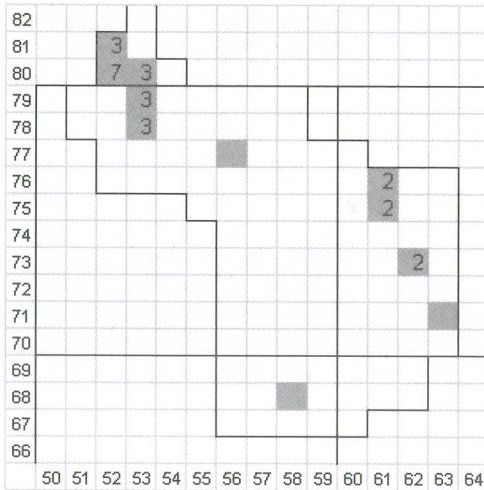


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Conservation The building of new ponds in association with developments has assisted them.

COOT *Fulica atra* **B**

Population Nationally there has been a 51% increase in the past 25 years, and locally there is evidence of an increase of over a fifth since 1994. They are a very territorial species, and usually need larger waters than Moorhens. The breeding population in the city was around 25 pairs.



Distribution It was present in 11 squares, and was most frequent on Eastville Lake, St Georges Lake, Duchess Pond and Avonmouth Sewage Works ponds.

Conservation Reasonably sized ponds with islands are important.

OYSTERCATCHER *Haematopus ostralegus* **B**

Population Nationally there has been a 46% increase in the past decade in England. Two or three pairs bred in Avonmouth docks, which is a very recent development. It is seen regularly on the River Severn shore and infrequently on the tidal River Avon.

Distribution It was present in five Squares.

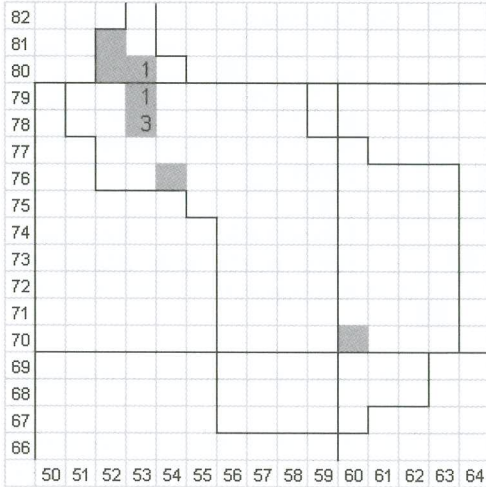
Conservation Avonmouth Docks at present provides breeding sites that are fairly secure from human interference.

RINGED PLOVER *Charadrius hiaticula* **B**

Up to ten pairs breed in Avonmouth Docks, using the huge car-park areas for their nests. It was not recorded by the main survey.

LAPWING *Vanellus vanellus* B

Population Nationally there has been a 43% decline in England in the past 25 years. Locally there has been a 92% decline since 1994. It is probably now extinct as a breeding species in Bristol, but during the survey bred at Kings Weston Bowl.



Distribution Seen in 7 squares mainly around Avonmouth. It winters on the tidal River Avon and River Severn coast.

Conservation The preservation of the last Bristol marshes, Ashton Marsh and Kings Weston Marsh, might enable its return.

CURLEW *Numenius arquata*

Population Nationally there has been a 36% decline in the past 25 years. In Bristol it is only present as a summering species on the River Severn estuary.

COMMON SANDPIPER *Actitis hypoleucos*

It was a passage migrant only seen in April in four squares, but it can be found anywhere along the tidal and non-tidal River Avon.

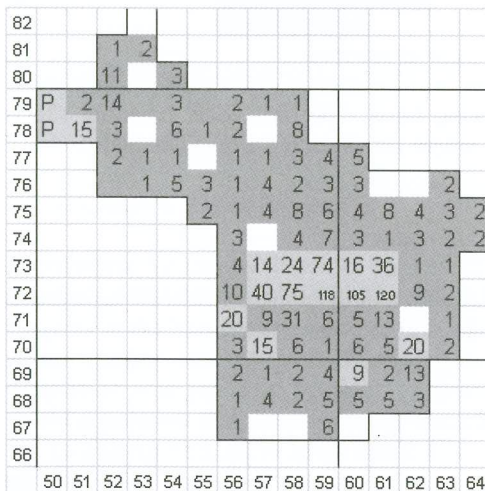
REDSHANK *Tringa totanus*

Population Nationally there has been a 43% decline measured by the BTO Waterways survey. In Bristol it is present as a summering species on the banks of the tidal Rivers Avon and Severn. It might have bred in the past in the Avonmouth area but there is no recent evidence. In winter quite common all the way up the tidal River Avon.

LESSER BLACK-BACKED GULL *Larus fuscus* B

Population Locally the population has increased by 102% since 1994. In Bristol, urban nesting began in 1970 and there was a breeding population of c.1500 pairs, concentrated in the city centre area between Clifton and Conham but there is a substantial population in Avonmouth Docks, and outlying groups in Brislington, Frenchay, Hengrove, and Ashton Marsh. Squares with breeding colonies are in lighter shading on the map. They are the most closely documented urban breeding colony in the world as c.100 have been ringed annually with Darvic rings*, and a huge data-base of c.15,000 subsequent sightings has been created (*pers. comm.* Peter Rock). In 2007 the City council began to substitute plastic eggs for real ones in accessible nests. This may control the population growth, though this is mainly fuelled by scavenging the masses of food left on the streets every night. They prefer industrial roofs, but have used residential chimney stacks. They cause many problems, disfiguring buildings, creating the necessity of expensive, and often futile, netting, and in new buildings the opportunity for nest sites ought to be designed out from the start. They could become a major problem for authorities in the future. Further spread into the suburbs is likely. They increasingly seek food in gardens throughout the suburban areas, and also feed extensively on worms on sports fields. The juveniles all depart in August for Spain and Africa, and most do not return for at least two years. A very few remain as nest-guards over winter. *Darvic rings have large letters/numbers which can be read in the field.

Frequency Average of 9.1 birds per hour over the whole survey, with a maximum of 120 in the city centre.



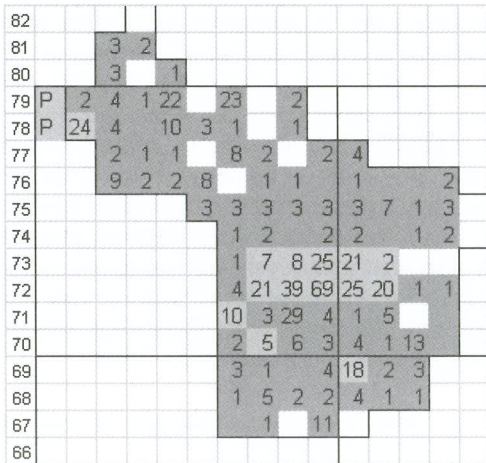
Distribution Present in 102 squares of which 17 contained breeding birds.

Conservation They are long-lived birds, with few natural enemies, and have become a fairly serious problem, though largely as a result of human wastefulness.

HERRING GULL *Larus argentatus* B

Population Locally the population has increased by over 100% since 1995. In Bristol there is a breeding population of c.500 pairs, breeding with the Lesser Black-backs. Everything said about the Lesser Black-backs also applies to Herring Gulls.

Frequency An average of 5.1 birds per hour reflects the fact that in summer they are outnumbered by Lesser Black-backs, but the adults stay around all through the winter, whereas most Lesser Black-backs migrate to Spain.



Distribution. Present in 99 squares, with a variation from 0 to 69. They bred alongside Lesser Black-backs in 16 of them.

Conservation They are long-lived birds, with few natural enemies, and have become a fairly serious problem, though largely as a result of human wastefulness

GREAT BLACK-BACKED GULL *Larus marinus*

Present in four squares, as summering birds. The only local breeding site is Steep Holm, in the Bristol Channel, where about ten pairs breed annually.

BLACK-HEADED GULL *Larus ridibundus*

Present as a summering bird in 12 squares, mainly along the tidal River Avon. It is also a very early post breeding migrant at the very end of June.

FERAL PIGEON *Columba livia* B

Population Nationally the population has been stable in the past decade. In the Bristol region there is evidence of a 9% fall since 1995. In Bristol the vast flocks that once dominated Avonmouth docks have dwindled virtually to zero as

dock activity has changed, and there has been a 16% fall in numbers between 2000 and 2007 in this survey. There has been some tendency for flocks to spread into suburban regions from the city centre where they face great competition from the large gulls. The total breeding population was estimated at 800 pairs, and the total population at 7000 birds, a breeding density of 7.8 pairs per sq. km. They breed throughout the year and breeding sites are mainly under bridges, as there are now few empty and ruined buildings available, though a few nest in cliffs, as their progenitors the Rock Dove did hundreds of years ago. Breeding sites are jealously guarded by their owners.

Frequency Average of 15.4 birds per hour, the fifth most frequent species. Frequency varies from 0 to 96 per hour, as non-breeding birds are very obvious in large feeding flocks, and it is still most frequent in the city centre.

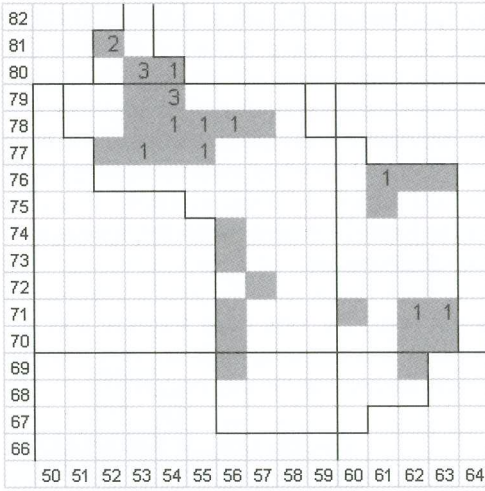
82																						
81																						
80			11																			
79	P	54	3	5	1	1	12	7	5													
78	P	31	5	4	22	2	15	2	10													
77			19	2	1		11	5	8	12	3											
76			4	30	13	13	2	11	7	6	9	6										
75						9	5	7	9	34	6	12	3	33	11							
74							1	40	21	38	52	16	7	1	9							
73								12	25	48	96	47	37	65	15							
72								30	33	84	73	52	24	27	8							
71								25	32	51	18	19	6	3	2							
70								19	16	19	7	27	3	12								
69								9	2	2	17	21	8	4								
68								4	16	9	1	9	3	11								
67								7	7	16	9	6										
66																						
		50	51	52	53	54	55	56	57	58	59	60	61	62	63	64						

Distribution It was present in 107 squares, and missing from the rural areas north of Avonmouth, the upper River Avon and Coombe Dingle. There are large outlying flocks in Fishponds church, St Georges Lake, Sea Mills viaduct, among other sites.

Conservation Human feeders, or a regular source of food, are the key to the success of the large non-breeding flocks. As scavengers they face intense competition.

STOCK DOVE *Columba oena* **B**

Population Nationally there has been an 18% increase in the past 25 years, and locally a 14% fall since 1994. They nest in hollow trees, and are thus most frequent in the Rivers Frome and Trym valleys, the upper River Avon and River Avon gorge, and remnant farmland around Avonmouth. The breeding population was probably 50 pairs at most. As Britain supports much of the world population they have a greater significance than is usually realised. They are an elusive bird, more often heard than seen, but their "song" is not widely recognised.

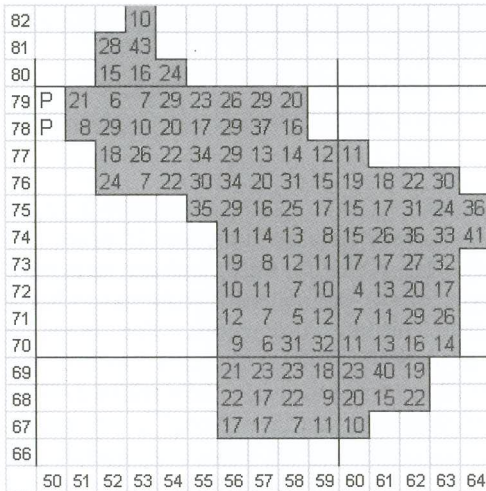


Distribution Present in 30 squares.

Conservation Trees with nesting holes or abandoned buildings are important as nest sites.

WOODPIGEON *Columba palumbus* **B**

Population Nationally the population has doubled in the past 25 years, and locally grown by 72% since 1994. They have become common as a garden bird only within the past fifteen years. In the course of the survey numbers grew by 46%. The estimated breeding population was 3000 pairs, or 26.5 pairs per sq. km. and, unlike the Feral Pigeon, there is no evidence of a substantial non-breeding population, but like them they can breed in every month of the year. It is a sedentary species, but more obvious in the winter when trees are leafless.



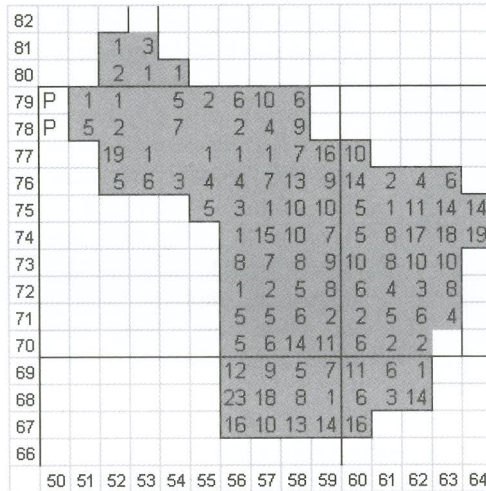
Frequency Average 19.2 birds per hour, slightly less than the House Sparrow. The variation across the city was from 4 to 43 per hour. The pattern of distribution is roughly the converse of the Feral Pigeon, most frequent in the suburbs and least in the city centre.

Distribution Universal.

Conservation Its adaptation to urban living has been a remarkable recent development, and perhaps a response to the national increase.

COLLARED DOVE *Streptopelia decaocto* **B**

Population They first arrived in Bristol in 1961, and numbers have grown steadily since then. Nationally the population has increased by 58% in the past 25 years, and locally by 82% since 1994, though the Bristol population peaked in 2003 and has fallen by a third since. The population was estimated at 700 breeding pairs, or 7.6 per sq. km. They breed in every month of the year.



Frequency Average 6.6 birds per hour. The frequency distribution is towards the south and east of the city rather than the north and west, for which there is no obvious reason, and varies from 0 to 23 per hour.

Distribution Universal.

Conservation They make an ideal prey for the Sparrowhawk, which is a possible reason that their population has ceased to grow. They are also competitors with both Woodpigeon and Feral Pigeon.

CUCKOO *Cuculus canorus*

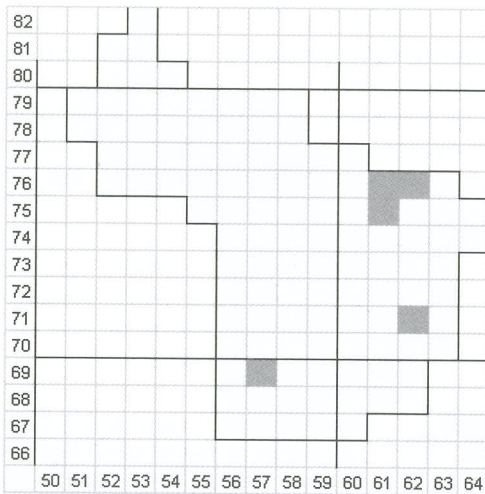
The Cuckoo has declined steeply since 2000 and it has been heard just nine times within the city of Bristol in 976 hours of the survey.

LITTLE OWL *Athene noctua*

A record from Brislington. This is a very elusive species and may well have bred within the city.

SWIFT *Apus apus* **B**

Population Nationally there has been a 22% decline in the past decade and locally there is evidence of a 39% fall since 1994. However the BBS is not an effective method of monitoring this species, and it has been affected by two

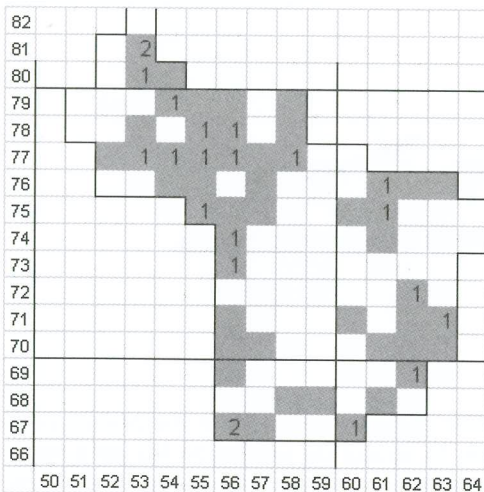


Distribution Present in 5 squares, on the Rivers Frome, Malago and upper Avon. In winter it is more widespread on rhines in the Avonmouth area, and on the Trym and City Docks. It is extremely elusive.

Conservation It does require rivers with vertical banks for breeding, and of course high water quality for an abundance of very small fish.

GREEN WOODPECKER *Picus viridis* B

Population Nationally there has been a 96% increase in the past 25 years. Locally there has been a 24% increase since 1994. It needs a combination of old trees and rough grass full of ants, which is why it is concentrated in parkland areas such as at Blaise, River Frome valley, upper River Avon and the Downs. The breeding population was estimated at about 50 breeding pairs.

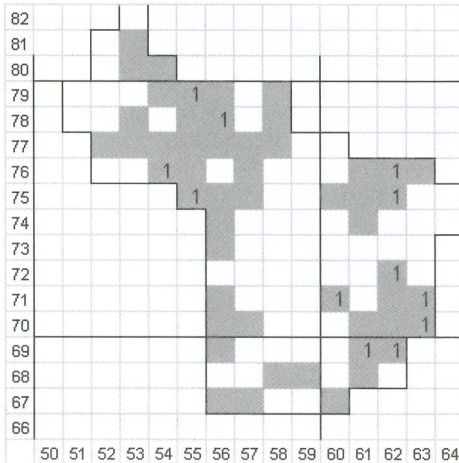


Distribution Present in 49 squares.

Conservation Parks that are not too neat, and have old trees are a key habitat.

GREAT SPOTTED WOODPECKER *Dendrocopus major* **B**

Population Nationally there has been a 98% increase in the past 25 years. Locally there has been a 70% increase since 1994. Its habit of drumming draws attention to its presence, but otherwise it is easily missed. Probably around 50 pairs bred or one pair per occupied sq. km. It is regular in Blaise and Kings Weston woods, the Downs, the River Frome valley, Brislington Brook and the upper River Avon valley.

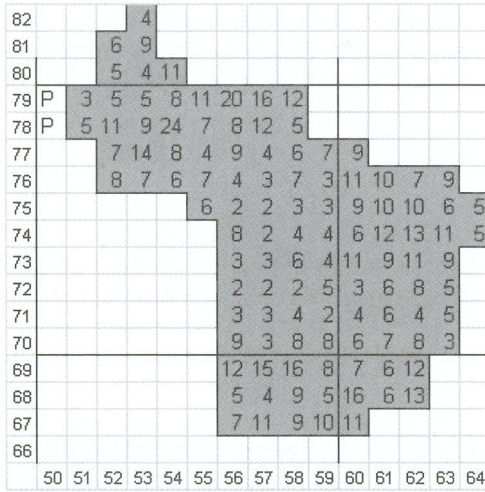


Distribution Present in 41 squares. It often visits gardens, and will take nuts or fat, and can be a nest-box predator.

Conservation It requires old trees with plenty of rotten wood both to excavate, and to find its food.

MAGPIE *Pica pica* **B**

Population Nationally its population has grown by 37% in the past 25 years but locally fallen by 1% since 1994. In Bristol its population has been stable since 2000. The bird everyone loves to hate for its aggressive ways, and skill in finding and destroying the nests of other species in the breeding season. There are estimated to be 800 breeding pairs in the city, 7.1 pairs per sq. km.



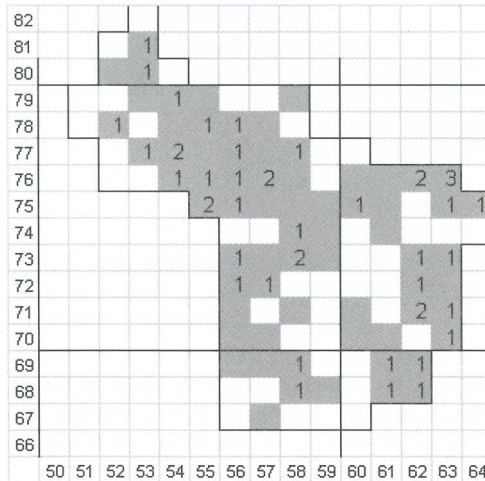
Frequency Overall frequency was 7.2 per hour, partly because it makes its presence very obvious. It varied from a minimum of 2 per hour to a maximum of an amazing 24 per hour in an area of wasteland near Avonmouth. There was a tendency for levels to be lower in the city centre and to increase outwards.

Distribution Universal.

Conservation It is a supremely adaptable species, ready to nest almost anywhere, and there are no legal threats to it.

JAY *Garrulus glandarius* B

Population A woodland bird that has expanded into mature suburbs in recent years, and is most commonly seen in the autumn burying acorns. Nationally the population has declined by 5% in the past 25 years, locally it has grown by 43% since 1994. The City population was probably about 150 pairs, based on two pairs in each occupied square.



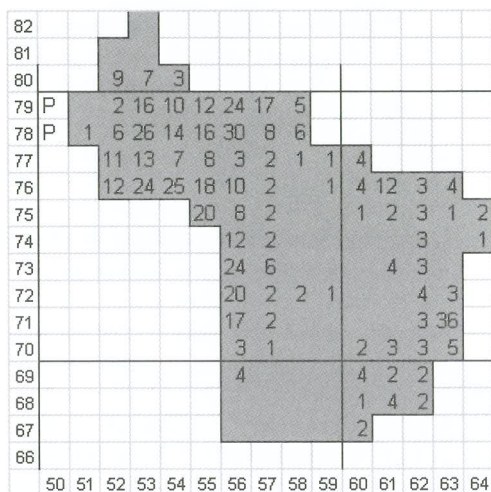
Frequency Overall a low frequency of 0.5 birds per hour, but regular in the most wooded areas such as the Rivers Trym, Frome and upper Avon valleys.

Distribution Found in 69 squares, and only really absent from parts of Avonmouth and some city centre squares.

Conservation It is the city's best forester, planting thousands of trees annually, and provided there is plenty of old woodland it will continue to thrive. The lack of acorns as a consequence of the new Oak *Quercus robur* gall is unlikely to cause problems provided there are plenty of Holm Oaks *Q. ilex*, and peanuts in garden feeders.

JACKDAW *Corvus monedula* B

Population Nationally the population has increased by 58% over the past 25 years and locally by 6% since 1994. In Bristol the population has been stable since 2000. The City population was estimated at 800 breeding pairs, or 7.1 pairs per sq. km. It has colonies on cliffs and quarries, in old woodland, and in some areas of the city in chimneys.



Frequency Overall 5.3 birds per hour, but with very large variations from less than 1 to as high as 36. The highest densities are in the NW of the city, and in the east. The City centre and south have very few.

Distribution Universal.

Conservation It is ready to take any food, and to use a variety of nest sites, so there are few threats.

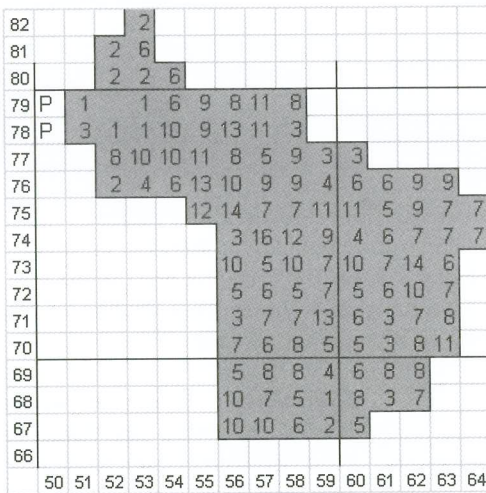
ROOK *Corvus frugilegus* B

Population Nationally the population has been stable in the past decade, but locally there is evidence of a 21% fall since 1994. It is a farmland bird, dependent upon a healthy supply of worms for successful breeding, and in the past it has abandoned rookeries within the city boundary as suburbs have spread. Only three breeding sites were recorded, at Bower Ashton, in Shirehampton, and at Eastwood Farm, though there is another site immediately outside the boundary at Pill, and Ashton Park has one of the largest rookeries in the region. This survey revealed that a maximum of 30 pairs nested within the city.

BLUE TIT *Cyanistes caeruleus* **B**

Population Nationally they have increased by 21% over the past 25 years, locally there has been a 16% decline since 1994, caused by two recent poor breeding seasons. Within Bristol there has been an 8% fall since 2000. An extremely successful and common species, whose city population was estimated at 5000 pairs, or 44.6 pairs per sq. km.

Frequency The average for the whole survey was 6.8 birds per hour with a maximum of 16. The lowest figures are in the Avonmouth region which has few gardens or trees. They are very much a bird of suburbs preferably with large gardens.



Distribution Universal.

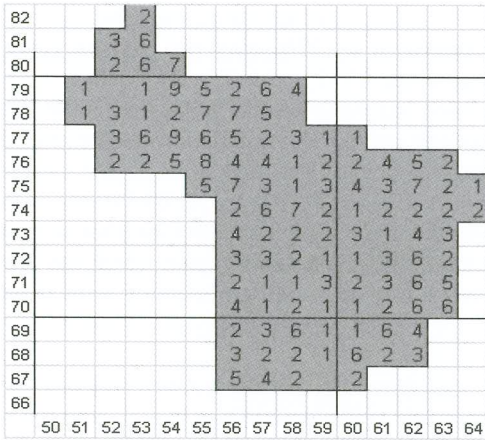
Conservation They are the most frequent occupiers of nest boxes in gardens, but are single brooded, and cold wet summers can lead to very poor breeding seasons. Urban intensification, and an absence of small insects for feeding to the young are the greatest threat. Bird feeders are a great help.

GREAT TIT *Parus major* **B**

Population Nationally they have increased by 50% over 25 years and locally by 47% since 1994, though surprisingly there has apparently been a 13% fall since 2000 in Bristol. A city population of 3800 breeding pairs was the most recent estimate, that is 34 pairs per sq. km.

Frequency An average of 3.2 birds per hour, slightly less than half the Blue Tit rate. The maximum is up to nine. There is very little variation across the city, though the Avonmouth area has very few.

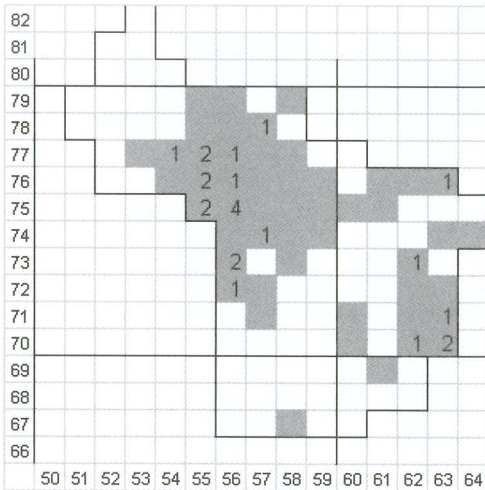
Distribution Universal.



Conservation Winter bird feeding has helped it maintain high numbers, and it is very well adapted to garden life. Increased urban density is a potential threat.

COAL TIT *Periparus ater* B

Population It is a common visitor to winter bird-feeders, but prefers conifer plantations for breeding, and its breeding season population seems to be smaller than the winter one. There were probably at least 100 breeding pairs in the city, but this may be an underestimate. Nationally there has been a decline of 5% over 25 years; locally too few are seen for accurate monitoring.



Frequency Over the whole survey 0.3 birds per hour; in other words it is quite an elusive bird. The River Trym valley and the upper River Avon are the areas where it is most frequent.

Distribution Present in 49 squares, and none in the Avonmouth area, South Bristol or the City Centre.

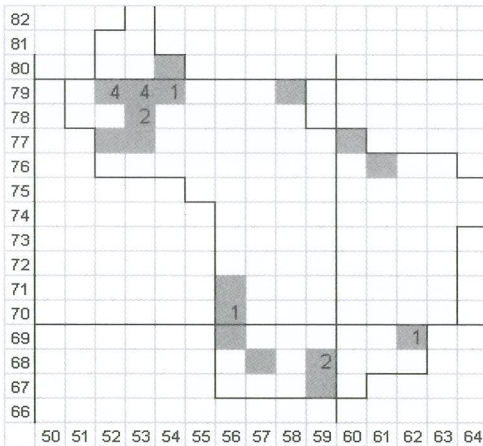
Conservation In winter it is widespread in gardens, and feeders help over-winter survival.

MARSH TIT *Poecile palustris* **B**

Nationally a decline of 33% in the past 25 years. It was recorded from Blaise, where breeding was proved, and Brandon Hill.

SKY LARK *Alauda arvensis* **B**

Population Nationally the population in England has fallen by 51% in the past 25 years. Locally there has been a 25% fall since 1994. They were frequent in the old fields around Avonmouth, Hengrove Park, very occasional in Stoke Park and Ashton marsh. Almost all its existing sites are threatened. At most 10 pairs still breed in the city.



Distribution Present in 17 squares, wherever decent open grassland remains.

Conservation Open grassland that is not frequently mown is vital.

SAND MARTIN *Riparia riparia* **B**

Once bred regularly in wall drainage holes. This survey recorded it at two sites, and breeding was proved near the Feeder Canal in 2006.

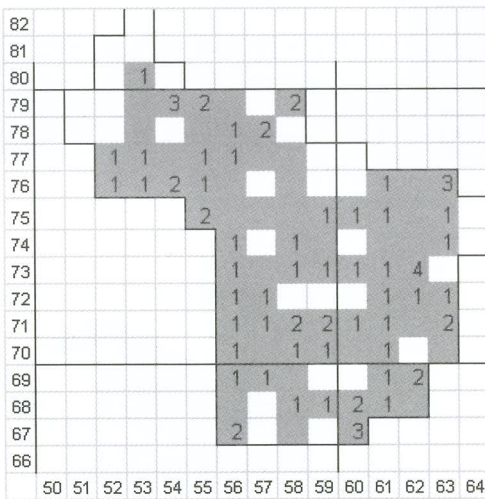
SWALLOW *Hirundo rustica* **B**

Population Nationally the population has increased by 8% in the past 25 years. Locally some evidence suggests a 56% increase since 1994. Birds still breed on the farmland fringes around Avonmouth, Bower Ashton and Brislington, but no longer in the heart of the city. A maximum of 30 breeding pairs remain within the city boundary.

LONG-TAILED TIT *Aegithales caudatus* **B**

Population A small and attractive species, that can be elusive. Nationally the run of warm winters since 1995-6 has led to a 67% increase over the past 25 years. A 46% local increase has been recorded since 1994. Within Bristol there were probably at least 200 breeding pairs, 2.4 pairs per sq. km. They breed early in the year, and numbers have not been affected by the cold wet summers of 2007 and 2008.

Frequency Over the whole survey the average was 0.8 birds per hour. In one or two favoured localities it reached 3, and, in one, 4 per hour. Birds are most frequently seen as family parties moving through scrub in May and June, and groups of a dozen or more are quite common.



Distribution Present in 84 squares, with no particular pattern to the distribution, though they are absent from much of the Avonmouth area and parts of the city centre.

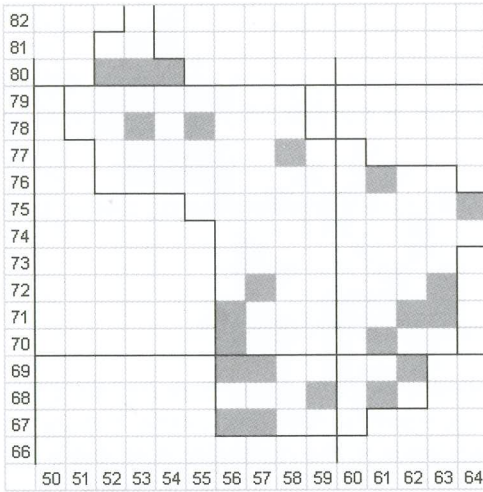
Conservation Cold winters, factors damaging the life of very small insects, and urban intensification are the main threats.

WOOD WARBLER *Phylloscopus sibilatrix*

One migration record.

CHIFFCHAFF *Phylloscopus collybita* **B**

Population It is a successful species that has increased by 118% nationally over the past 25 years. Locally there have been some striking fluctuations, and a 29% increase since 1994 and a 14% decline within the city of Bristol since 2000. An estimated 600 pairs bred in the city, using all the scrubby habitat they can find, which is 5.3 pairs per sq. km.

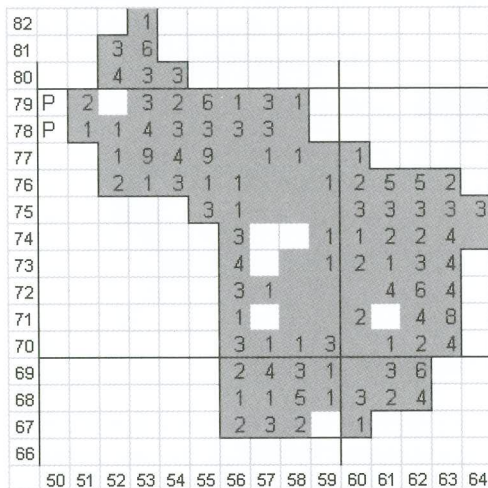


Distribution It still survives in well wooded areas, mostly on the fringe of the city.

Conservation The recent collapse in the population in southern England is probably related to problems in its wintering areas in Africa.

BLACKCAP *Sylvia atricapilla* **B**

Population A very successful species that has grown by 113% nationally over the past 25 years, and by 30% in the region since 1994. In Bristol it has expanded by 15% since 2000. The breeding population was probably 1000 pairs, or 8.9 pairs per sq. km.



Frequency Average 2.1 per hour, varying up to 9. Its highest frequency was in woodland areas such as Blaise, Kings Weston Woods, the River Frome valley, Brislington Brook and the upper River Avon. It was lowest from the Cumberland Basin northward to Southmead where development is most dense.

Distribution Present in 106 squares - only missed in 7 squares, mostly urbanised.

Conservation It is not a garden bird, except in winter, when there is a substantial population of migrants from Germany supported by garden feeders. Blackcaps need scrub and woodland to nest in.

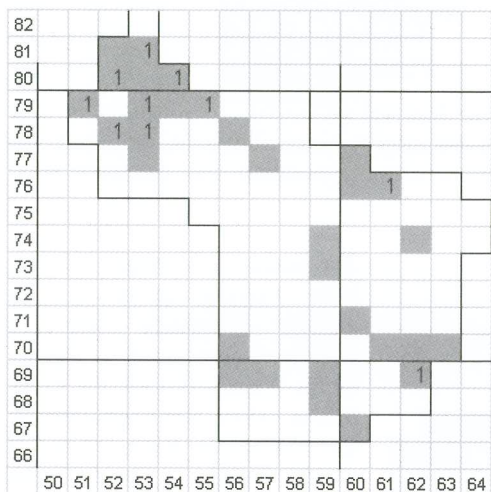
GARDEN WARBLER *Sylvia borin*

Population Locally this shy species has fallen by 61% since 1994 though nationally there has been a 9% increase in the past 25 years. It is not clear whether it still breeds in the city.

Distribution It was recorded in 22 widely scattered squares, mostly as a migrant.

LESSER WHITETHROAT *Sylvia curruca* **B**

Population Essentially a bird of farmland and hedges, and there are only a few areas, mainly in the Avonmouth region, where the habitat is suitable. Perhaps 30 pairs nested within the city. The population in the region has been stable for many years though nationally it has declined by 29% in the past 25 years.



Distribution It was seen in 31 squares, but many of them will probably have been passage birds in April.

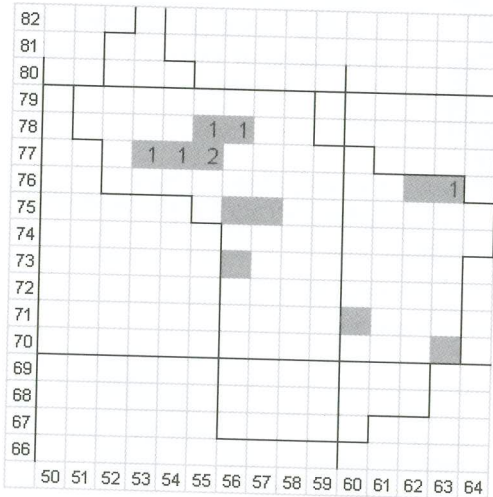
Conservation Maintaining hedgerows and scrub in areas such as Avonmouth and the Dundry slopes is essential for its long term future.

COMMON WHITETHROAT *Sylvia communis* **B**

Population It is a farmland bird whose population has fluctuated considerably in the past fifty years. Nationally it has increased by 61% in the past 25 years after a collapse in 1968. Locally it has increased by 4% since 1994. In Bristol its stronghold is the Avonmouth region, and there may have been 200 breeding pairs in the area, 2.9 pairs per sq. km.

Conservation The preservation of wetland, and encouragement to reed *Phragmites* growth is the key to its future.

NUTHATCH *Sitta europaea* B

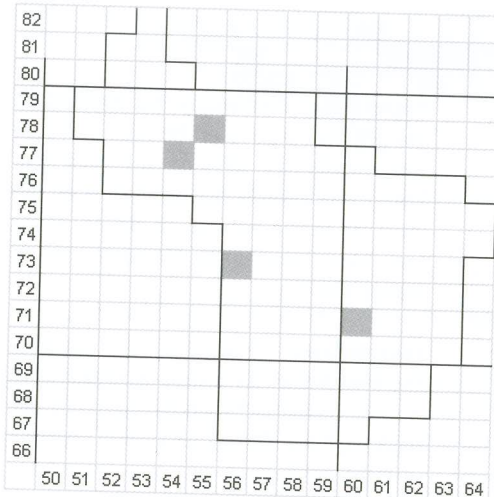


Population Nationally there has been a 91% increase in the past 25 years. Locally it is not readily monitored and in this survey proved to be surprisingly elusive. There may have been 25 pairs in the City.

Distribution. Only found in 12 squares, and only regular in the Rivers Trym and Frome valleys.

Conservation. It needs old established woodland to provide suitable nest holes.

TREECREEPER *Certhia familiaris* B



Population A woodland bird that is more elusive than the Nuthatch. Nationally there has been a 1% decline in the past 25 years. Locally it was seen too infrequently to monitor. There must have been at least ten pairs in the city.

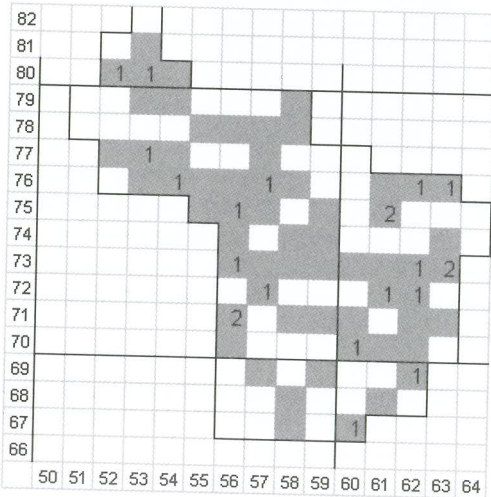
Distribution It was only recorded in four squares.

Conservation It needs well wooded areas and old trees with rough bark to nest in.

MISTLE THRUSH *Turdus viscivorus* B

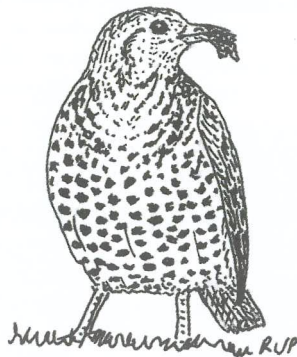
Population It has declined by 45% nationally in the past 25 years, and by 48% in the region since 1994, though this has attracted far less attention than the decline of the Song Thrush, and its cause is uncertain. Within the city probably 60 pairs bred at a density of 1.0 pair per occupied sq. km.

Frequency The average for the whole survey was 0.2 per hour, or a tenth of that of the Song Thrush.



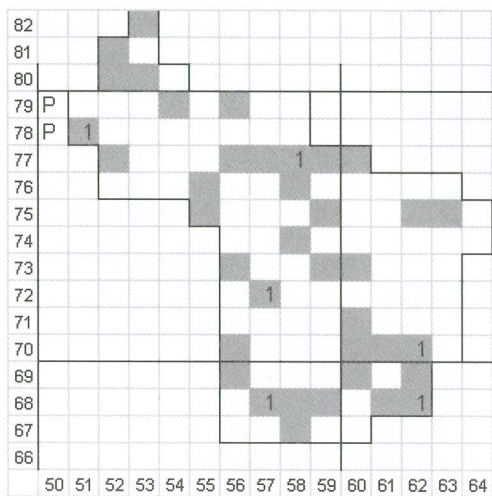
Distribution Present in 60 squares scattered right across the city, but regular in only 19 of them. It breeds early, sings in February, and can be very secretive around its nest, so it was easily missed by this survey.

Conservation. Tall trees and a good worm population, as well as a good supply of berries for over-winter survival are the keys to its survival.



PIED WAGTAIL *Motacilla alba yarrellii* **B**

Population Nationally the population has been stable over the past 25 years. Locally there is evidence of a 10% increase since 1994. It is a farmland bird more than an urban one, and the breeding population was probably 30 pairs or fewer. They are far commoner in winter than in the breeding season.



Frequency They proved to be very elusive - it took nine hours on average to find one.

Distribution Present in 36 squares, scattered seemingly randomly across the city.

Conservation They are entirely insectivorous, so that anything that harms invertebrate life is a threat.

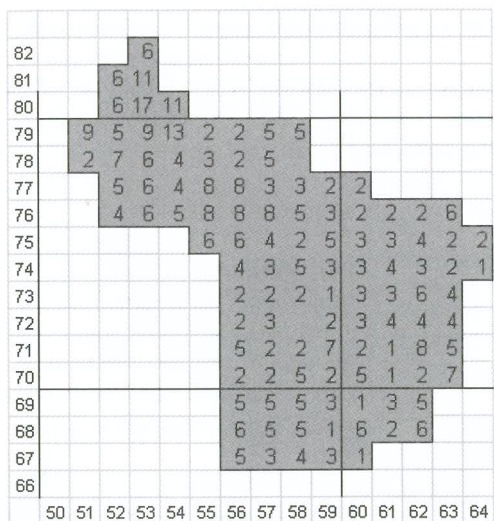
MEADOW PIPIT *Anthus pratensis* **B**

Most records were almost certainly late winter migrants, but it was recorded on the saltmarsh at Chittingen where it has bred.

CHAFFINCH *Fringilla coelebs* **B**

Population Nationally the population has grown by 29% in the past 25 years, but locally it has fallen by 25% since 1994, and within Bristol it has fallen by 25% since 2000. Current estimates are a population of 1000 pairs, or 8.9 pairs per sq. km. This local decline is unexplained. It was most often seen in gardens in winter, when much of the population are migrants.

Frequency Overall annual average of 4.2 birds per hour, with a maximum of 17 per hour in one or two farming areas of the city. Otherwise its frequency varied very little across the city though it was lowest in the central areas.

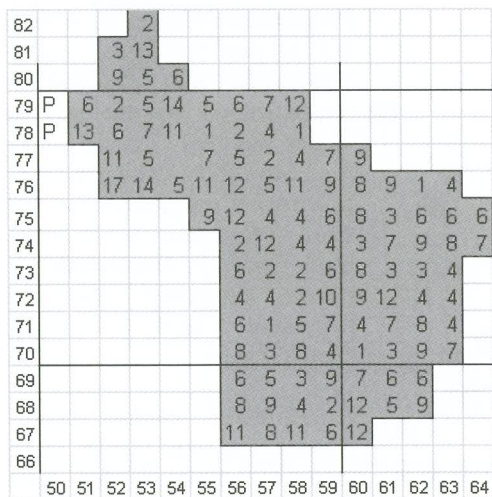


Distribution Universal.

Conservation Good suburban gardens are attractive to it, but they do need a plentiful supply of invertebrates for the young. Any reduction in the ratio of built up areas to green spaces will have a damaging effect.

GREENFINCH *Carduelis chloris* **B**

Population Nationally the population expanded rapidly to 1976, and there was a 51% rise over the past 25 years. In the Bristol region the impact of the disease (Trichomonosis) in 1976 has caused an 18% decline since 1994. Bristol figures show a 7% increase since 2000, but a very sharp fall between 2007 and 2008. The population estimate was that 1300 pairs nest within the city, or 11.6 pairs a sq. km. There is also a much larger migratory winter population as revealed by their familiar use of thousands of bird feeders.



Frequency Overall 6.3 birds per hour, with a minimum of less than one and a maximum of 17. The cause of the variation is obscure.

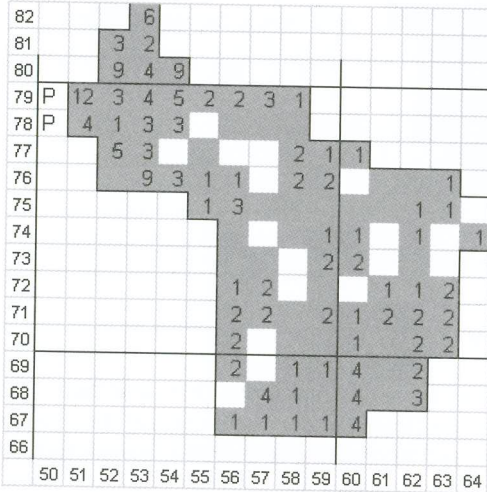
Distribution Universal.

Conservation It has been a shock to see an abrupt decline in this species after years of increase, caused by a parasite. It is very much a bird of the suburbs, and any threats to gardens is a threat to this species.

GOLDFINCH *Carduelis carduelis* B

Population Nationally a 13% increase in the past 25 years, locally a 100% increase since 1994 in the past decade. In Bristol a 34% increase since 2000. Population estimate was 500 breeding pairs, or 5.4 pairs per sq. km.

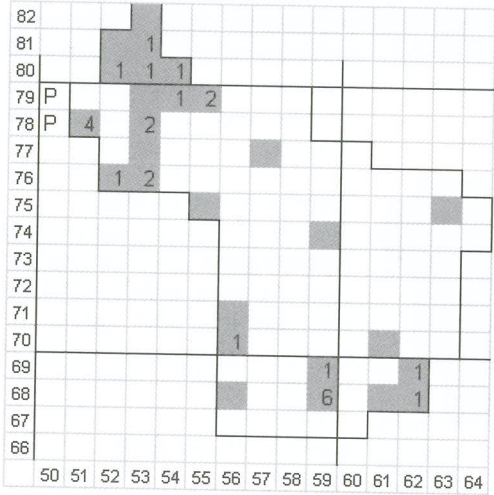
Frequency Overall 1.6 birds per hour, varying from none to 12 per hour.



Distribution Seen in 92 squares, most frequent in the north west; the areas of wasteland around Avonmouth. Otherwise it is fairly common on the fringes but not in central areas.

Conservation Its recent increase has been caused by garden feeding stations enabling improved over-winter survival. It also eats the seeds of Plane *Platanus x hispanica* trees, so that the city is an attractive habitat in winter.

LINNET *Carduelis cannabina* B

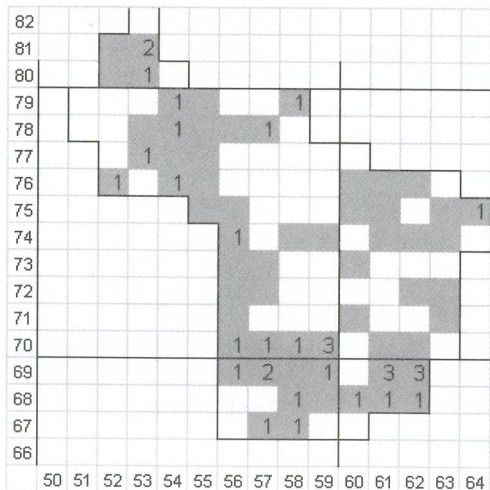


Population Nationally a 44% fall in past 25 years, largely associated with agricultural intensification and the lack of winter stubbles. Locally there has been a 27% fall since 1994. In Bristol it was uncommon and more or less restricted to waste areas around Avonmouth. It breeds colonially, and the population is likely to be fewer than 100 pairs.

Distribution Found in 27 squares, but only regular in 15 squares, associated with open grassland or waste sites.

Conservation Urban intensification is likely to remove it from the list of species breeding in the city.

BULLFINCH *Pyrrhula pyrrhula* B

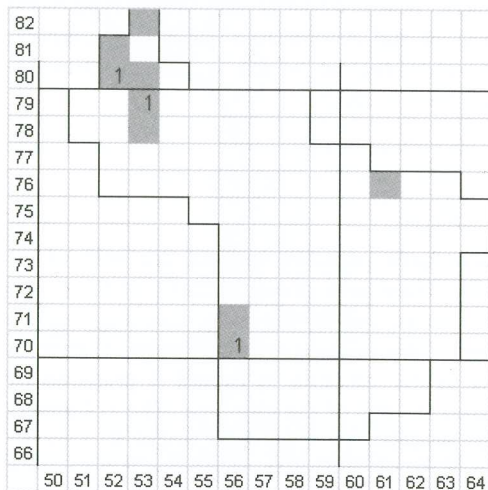


Population Nationally there has been a 34% fall in the past 25 years and locally a fall of 3% since 1994. Perhaps 100 pairs nested within the city at a low density of 1.6 pairs per sq. km. It is an elusive species which favours scrubland.

Distribution Found in 61 squares, but regular in only 26 (23%), and largely confined to the fringes of the city.

Conservation Any destruction of shrubby habitats or development of wasteland is likely to reduce its numbers.

REED BUNTING *Emberiza schoeniclus* B



Population Nationally there has been a 9% decline in the past 25 years, but locally the situation is unclear. However the number of Bristol sites is very small, including Avonmouth Sewage Works, Lawrence Weston Marsh, Duchess Pond, and, until recently, Ashton Marsh. A maximum of ten pairs still bred.

Distribution Found in just nine squares (8%).

Conservation More reedy wetlands would help this species to flourish.

Bristol Red List

The list below of 23 species shows those that either occur in ten squares or fewer, or that have an estimated breeding population of 10 pairs or fewer. Some - Canada Goose, Gadwall, Buzzard, Peregrine, Oystercatcher and Ringed Plover - are new species, and may be expanding. Little Grebe, Kingfisher and Reed Bunting have very specific habitat requirements. Treecreepers are highly elusive, and Kestrels may be in decline, though the evidence is uncertain. Many are unlikely to become common due to lack of suitable habitat.

Mute Swan	Peregrine	Skylark
Canada Goose	Oystercatcher	Sand Martin
Shelduck	Little Ringed Plover	Treecreeper
Gadwall	Ringed Plover	Dipper
Tufted Duck	Little Owl	Black Redstart
Little Grebe	Tawny Owl	Spotted Flycatcher
Great Crested Grebe	Kingfisher	Rock Pipit
Buzzard	Raven	Reed Bunting
Kestrel	Marsh Tit	

Six of the above species do not appear in the main Species List because they were not recorded during this survey. Tawny Owl are known to breed in wooded areas of the city (such as Blaise Woods), and there may be ten breeding pairs. Great Crested Grebe is known to have bred in ST5379 (Avonmouth Sewage Works). Little Ringed Plover, Black Redstart and Rock Pipit were known to have bred in secure areas of the Avonmouth industrial complex. Spotted Flycatcher is a species in rapid decline which is still occasionally recorded from within the city, and has bred in the past.

Acknowledgements

None of this knowledge would have been possible without the help of 31 volunteers, coordinated by John Tully. They have given tirelessly of their time and energy. The transects were all carried out in the early morning, and in theory all are completed by 9.00am. The process of population change is continuous, and an annual summary of the situation in Bristol is prepared by John, normally based on covering around 40% of the city area. The volunteers were: Ayers N, Ayers S, Baillie D, Bowring D, Clay M, Cockitt R, Cox K, Davis E, Drewitt E, Farmer P, Harman G&A, Hayes R, Holbrook P, Holbrook R, Holmes J&C, Kelly A, Levinson A, Lott D, Maxwell J, Page B, Parry S, Prince S&J, Scantlebury R, Searle M, Smith E, Stoddard D, Williams K, Williams R, Wood M.

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APPENDIX (Fig. 4 and Tables 3 & 4)

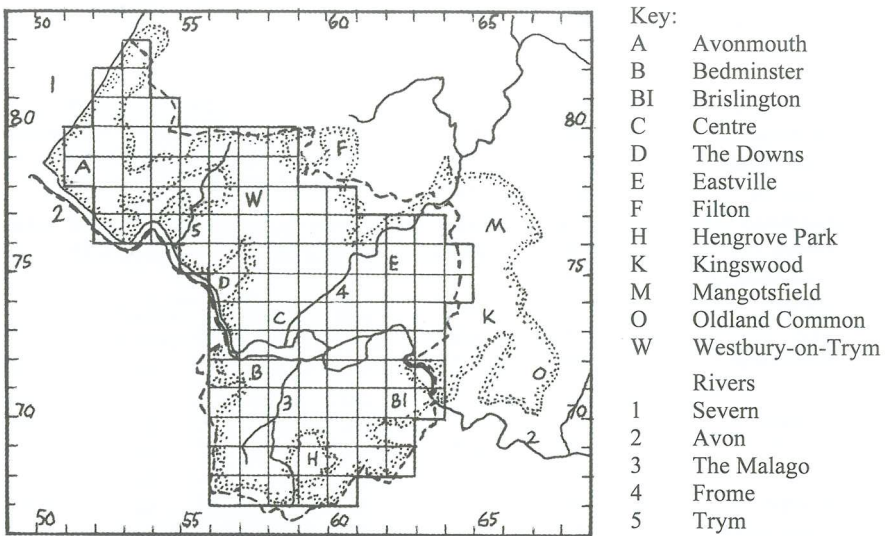


Fig. 4 Bristol showing the position of the 113 one km squares relative to topographical features. The stippled band indicates the edge of built-up areas and the broken line delimits the City of Bristol.

Table 3 Breeding species listed in order of breeding population pairs. Column 3 shows breeding density in pairs per sq. km., Column 4 shows the frequency of sighting in birds per hour, Column 5 the number of 1km squares occupied, and Column 6 the percentage local population change, 2000-2008.

Species	Breeding pairs	Breeding density	Frequency	Distribution	Population change
Wren	8400	75.0	11.5	112	-8
House Sparrow	7500	67.0	21.1	113	-9
Blackbird	6500	58.6	18.1	111	-13
Robin	5400	48.0	6.2	112	7
Blue Tit	5000	44.6	6.8	113	-8
Great Tit	3800	34.0	3.2	113	-13
Wood Pigeon	3000	26.5	19.2	113	59
Dunnock	2800	24.8	3.9	113	2
Starling	1600	14.1	26.2	113	-62
L. Black-backed Gull	1500	88.0	9.1	102	11
Greenfinch	1300	11.6	6.3	113	7
Carrion Crow	1100	9.8	9.2	113	-14
Blackcap	1000	8.9	2	106	-7
Chaffinch	1000	8.9	4.2	113	-25
Feral Pigeon	800	7.8	15.4	107	-16
Jackdaw	800	7.1	5.3	113	-4
Magpie	800	7.1	7.2	113	-1
Collared Dove	700	7.6	6.6	113	-26
Chiffchaff	600	5.3	1.9	113	-14
Song Thrush	600	5.8	1.7	113	-18
Goldcrest	500	9.0		58	
Goldfinch	500	5.4	1.6	92	34
Herring Gull	500	29.0	5.1	99	66
Long-tailed Tit	200	2.4	0.7	84	
Mallard	200	2.9	2.8	70	
Swift	200	2.0	3.4	99	-37
Whitethroat	200	2.9	0.8	68	
Jay	150	2.0	0.4	69	
Bullfinch	100	1.6		61	
Coal Tit	100	2.0		49	
Linnet	100	2.9		27	
Moorhen	100	3.1		32	
House Martin	80			42	
Mistle Thrush	60	1.0		60	
Green Woodpecker	50	2.0		49	
Gt Spotted Woodpecker	50	2.4		41	
Willow Warbler	50	5.0		22	
Reed Warbler	50			11	
Stock Dove	50	1.7		30	
Lesser Whitethroat	30	1.0		31	
Pied Wagtail	30			36	

Species	Breeding pairs	Breeding density	Frequency	Distribution	Population change
Swallow	30			60	
Grey Wagtail	30			26	
Rook	30			36	
Heron	25			52	
Coot	25	2.3		11	
Nuthatch	25	2.1		12	
Pheasant	20			23	
Sparrowhawk	15			43	
Skylark	10			17	
Kestrel	10			25	
Reed Bunting	10	1.1		9	
Ringed Plover	10				
Treecreeper	10			4	
Buzzard	5			26	
Gadwall	5			6	
Kingfisher	5			5	
Peregrine	4			9	
Little Grebe	3			5	
Oystercatcher	3			5	
Canada Goose	2			9	
Mute Swan	2			16	
Shelduck	2			11	
Lapwing	0			7	
Cormorant	0			43	
Total	57,760			511	

Table 4 Grid reference of each 1 km square, with total species, total hours spent, total number of birds/hour, and crude habitat percentages.

Square	Species	Time	Rate	Habitat		
	Number	Hrs	Birds/hr	Residential %	Business %	Natural %
5178	26	2	195	0	95	5
5179	22	1	129	0	80	20
5276	38	3	233	60	0	40
5277	38	12	279	80	20	0
5278	26	1	113	0	90	10
5279	20	1	54	0	100	0
5280	50	3	171	0	90	10
5281	47	3	154	0	40	60
5376	35	3	281	70	0	30
5377	51	12	201	60	0	40
5378	48	12	153	0	60	40
5379	58	16	141	0	60	40
5380	47	3	151	0	50	50
5381	37	2	180	0	60	40
5382	40	3	104	0	50	50
5476	44	4	213	10	0	90

Square	Species Number	Time Hrs	Rate Birds/hr	Habitat		
				Residential %	Business %	Natural %
5477	39	21	129	50	0	50
5478	37	3	262	70	0	30
5479	41	3	242	0	0	100
5480	36	3	167	0	0	100
5575	46	9	241	80	0	20
5576	48	32	187	90	0	10
5577	33	3	191	70	0	30
5578	41	20	124	40	0	60
5579	36	3	143	30	0	70
5667	29	3	261	50	0	50
5668	27	3	352	60	0	40
5671	40	5	190	5	60	35
5672	34	4	159	30	0	70
5673	45	19	182	50	0	50
5674	36	10	131	5	0	95
5675	33	7	208	80	0	20
5676	28	2	199	60	0	40
5677	35	21	185	50	0	50
5678	43	16	189	50	0	50
5679	34	4	297	50	0	50
5767	29	3	270	50	0	50
5768	30	4	297	70	20	10
5769	41	6	298	60	0	40
5770	29	4	149	60	30	10
5771	26	5	172	90	10	0
5772	53	30	178	80	0	20
5773	32	19	123	90	10	0
5774	22	2	221	90	0	10
5775	39	23	137	70	0	30
5776	27	11	140	90	0	10
5777	40	26	93	90	0	10
5778	31	3	171	80	0	20
5779	25	4	221	60	0	40
5867	34	4	264	80	5	15
5868	35	5	215	40	40	20
5869	30	3	162	70	10	20
5870	31	4	252	80	0	20
5871	32	8	215	50	50	0
5872	26	6	305	0	80	20
5873	27	5	166	50	50	0
5874	27	6	166	100	0	0
5875	32	29	147	90	0	10
5876	33	14	312	80	0	20
5877	34	13	142	65	20	15
5878	25	13	313	90	0	10
5879	38	9	187	40	0	60
5967	25	2	350	65	5	30
5968	45	26	92	5	15	70

Square	Species Number	Time Hrs	Rate Birds/hr	Habitat		
				Residential %	Business %	Natural %
5969	28	3	296	70	15	15
5970	27	3	238	70	5	25
5971	26	4	161	60	20	20
5972	25	2	376	5	85	10
5973	37	14	324	10	80	10
5974	39	21	154	60	30	10
5975	32	19	211	100	0	0
5976	23	4	203	95	0	5
5977	23	4	280	70	20	10
6067	29	3	282	85	0	15
6068	27	3	313	70	5	25
6069	27	4	224	70	10	20
6070	38	23	177	75	5	20
6071	49	24	98	35	40	25
6072	28	2	274	0	100	0
6073	29	6	246	70	30	0
6074	24	2	162	70	30	0
6077	29	5	206	80	0	20
6168	43	27	123	70	0	30
6169	30	3	225	50	0	50
6170	42	26	103	80	10	10
6171	25	2	126	90	10	0
6172	33	5	308	20	60	20
6173	22	3	231	80	10	10
6174	28	4	230	80	0	20
6175	47	18	180	20	0	80
6176	55	16	176	30	0	70
6268	38	3	284	80	0	20
6269	60	22	220	10	5	85
6270	38	3	189	10	75	15
6271	39	6	193	70	0	30
6272	41	10	218	80	0	20
6273	36	3	294	60	0	40
6274	30	4	257	30	50	20
6275	30	3	269	75	5	20
6276	41	12	167	60	20	20
6370	38	3	146	5	5	90
6371	47	16	248	30	0	70
6372	38	13	183	85	0	15
6373	27	2	202	90	0	10
6374	28	2	303	90	0	10
6375	34	8	228	75	20	5
6376	35	3	269	60	0	40
6474	23	3	213	100	0	0
6475	25	2	183	100	0	0

Paradise lost: the palaeornithology of the Avon wetlands

M.A. Rogers

It is hard to imagine that the low-lying areas of central Bristol were once a marshy floodplain formed by the confluence of the River Avon and one of its tributaries, the Frome. Rising above this waterscape were the fortified walls of the early Medieval town and castle, built on an elevated sandstone ridge between the two rivers. The old meandering course of the River Avon, now part of the floating harbour, would have changed from a freshwater stream to a turbid, brackish waterway with the rise and fall of the tide. Avian remains from a number of Medieval sites in Bristol show that a wide range of marine, freshwater and estuarine birds frequented the muddy banks of the river and surrounding marshes. Many of the species identified are familiar to birdwatchers in our area today but some now only occur as rare vagrants. These bird bones are most likely the leftovers from banquets held at the wealthier households in the city or, indeed, Bristol Castle itself. As the port and city of Bristol grew many of these waterbirds vanished along with their wetland habitat and would have been brought in from elsewhere in the region. Before 1240, the sinuous course of the River Frome flowed past Baldwin Street before discharging its waters into the Avon below Bristol Bridge. By 1247 it had been diverted along a straight new channel which passed through what is now the City Centre (then St. Augustines Marsh) and rejoined the Avon at Canon's Marsh. This enabled much of the marshland to be drained and reclaimed for housing, monastic settlements, light industrial use and, of course, docklands. The last surviving wetland areas at Canon's Marsh and where Queens Square now stands (known simply as 'The Marsh') persisted until the seventeenth century. The reclamation and development of the former was a more protracted and piecemeal affair but The Marsh disappeared in little more than a hundred years. At sometime after 1678 large-scale dumping of domestic and industrial waste began in order to raise the ground level of this land and continued until 1709. In 1699 building work started on what was to become Queens Square and by 1793 the whole site had been developed with the construction of the last property on the Welsh Back frontage. The only extensive wetlands in the region were now the coastal marshes and back-fens of present-day North Somerset and South Gloucestershire.

Ornithologists might be forgiven for thinking that the North Somerset, Avonmouth and Oldbury Levels and moors are semi-natural wetlands, largely unspoilt by the ravages of modern farming practices. In reality, they are the end result of centuries of drainage and reclamation that began in the Medieval

period and continued almost unabated up until the present day. These alluvial lowlands lie below sea level and were therefore vulnerable to flooding during periods of heavy rainfall or inundation by high spring tides. The water levels are thus controlled via a network of artificial watercourses (known locally as 'rhynes'), embanked/canalised rivers, sluice gates, pumping stations and sea walls (Rippon 1997). Very few truly wet areas now exist and as a result breeding species characteristic of this type of habitat, such as Lapwing *Vanellus vanellus*, Redshank *Tringa totanus* and Snipe *Gallinago gallinago*, have declined dramatically in recent years. In sharp contrast, these wetlands, although humanly modified and managed to some degree, were still prone to periodic episodes of flooding during the Middle Ages and their associated avifauna was much more diverse. Wild birds were regarded as a luxury food at this time and some species such as the White Stork *Ciconia ciconia*, Spoonbill *Platalea leucorodia* and Crane *grus grus* were particularly sought after and expensive to obtain (Jones 1965). The sheer quantities and variety presented to guests at a banquet would have been symbolic of the social status of their host (Albarella & Thomas 2002; Serjeantson 2006). By the sixteenth century, the over-exploitation of waterbirds to meet this demand prompted the introduction of protective legislation in the form of the 1534 *Acte Ayenst Destruccon of Wyldfowle* (Luders *et al.* 1817). Apart from a proviso for "gentlemen sporting with spaniels and long bows" no-one else was allowed to hunt wildfowl between the end of May and the end of August. Furthermore, it was also made illegal, "between the first of March and the end of June to take or destroy the eggs of the bittern, heron, spoonbill, crane, mallard, teal or any other kind of wildfowl". Any transgressors could be punished with a fine and one year's imprisonment. It is clear from the wording of the act that it also protected the interests of the poulterers (whose grossly over-inflated prices were set by royal decree) and the gastronomic rights of the king, aristocracy and more affluent social classes. The overseas trade in wild birds probably flourished as a result and some species, such as Grey Herons *Ardea cinerea* were taken from the nest as chicks and reared in captivity before being killed, cooked and eaten (Bourne 1999b). Even in the Middle Ages, it seems, unsustainable practices were being driven by market forces.

In the immediate Post-Medieval period some protection was given to breeding swans, herons, egrets, spoonbills and cranes in the 1566 *Acte for P'servacion of Grayne* (Luders *et al.* 1819) but by this time some of our native waterbirds appear to have declined to a point where they had to be imported from abroad. Harrison (1586) states that:

"...as for egrets, pawpers [spoonbills], and such like, they are dailie brought to us from beyond the sea, as if all the foule of our own countrie would not suffice to satisfie our delicate appetites"

The popularity of wild bird meat gradually waned in England but came too late to save such species as the Spoonbill and Crane from extinction as breeding

residents. The wholesale drainage and reclamation of the English fenlands commenced in the seventeenth century and vast tracts of prime habitat were lost to agriculture (Rackham 1986). This paper presents an overview of waterbird remains from Medieval and post-Medieval archaeological sites in the Bristol region. It will also use documentary sources in an attempt to reconstruct the wetland avifauna of the Middle Ages in our area and speculate on what other species might have been present at this time.

Table 1 Waterbird remains from Medieval and Post-Medieval archaeological sites in the Bristol Region. This is not an exhaustive list and more records are probably hidden in many unpublished reports.

Mute Swan <i>Cygnus olor</i> - BC, KS, NQ, US.
Greylag/DomesticGoose <i>Anser anser</i> - BC, BH, PM, SBH, SJP, US?.
Wigeon <i>Anas penelope</i> - MLP, PM.
Gadwall/Wigeon <i>Anas strepera/penelope</i> - BC.
Teal <i>Anas crecca</i> - BC, DW, FR, OCH, PM, ST/QL.
Mallard/Domestic Duck <i>Anas platyrhynchos</i> - BC, DW, FR, PM, RS, ST/RS.
Mallard/Teal <i>Anas platyrhynchos/crecca</i> - SJP.
Pintail <i>Anas acuta</i> - BC.
Teal/Garganey <i>Anas crecca/querquedula</i> - US.
Duck <i>Anas/Aythya sp.</i> - OCH.
Goldeneye <i>Bucephala clangula</i> - BC.
Goosander <i>Mergus merganser</i> - BC, MLP.
Cormorant <i>Phalacrocorax carbo</i> - BC.
Grey Heron <i>Ardea cinerea</i> - BC, DW, PM.
White Stork <i>Ciconia ciconia</i> - PM, WW.
White-tailed Eagle <i>Haliaeetus albicilla</i> - CC.
Marsh Harrier <i>Circus aeruginosus</i> - PM.
Moorhen <i>Gallinula chloropus</i> - DW.
Coot <i>Fulica atra</i> - US.
Crane <i>Grus grus</i> - BC, DW, PM, US.
Golden Plover <i>Pluvialis apricaria</i> - BC, FR.
Grey Plover <i>Pluvialis squatarola</i> - BC.
Lapwing <i>Vanellus vanellus</i> - BC, DW, US.
Lapwing/Plover <i>Vanellus vanellus/Pluvialis sp</i> - PM.
Dunlin <i>Calidris alpina</i> - DW.
Jack Snipe/Dunlin <i>Lymnocyptes minimus/Calidris alpina</i> - PM.
Snipe <i>Gallinago gallinago</i> - BC, DW, FR, ST/QL.
Woodcock <i>Scolopax rusticola</i> - BC, DW, FR, PM, US.
Godwit <i>Limosa sp.</i> - SH.
Curlew <i>Numenius arquata</i> - BC, DW, FR, PM.
Turnstone <i>Arenaria interpres</i> - BC.
Wader sp. Charadriiformes - BC, FR, OCH, QS, US, WS.
Common Gull <i>Larus canus</i> - DW.
Lesser Black-backed Gull <i>Larus fuscus</i> - DW.
Herring Gull <i>Larus argentatus</i> - DW.

Key:

- BC - Bristol Castle (Ponsford 1979) 11-14th century.
 BH - Back Hall (Bird 1960) 13th century.
 CC - Cabot Circus (S. Warman *pers. comm.*) 13th century.
 DW - Dundas Wharf (Jones & Watson 1987) 12-13th century.
 FR - Finzel's Reach (Strid in prep.) 12-15th century.
 KS - 1-2 Kings Street (Higbee 2005a) 17/18th century.
 MLP - Mary-le-Port (Bramwell 1985) 13th century.
 NQ - Narrow Quay (Levitan 1987) 15-17th century.
 OCH - Old Council House (Higbee 2008) 12-13th century.
 PM - Puxton Moor (Hamilton-Dyer 2006) 11-12th century.
 QS - 22-25 Queens Square/42-44 Welsh Back (Higbee 2010) 17-18th century.
 RS - 98-103 Redcliff Street (Higbee 2001) 13/14th century.
 SBH - St. Bartholomew's Hospital (Barber 1998) 13-16th century.
 SH - Spicers Hall (Barber unpublished) mid-14th - late 15th century.
 SJP - St. James's Priory (Barber 2006) Medieval/17-18th century.
 ST/QL - 26-28 St. Thomas Street/ Three Queens Lane (Warman *et al.* 2004) 11-15th century.
 ST/RS - 30-38 St. Thomas Street/60 Redcliff Street (Higbee 2004a) 15/16th century.
 US - Union Street (Higbee 2005b) 12-17th century.
 WB - 42-43 Welsh Back (Higbee 2006) pre-late 17th century.
 WS - 18-20 West Street (Higbee 2004b) Post-Medieval.
 WW - West Wick (Strid 2009) 12-13th century.
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The wetland avifauna of the Bristol region in the Middle Ages

Only the larger and more conspicuous waterbirds are discussed here - the fragile bones of passerines do not survive well at open archaeological sites or are missed unless wet sieving is used to recover the smaller faunal remains. These are usually preserved in cave deposits which tend to be an admixture of both old and new material. There is also the question of edibility. Apart from the White-tailed Eagle *Haliaeetus albicilla* and Marsh Harrier *Circus aeruginosus*, most of the birds in Table 1 were regarded as highly palatable and appeared on the menus of numerous Medieval banquets. Most people would be understandably appalled and disgusted at the ornithophagous habits of our forbears. The flesh of the various Ardeids, for example, possesses a strong fishy flavour and would have been very much an acquired taste amongst the select few. Several species were probably eaten out of existence and this could explain why, at least until recently, the Bittern *Botaurus stellaris* and the Grey Heron have been the only resident members of the Ardeidae in our country. More of this later. Now let us consider the archaeological and documentary evidence for the former presence of the Little Egret *Egretta garzetta*, White Stork, Spoonbill, Crane and other potential species in the Avon wetlands.

LITTLE EGRET *Egretta garzetta*

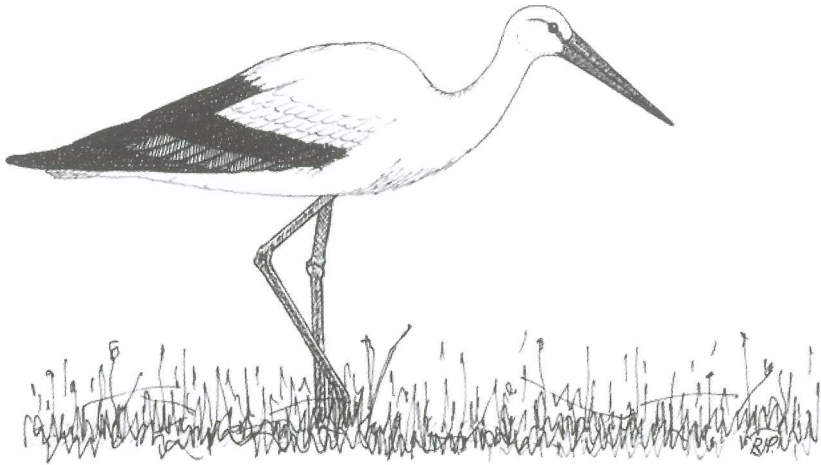
The change in status of this species, from rare vagrant to breeding resident, over the last twenty years has been well documented (Dymond *et al.* 1989; Lock & Cook 1998; Musgrove 2002). However, Bourne (2003), building on the earlier work of Stubbs (1910a,b), has put forward a convincing case for the former presence of the Little Egret in Medieval England. Unfortunately, there are no confirmed archaeological records from Britain to support this. The sole evidence for its occurrence in the Bristol Region at this time comes from a fifteenth century account of a banquet that took place in the Great Hall of the Bishop's Palace in Wells. On 16th September 1425 a feast was held to mark the induction of John Stafford to the Bishopric of Bath and Wells. The third course on the menu included pety curlewe [Whimbrel *Numenius phaeopus*], egret, plovere [plover *Pluvialis* sp.] and snytys [Snipe]. Swan, heyroun [Grey Heron], crane, tele [Teal], gullys [gulls *Larus* spp.] and curlew were served during the first and second courses (Gasquet 1896). All of these birds could have been obtained locally from the extensive wetlands that still existed in the area at this time. Gasquet regarded this reference to the egret as being synonymous with 'young heron' but several Medieval manuscripts clearly differentiate between the species. Juvenile Grey Herons were almost exclusively referred to as 'branchers' in the literature. By the sixteenth century the Little Egret was evidently declining in Britain. As the resident population dwindled they had to be imported from Europe to meet the demand for wild bird meat (Harrison 1586; Bourne 1999, 2003). The 1566 *Acte for P'servacion of Grayne* implies that it was protected as a nesting species in Post-Medieval England (Luders *et al.* 1819).

The first accepted modern record of this species in our area occurred in 1965 when an adult bird was seen in the Axe Estuary on 22nd May. There were a further five records before 1993 when increasing numbers began to appear in the Bristol Region in line with a national trend. There was a corresponding increase in neighbouring Somerset and breeding first began there in 1998 when two pairs fledged up to five young (Ballance 2006). By 2007 there were an estimated 35-36 breeding pairs at five sites in the county (Holling *et al.* 2010). Apart from birds being present at Uphill Grange heronry during the spring of 2003 and 2005 (*Avon Bird Report* 2005: 57) there have been no other signs of imminent colonisation in our area.

WHITE STORK *Ciconia ciconia*

Sub-fossil bones of this species (including *ciconia* sp.) have been found at eighteen archaeological sites in Britain. Two of these are from 12-13th century fen-edge settlements at Puxton Moor and West Wick near Weston-Super-Mare (Hamilton-Dyer 2006; Strid 2009). The close proximity of these two sites suggest that the White Stork was once a resident in the Bristol Region or

appeared more regularly than it does now. In 1598/99, for example, Nether Badgworth and Nether Weare, in Somerset, were held by Sir Henry Newton from the Bishop of Bath and Wells on annual payment of one stork (Collinson 1791). A carved stone spandrel in the Elder Lady Chapel of Bristol Cathedral (constructed in 1220) depicts a stork, its head thrown back in bill-clattering display. A similar image can be seen on a wooden bench-end (carved in 1538) at St. Michaels Church in North Cadbury. The only known breeding attempt to have occurred in Britain is documented by Joannes de Fordun in his *Scotichronicon* of 1446. He describes how a pair of storks nested on the top of St. Giles Cathedral, in Edinburgh, in 1416 and stayed "throughout a season of the year" (Baxter & Rintoul 1953). More recently, another pair were observed displaying and building nests in the Calder Valley (West Yorkshire) in 2004. Blathwayt (1906) mentions a pair that were said to have been shot on the church tower of Wick St. Lawrence in December 1897 but the first accepted record for our area did not occur until 1971 when three juveniles, ringed at the same nest in Jutland (Denmark), were seen at Combe Down on 6th September (Bottomley 1972). To date, there have been a further seven records, mainly of single birds, apart from three over Knowle on 27th April 1993 (*Avon Bird Report* 1993: 16-17).



SPOONBILL *Platalea leucorodia*

The spoonbill may once have been a breeding resident in the Bristol Region, perhaps nesting colonially with Grey Herons. It is depicted as a stone carving on

a capital at Wells Cathedral (c.1180), in a stained glass window (c.1400) at Nailsea Court and on a carved wooden bench-end (c.1537) in St. Andrews Church, Stogursey (Blathwayt 1935; Smith 1969). The species is known to have nested in East Anglia, Sussex, Kent, Middlesex and Pembrokeshire up until the middle of the seventeenth century (Gurney 1921). Its eggs and nests are specifically protected in the 1534 *Acte Ayenst Destruccon of Wyldefowl* and the 1566 *Acte for P'servacion of Grayne*. Strangely, these documentary sources are not supported by the archaeological evidence. So far, the species has only been identified from two sites - fourteenth century Cuckoo Lane in Southampton (Bramwell 1975) and Medieval Castle Rising Castle in Norfolk (Jones *et al.* 1997). The spoonbill probably became extinct in Britain in the seventeenth century due to over-exploitation and habitat loss. They regularly appeared on the menus of Medieval feasts and Sir Thomas Browne, writing in 1668, noted that the spoonbills nesting at Trimley in Suffolk were shot by fowlers for their feathers (Southwell 1902). The drainage of the East Anglian fens, under the direction of the Dutch engineer Cornelius Vermuyden, was completed by 1651 and destroyed the largest area of wetland in Britain (Rackham 1986).

In the mid-1990's increasing numbers of birds began to appear in East Anglia, the north of England and the south of Scotland during the breeding season. Courtship and nest building activity were observed but it was not until 1998 that a pair laid eggs at an undisclosed site in Suffolk. Unfortunately, these were predated but the following year two young fledged successfully from a nest at the Ribble Estuary in Lancashire (Ogilvie *et al.* 2001). In 2008 another pair reared three young at Kirkudbright Bay in Dumfries and Galloway (Collin 2009). In 2010 six pairs of spoonbills reared a total of ten young at Holkham NNR in Norfolk. The first historical occurrence of the spoonbill in the Bristol Region was of one shot on Kenn Moor in October 1865 (Lewis notebook). No more were seen until 3rd May 1946 when a single bird appeared at the Axe Estuary. Since then there have been a further 24 records, mainly of ones or twos, but a party of five were observed in the Weston-Super-Mare/Axe Estuary area on the 6th June 2000 (*Avon Bird Report* 2000: 30).

CRANE *Grus grus*

The archaeological, documentary and place-name evidence for the former presence of this species in the Bristol Region has been reviewed by Rogers (2008). However, some of the material from this paper is worth repeating here in the light of additional documentary and archaeological evidence recently found by the author. As already discussed in the species account for the Little Egret, crane was served during the first course at the induction feast of Bishop Stafford in September 1425 along with heron and swan. It is possible that these birds were locally sourced from the Somerset Levels or other extant wetlands in the region. This adds some weight to the writings of Gerard of Trent (1900) who stated that cranes could still be obtained at Steart, in the Parish of Babcar, in

the seventeenth century. The Manor of Steart was held by serjeanty (a form of feudal tenure) from the king on payment of one crane at Michaelmas. This arrangement apparently dated back to the thirteenth century, but by the time Gerard of Trent wrote his account in 1633 cranes were rare in Somerset and three shillings sometimes had to be paid to the king instead of the customary bird at Michaelmas. Further evidence has also emerged from more archaeological sites in central Bristol. A subfossil crane bone was found in waterlogged 12-13th century deposits on part of the former Dundas Wharf in Redcliff Street (Jones & Watson 1987). In the year 2000, two more were identified from 12-13th and 15-17th century levels at a high-status archaeological site in Union Street (Higbee 2005b). This brings the number of Medieval and Post-Medieval sites in the Bristol Region, including Puxton Moor and Bristol Castle, to four (Hamilton-Dyer 2006; Ponsford 1979). Collectively, these have produced a total of seven bones. Cranes appeared to have been a familiar sight on the wetlands of the Bristol Region up until the seventeenth century. There are six recent historical records from our area including a party of five that frequented fields of maize stubble in the Tortworth area from 25th February to 2nd March 2003 (*Avon Bird Report* 2003: 58).

Other wetland species

In 1655 a rather curious book appeared (written in 1595 and published posthumously), entitled *Healths improvement or rules comprising and discovering the nature, method and manner of preparing all sorts of food used in this nation*. Its author, the physician Thomas Muffett, as well as discussing the nutritional value of many wild birds, makes some particularly interesting observations on their natural history. In addition to Bittern and Grey Heron, he states that four more species were present in Britain in the sixteenth century - the black, white, criel heronshaw and the mire-dromble (Mullens 1912). Old English vernacular names are not much to go on but we can make some educated guesses regarding the identities of these ardeids by using other documentary sources. The first of these, the black heron, is also referred to by Sir Thomas Browne as occurring in Norfolk in the seventeenth century and may have been the Purple Heron *Ardea purpurea* (Southwell 1902; Bourne 1999a,b). Up until recently, this species was a rare but annual vagrant to Britain but in May 2007 three birds (two males and a female), all sporting breeding plumes, were present at Minsmere in Suffolk. Heavy flooding in June is thought to have curtailed any potential breeding attempt (Holling *et al.* 2010). In 2010 a pair reared at least two young at Dungeness in Kent. There are seven recent records of this species from the Bristol Region. The white heron, as already discussed in this paper, has been identified as the Little Egret (although one cannot discount the possibility of the Great Egret *Egretta alba* as a former inhabitant of this country). The criel-heronshaw could have been the Night Heron *Nycticorax nycticorax* - Bourne (1999b, 2003) established that the mysterious brewer (or brue), a popular delicacy in the Middle Ages, was, in fact, this species. The

brewé is an anglicised form of the French héron bihoreau and these birds are now known to have been imported from Europe in the sixteenth century. Like Grey Herons, they were also taken from the nest and kept in captivity to be fattened up for the pot. Despite its apparent popularity as a dish there is only one Post-Medieval archaeological record from the Royal Navy Victualling Yard (c.1560-1635) in Greenwich (West 1995). There are currently five accepted records from our area and in 1997 up to three birds summered in the Avalon Marshes in Somerset (*Somerset Birds* 1997: 25), raising hopes that the species might breed in Britain for the first time. It is certainly capable of doing so - a small feral population of the nominate European race was established in Norfolk from birds that escaped from Great Witchingham Wildlife Park during the October 1987 gale (Bourne 1999a; Williamson 1998). The fourth species of heron mentioned by Muffett, the Mire-dromble, could have been the Little Bittern *Ixobrychus minutus*. Breeding by this species was strongly suspected in East Anglia in the nineteenth century and Kent in 1947 but not proven until 1984 when a pair reared three young at Potteric Carr in South Yorkshire (Allport & Carroll 1989; Dymond *et al.* 1989; Holloway 1996). In 1958, a male bird was present at Screech Owl Pit, near Bridgwater, from 21st June-1st August and was joined by a female during part of its stay from 18th July-12th August (Ballance 2006). More recently, a pair reared two young at Ham Wall NNR in 2010. It has been recorded on six occasions in our area since 1789.

The last species worth considering here is the Glossy Ibis *Plegadis falcinellus*, a relatively recent addition to the county list. It was first recorded in 2007 when a first-winter bird was seen at Chew Valley Lake on the 2nd and 3rd of November (Thoburn 2008). Earlier, in the spring of 2007 there was an unprecedented influx of this species into the UK, including a flock of 17 at Frampton 100 Acre/Saul Warth in Gloucestershire from 20th April to 7th May, with three remaining until 15th (*Gloucester Bird Report* 2007: 49-50). There were more sightings from our area in 2009 with single birds being recorded at Chew Valley Lake on the 6th September and Northwick Warth on 14th October. At the former site a group of four appeared on 26th September that same year. Since 1860 there have been at least seven records from Somerset (Ballance 2006), not including a number of sightings of up to five birds at various sites in the Avalon Marshes in 2009/10 (B.Gibbs *pers.comm.*). According to Lubbock (1845):

"fifty years back it was seen often enough [in Norfolk] to be known to gunners and fishermen as the black curlew"

Fourteenth-century domestic wall-paintings at Longthorpe Tower, near Peterborough, include several naturalistic images of wetland birds such as Bittern, Crane and what is traditionally regarded as that of a Eurasian Curlew (Rouse & Baker 1955). However, the latter picture was painted with black pigment suggesting that the artist intended to depict a Glossy Ibis.

It is possible that the Glossy Ibis was present in the Bristol Region in the Medieval and Post-Medieval periods before wetland drainage began to have a serious impact on our local avifauna. One could speculate further on what other species once frequented our long-lost fens and marshes but the archaeological and documentary evidence is far from complete. There is, for example, one anomalous record of the Pygmy Cormorant *Phalacrocorax pygmaeus* from a 15-16th century timber-lined well in Abingdon, Oxfordshire (Bramwell & Wilson 1979). This species is not referred to in any cookery books or accounts of feasts from this period, nor are there any historical ornithological records from Britain. This raises an important question - how many of these wetland birds were truly native to this country and what proportion were imported from abroad? The latter could apply to bird bones recovered from Post-Medieval and later archaeological sites when local waterbird populations were seriously depleted by over-exploitation and habitat loss. However, numerous archaeological excavations are undertaken every year and much more remains to be discovered concerning the avifauna of our vanished wetlands in the Middle Ages.

Conclusion

From the available archaeological and documentary evidence it appears that the modern avifauna of our desiccated wetlands is impoverished compared to that of the Middle Ages. The diverse community of waterbirds at this time may have included many species of wildfowl, several types of heron, White Stork, Glossy Ibis, Spoonbill, White-tailed Eagle, Marsh Harrier, rails and crakes, Crane, waders (perhaps including Ruff *Philomachus pugnax*) and gulls. Unfortunately, little can be said regarding the small passerines that no doubt inhabited these fens and marshes. Before wetland drainage and reclamation began to have an impact, many of the more edible species were probably obtained locally for the dinner table. Avian remains from Post-Medieval and later archaeological sites could be from birds that had to be imported from farther afield as local supplies dwindled.

Now that we live in more enlightened times, and the conservation ethic is very much on the political agenda, could some of this former biodiversity be restored? One only has to look at what has been achieved by the Royal Society for the Protection of Birds, English Nature (now Natural England) and Somerset Wildlife Trust in the Avalon Marshes, at West Sedge Moor and other reserves in Somerset. The rehabilitation of old peat workings and Raised Water Level areas have created a rich mosaic of wetland habitats which attract large numbers of wintering wildfowl and waders. In recent years, the Bittern and Marsh Harrier have returned as breeding species. The colonisation of the county by the Little Egret and successful breeding by Cattle Egrets *Bubulcus ibis* in 2008 (*Somerset Birds* 2008: 37-38) could be a portent of more 'exotics' (i.e. Great White Egret, Spoonbill) being tempted to take up residence there, especially when global warming takes hold in the next few decades. As sea levels continue to rise,

agriculture on the alluvial lowlands bordering the Severn Estuary will become increasingly untenable and some form of managed retreat will be inevitable. Diversification, in the form of eco-tourism, would provide an alternative source of income for many farming communities and contribute to the local economy. The old landscape of marsh and back-fen would return and present conservation organisations with a golden opportunity to manage substantial areas of former farmland for the benefit of its birdlife. There are very few, if any, wetland habitats in the Bristol Region that can be described as pristine but some semblance of their former glory in the Middle Ages could be resurrected with careful management of water levels and, of course, the consent of landowners. The nature reserves of the Walton, Weston and Clapton Moors in the Gordano Valley are clearly the way forward but more extensive areas would need to be protected, enhanced or re-created to make such a project worthwhile.

Acknowledgements

The author would like to thank the following individuals for their assistance - William Bourne (Department of Zoology, Aberdeen University), Brian Gibbs (Somerset County Bird Recorder), Gail Griffith (Somerset Archaeological & Natural History Society), Lorrain Higbee (independent archaeozoologist), Peter Insole (Archaeological Officer, Bristol City Council), Sylvia Warman (Environmental Officer, Cotswold Archaeology) and Bruce Williams (Bristol and Region Archaeological Services).

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Also consulted were the notebooks of the late Stanley Lewis, an egg-collector and field naturalist from Wells (1870-1949). These are held by Bristol City Museum and Art Gallery.

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Appendix: The Bush Tavern and its Christmas Bills of Fare: echoes of a bygone age

The Bush Coaching Inn and Tavern, immortalised in *The Pickwick Papers* by Charles Dickens, once stood in Corn Street, Bristol, and was demolished in 1854. At Christmas its patrons could enjoy a wide range of unusual dishes laid on by John Weeks, its landlord from 1773-1804. This was advertised as a printed Bill of Fare which was reproduced in many local and national newspapers, such was the fame of the Bush Tavern. Several species of waterbirds are listed, many of which are referred to by their Old English vernacular names, thus harking back to earlier times. Although the numbers and variety vary slightly over time, these Christmas menus were generally the same from year to year. The following are mentioned in the 1800 Bill of Fare (Hone 1827): 87 wild ducks; 17 wild geese; 37 teal; 31 wigeon; 16 bald coots [Coot]; 2 sea pheasants [Pintail]; 3 mews [gulls cf. common], 4 moor hens; 2 water dabs [Little Grebe *Tachybaptus ruficollis?*]; 7 curlews; 2 bitterns; 81 Woodcocks; 149 snipes; 18 Golden Plovers; 1 swan; 2 land rails [Corncrake *Crex crex*]; 1 sea magpye [Oystercatcher *Haematopus ostralegus*].

John Weeks, by all accounts, was a larger-than-life character and this clearly represents a conscious attempt on his part to emulate the great feasts of the Middle Ages. Most of these birds could have been obtained from elsewhere in the Bristol Region and stored in icehouses which were commonplace at this time. Notable absences are, of course, the Eurasian Spoonbill and Common Crane which were much rarer in the late eighteenth century and long extinct as breeding residents. Two Bitterns are the most interesting feature of this list. Despite the on-going drainage and reclamation of marsh and fen that was taking place at this time, Bitterns were probably fairly frequent winter visitors to the Bristol Region, particularly during severe frosts. It is possible that the birds served up at the Bush Tavern were taken in such circumstances, thus constituting the earliest records of the species in our area. According to D'Urban & Mathew (1892) Bitterns were still common around Weston-Super-Mare in the 1860's. As far as the author is aware, this annual Christmas banquet, fit for the table of any Medieval nobleman, was not available at any other public house in Bristol during the late eighteenth century. The Bush Tavern was undoubtedly the Georgian equivalent of the modern-day gastropub.

Club Activities 2009 and 2010

Club membership has continued around the 660 level which is good considering the economic climate and fixing the subscription for the two year period helped. A steady stream of new members have been recruited through the website, www.boc-bristol.org.uk. The monthly publication of *Bird News* is an important feature of the club. Thanks go to Steve Hale and Pete Hazelwood for the compilation of the Bird Records and to members of the committee who edit Club News including the programme of visits and meetings, the field reports and items of interest. Some 20% of members now receive *Bird News* electronically. The majority of bird sighting records are submitted electronically and highlights are published daily on the club website. They are used in the compilation of the annual *Avon Bird Report* published by the Avon Ornithological Group sponsored by the club jointly with the Bristol Naturalists' Society.

Club members participate in surveys organised by the British Trust for Ornithology (BTO) that have been locally organised by John Tully and Richard Bland. Many members took part in survey work for the BTO Bird Atlas project 2007-2011 which was a major undertaking. Avon was the first region to complete the survey of all its tetrads in 2010 showing the dedication of the people involved.

The Club participates in public activities to encourage an interest in birds and to publicise the Club. The longest running event is the Peregrine Watch in the Avon Gorge, Bristol, that continued in 2009 and 2010. In 2010 the Club marked twenty years of the watch and successful breeding of Peregrine chicks in the gorge. After the breeding success in 2008 when five chicks were fledged, 2009 was disappointing as only one chick fledged. In a return to form, the pair raised five chicks in 2010, all females. The public had good views of the birds at rest, flying over the gorge, hunting for food and feeding the fledged chicks. The peregrines also featured on the *Springwatch* programme on BBC television. Thanks go to Charles Stapleton who organised the watch. The Club exhibition stand was taken to a number of events including the Bristol Festival of Nature which is the biggest wildlife event in the region. The London Camera Exchange show at Chew Valley Lake gave the volunteers the opportunity to check out the latest optics. In 2010 the Club attended the Hawk and Owl Trust open day at Acton Court Grange. Thanks go to the members who represent the Club at these events.

There was a full programme of the popular Tuesday walks interrupted only by severe weather. They often visited places that are not covered on the weekend venues. Thanks go to Peter Holbrook who plays a leading role in the organisation of them. In December 2010 the 800th walk was celebrated, appropriately, with a Christmas lunch. This is a remarkable achievement that has grown from an unpromising start many years ago.

Margaret Searle was a long term active member of the Club who joined the

committee in 1987 becoming Chairman for three years from 1998. In 2003 she returned to office as Secretary until ill health meant that she was unable to continue in that role. One cannot underestimate the work she did for the Club and this was recognised in the presentation of the Club Special Award in December 2009 that she was delighted to receive. She passed away in 2010 and is sadly missed. She organised an occasional series of mid-week walks, often to places further afield. In November 2010 they were restarted in her memory with a successful visit to the Exe estuary which was a favourite destination of hers.

2009

The birding year started with the annual fixture at Slimbridge WWT undeterred by the very cold weather. A good view of a singing Cetti's Warbler was a surprise. A Bittern was found on a visit in January to the Somerset levels where they have become well established. The visit to the Exe Estuary was the only coach trip of the year; at Powderham a few members managed to find the Black Brant in the flock of Brent Geese.

Several new destinations were included in a full programme of field trips throughout the year. The new RSPB reserve at Manor Farm on Salisbury plain was visited and many farmland birds were seen including Red-legged and Grey Partridges and a Red kite. Cleeve Hill is an upland area where 14 Ravens performed acrobatics and a brief view of a Grasshopper Warbler was a bonus. The long drive to RSPB Ottmoor in Oxfordshire was rewarded with ten species of warbler and many waders on the shallow pools that have been created. The migration watch at several points along the Severn Estuary in October has become an annual event building up a history of movement along the coast. Poor weather meant that the count was much lower than in previous years. In the autumn Coombe Meadows and Ashleworth Ham alongside the River Severn were flooded but still produced good numbers of ducks and waders, and Fieldfares and Redwings had arrived for the winter.

Weekends away and holidays continue to be very popular with the Club members, most being oversubscribed. A winter visit to Kent was the first of the year. Large numbers of waders were seen but it was the raptors that attracted much attention with Hen and Marsh Harriers, Peregrine, Sparrowhawk and a Rough-legged Buzzard. A May visit to the Elan Valley was good for warblers, Redstarts, Pied Flycatchers and Red Kites. Some of the group ventured to the coast where they managed to find Choughs on the spectacular Birds' Rock. The summer break was a pelagic cruise on the *Pride of Bilbao* to Spain. Several cetacean species were seen in addition to the expected range of bird species. A quick trip ashore in Bilbao added Nightingale, and Sardinian and Melodious Warblers to the list. An autumn weekend in Norfolk rounded off the year.

At the AGM in December Roger White was elected chairman; Jane Cumming, secretary and Sue Sayers, treasurer. During 2010 Richard Belson took over from Jane as secretary.

2010

The winter turned colder becoming the coldest for several years but that did not deter members venturing out. A Bittern was the highlight of the new year's day visit to Slimbridge. The RSPB reserve at Greylake was the entrée for the winter spectacle at West Sedgemoor of ducks and waders. The Exe estuary coach trip was popular with some members adding Red-breasted Goose to their life lists. Cotswold Water Park is noted for its Red Crested Pochards and the hunt for Smew was also successful. The visit to the forest of Dean was earlier in the year than usual but Crossbills and Redpolls made it worthwhile. The RSPB reserve at Newport Wetlands has developed into an excellent centre where Club members were given a very warm welcome. A visit to Shapwick Heath and Ham wall in the summer was notable for the number of Bitterns on view where they are successfully breeding. The Club social took a different form this year with a frantic two hour bird hunt around the Downs in Bristol followed by a picnic lunch in the Chairman's garden. A visit to the Chew Valley Lake ringing station was a family event giving young people the opportunity to see birds close up. In August a few members had the chance to visit the Stone Curlew project at Normanton Down in Wiltshire. The number of visitors is restricted to minimise disturbance to the birds. The weather was too good for the migration watch with virtually no wind giving low counts for the second year running. It was noticeable that longer distance day trips are becoming more difficult to organise and less popular; no doubt the steep increases in the price of petrol this year has had an impact.

In February the first weekend away was a visit to Lancashire where Morecambe Bay is home to many wintering birds and RSPB Leighton Moss reserve is nearby. Hesketh Out Marsh is a new RSPB site that shows promise and a visit to Martin Mere rounded off the trip. A new style of weekend away was tried with members using their own cars to drive to the New Forest in Hampshire with a Saturday night stay in a hotel in the heart of the area. It made looking for Nightjars easier and gave more time for birding without eating into a working week. It was very successful. The last weekend away was a long journey north to the Solway Firth. This was extended to three nights away to make the most of the opportunity. Many of the over-wintering birds had already arrived including an influx of Waxwings.

At the Annual General Meeting in December Roger White stepped down as chairman and Gordon Youdale was elected as chairman, Richard Belson was elected secretary and Sue Sayers was elected treasurer.

Indoor Meetings 2009 – 2010

15 January	Terry Wall – A year in the life of a wall
19 February	Members' evening
9 March	Steven Hughes – Somerset Levels Birding
17 September	Mike Bailey – A Century of Bird Ringing
15 October	Mike Lane – Mike's Digital Age
19 November	Martin McGill – Slimbridge
17 December	43 rd Annual General Meeting and Ed Drewitt – New Zealand
21 January	Malcolm Sainsbury – Namibia
18 February	Members' evening
18 March	Deborah Deveney – Cirl Bunting
16 September	Oliver Smart – Lesvos
21 October	David Boag - Kingfishers
18 November	Steve Dettmar – Raptor Camps in Malta and Sicily
16 December	44 th Annual General Meeting and Jason Williams – birding in Latvia

Richard Belson, *Honorary Secretary*

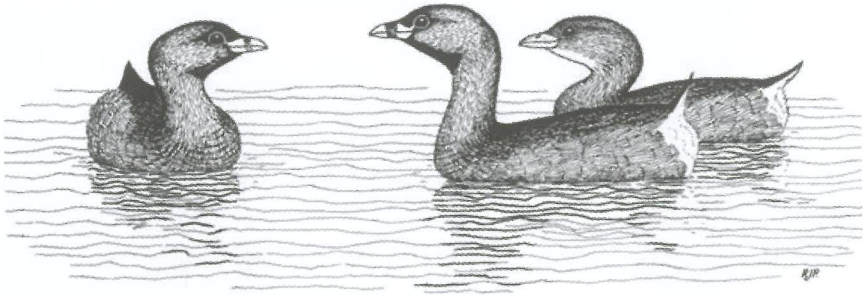
Bristol Ornithology

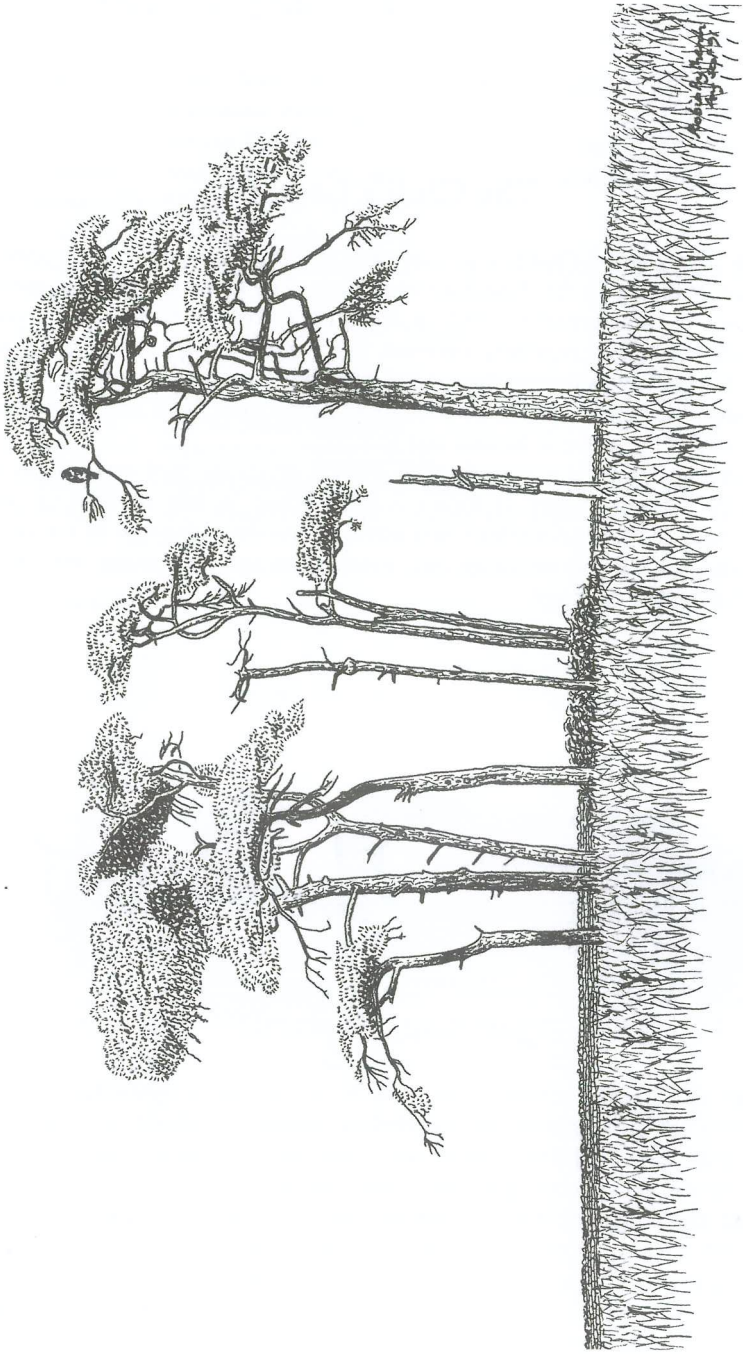
Bristol Ornithology is the journal of the Bristol Ornithological Club and exists to publish the results of studies undertaken by members of the Club. Both papers and short notes are welcome – the Editors will be delighted to discuss ideas for future submissions at any time. The range of subjects covered by the journal is wide, reflecting the varied interests of Club members over the years. Many articles have reported results of studies in the Bristol region, but there is no fixed restriction limiting studies to the Club's recording area. More general behavioural studies are also welcome.

The Club's Logo

The Pied-billed Grebe *Podilymbus podiceps* is the Club's logo. It's a species that normally occurs in the American continents. The first record of the species in Europe was in December 1963 at Blagdon Lake. Thereafter it, or other individuals, were seen regularly between 1965 and 1968 at Chew Valley and Blagdon Lakes. It was during this period that the BOC was founded (in 1966) and it seemed a natural choice for our logo. Since then there has been nearly forty records of the grebe in Britain and Ireland.

The sketch below is a reproduction from a greetings card created for the Club during its early years. It shows a small group in late summer (as they might be seen in North America): and adult in breeding plumage in the centre with another on the left moulting into winter plumage and young one on the right in first winter plumage.





Scots Pines *Pinus sylvestris* and Buzzards *Buteo buteo*, Caswell Hill, North Somerset. *Robin Prytherch*

