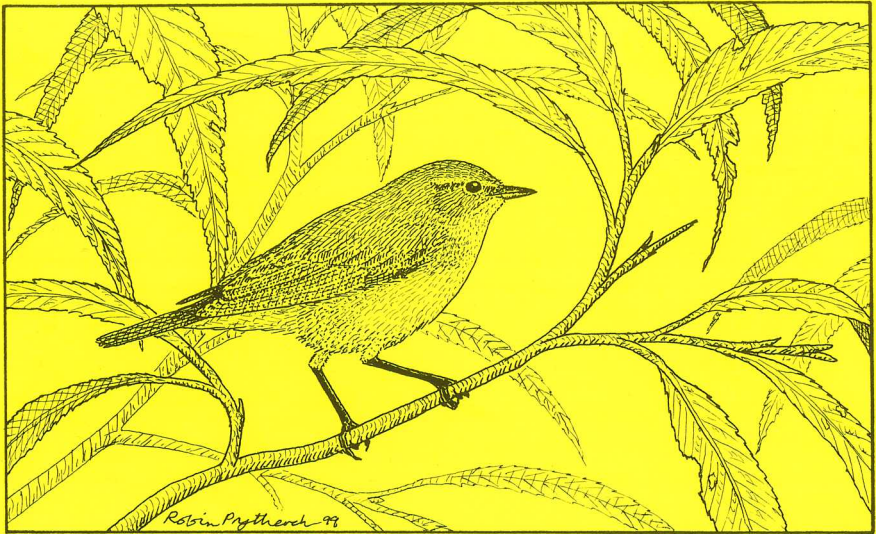


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THE JOURNAL OF THE BRISTOL ORNITHOLOGICAL CLUB



NUMBER 25, 1999

The Avifauna of Salford

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Preface

Once again we are devoting a whole issue of *Bristol Ornithology* to a single paper which gives the results of a study of the bird life around the town of Saltford. William Duckworth commenced the fieldwork for the resulting paper over twenty years ago. Although the bulk of the fieldwork was completed in 1992 supplementary information was gathered for a further four years to complete a nineteen year period of observation. It is a classic example of the amount of detail that can be assembled over a long period of standardised observations. The data can then be compared with other local and national studies, as William Duckworth has done here.

In the previous issues of the journal there has been fourteen papers or notes on the birds of various small areas in and around Bristol, including the Frome Valley (No. 2, 1969), Berrow (No. 6, 1973 and No. 14, 1981) and Clevedon Bay (No. 21, 1982). They vary from short lists to extensive coverage of the history and habitats as well as the bird life. Many of these contributions provide far more detail than it would be possible to include in the species list of the *Avon Bird Report* so they provide a considerable bank of extra data for future field workers.

The editors would like to encourage members who have been watching their own 'local patch' for a number of years, to publish their results in a future issue of the journal. Other types of observation worthy of note will also always be welcome, the only requirement being that it is original. We would also like to repeat our offer to provide guidance on presentation to any member.

Jane Cumming, Robin Prytherch and Lyndon Roberts
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The Avifauna of Saltford, 1978-1992

J. W. Duckworth

This paper characterises the bird community of the Saltford area ('the study area') between autumn 1978 and autumn 1992 ('the period'). Particular attention is paid to species showing a change in status on the site during this 15-year period, species considered to be Red Data Birds in Britain (listed in Batten *et al.*, 1990), species scarce in Avon, and species common in Avon but scarce in Saltford. Incidental records prior to, and subsequent to the period (up to 31 December 1996) are included where they bear on the population trends observed during 1978-1992. British bird populations are monitored by a variety of schemes (primarily operated by the British Trust for Ornithology; BTO), but local variation can be lost in country-wide calculation, and consideration of changes at individual sites may allow patterns shared among species to be related to local habitat changes.

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Introduction

The best known bird communities in Britain are probably those inhabiting areas surveyed for the BTO Common Bird Census (CBC). The typical CBC plot is too small to prevent the population patterns of most species being clouded by edge effect and random changes (Marchant *et al.*, 1990). Bigger areas reduce these problems but become more difficult to cover comprehensively.

The study area of 3 sq.km. (Fig. 1) is much bigger than the average CBC plot (67 hectares for farmland), but was still covered intensively enough that very few regular species might have been overlooked over the period; these would be most likely to comprise nocturnal ones such as Woodcock* and Long-eared Owl. The area is small enough that birds with large home ranges have total populations of only a few birds. For such species as Mute Swan, Common Buzzard, Common Cuckoo and Barn Owl, the cautions expressed above concerning CBC plots still apply here.

The present analysis concerns species which were found annually, or almost so, for at least some of the period; additionally, any species holding a breeding territory in at least two years of the period is included. Table 1 lists species which were not found frequently enough for treatment here.

Table 1 Species recorded regularly, but not frequently enough for inclusion in the main text.

Species	No. of years	Seasonality
Great Crested Grebe	3	HW
Gadwall	4	any season
Northern Shoveler	5	HW, AP
Woodcock	4	HW, SP, AP
Whimbrel	5	SP
Green Sandpiper	7	SP, AP
Tree Pipit	6	SP, AP
Common Stonechat	5	AP, exceptionally overwintered and on SP
Grasshopper Warbler	4	SP, exceptionally AP
Firecrest	5	wintered, exceptionally attempted breeding

Notes: HW, occurrence associated with hard weather; SP, occurred on spring passage; AP, occurred on autumn passage. The number of calendar years in the period 1978-1992 that the species was found is indicated.

There are few published data from earlier times with which to compare the period. It is a concern that despite voluminous publications of Bristol area bird

*A full list of bird species together with their scientific names can be found in the Appendix.

records for many decades, it is not possible to deduce the bird communities of Saltford (as distinct from incidental records of unusual species, which by definition are of minimal value) during the 1950s, 1960s or even 1970s, let alone earlier. The detail presented here will allow meaningful comparison of the period with the future; in the interim, it may be useful in incorporating bird conservation concerns in management decisions for the area, either through Environmental Impact Assessment or less formally in the ever-increasing number of local conservation projects.

Study area

Location and geology

Saltford (51°25'N, 2°30'W) is situated in the Avon valley, mostly at altitudes of 15-30 m. Much of the study area is on the floodplain and, prior to human manipulation of water flow, would have flooded extensively each winter. The Liassic bedrock of the Avon valley consists of bands of grey limestone and blue clay which has high water retention. Adjacent to the river channel in the former natural area of regular flooding, rich alluvial deposits in combination with yellow clay have produced gley soils (of pH 6.0-6.5) which waterlog naturally. Above this area, the bedrock is overlain by thick gravel deposits (pH 7) from ice age melt water coming from the southern edge of the ice sheet; this was just north of the area, at Lansdown.

The vegetation is typical of neutral lowland southern English farmland, inclining to calcareous communities. The latter are particularly prominent along the railway lines, for which large quantities of limestone were imported from the Mendips and their soil now has a pH of 8.0-8.5.

The area covered (Fig. 1) is divided into three sections: the main area (1.8 sq. km) in the north and two subsidiary areas (which were covered less frequently) to the south-east (Tennant's Wood, adjacent fields and parallel river) and south (Long Wood, Gypsy Lane, Folly Wood and the golf course) totalling a further 1.2 sq. km. The latter part is, at 80-110 m, significantly higher than the main area. The town is excluded (although incidental records are mentioned), except for the rows of houses along the river.

Habitats and land use

Fields Most of the study area is farmland and the land-use changed markedly over the period. Most permanent pasture (some fields had grown grass for up to 40-50 years) had been ploughed at least once by 1980. At the start of the period, most of the farmed areas were grassland, reflecting the county as a whole (Bland and Tully, 1992); by the end, this was no longer so. In the late 1970s, large areas of grass ley grazed by cattle and sheep or used for silage were supplemented by areas of arable, especially barley and wheat and to a

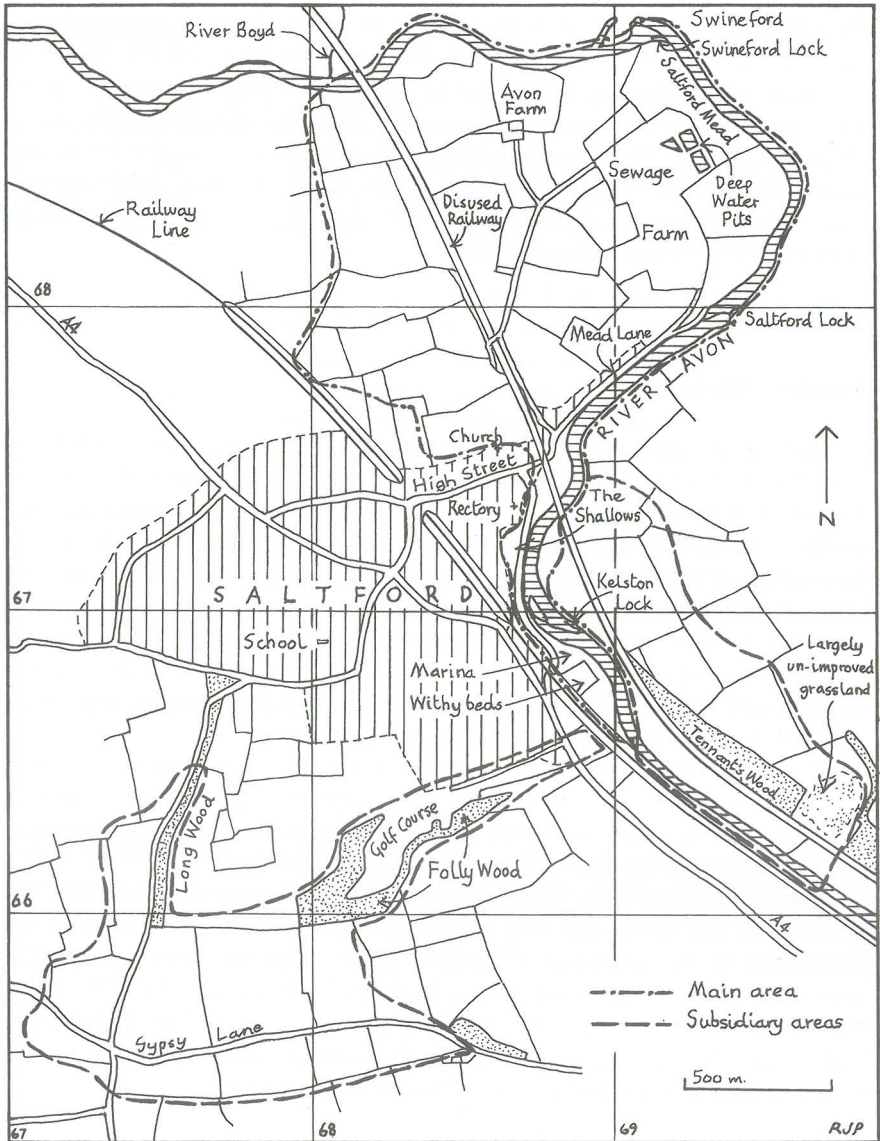


Fig. 1 Saltford and surroundings showing localities as mentioned in the text.

lesser extent fodder maize. During the period, stock grazing declined greatly in the main area, although by the end several fields were used solely for horses. From the mid 1980s, varying areas of rape were grown. Minority crops (such as brassicas) became more frequent during the period. In general, grass was cut relatively early for silage and arable fields were sown in autumn, reflecting the county practices (Bland and Tully, 1992). These timings, well established by

1978, made the fields of less value to birds than would be later-cut grass and spring-sown arable.

Stubbles and bare fields were unusual throughout the period, but fields used for maize usually retained stubble well into the new year and remained unsown until May. Prior to agricultural intensification, winter stubble and bare spring earth were common in lowland England and their scarcity in Saltford during the period reflects a dominance of autumn sowing across Britain by the early 1980s (Fuller *et al.*, 1995). The implementation of the Set-Aside policy after the 1992 harvest (the end of the survey period), and subsequently, meant that fallow fields became an annual feature, but insufficient data were gathered to discuss their effects on the avifauna.

Most water-retaining fields were drained throughout the period, with variable success; for extended periods of most winters, some fields (not only at river level) supported flashes of open water, which expanded greatly after heavy rain. Historically the area would have been much wetter, but major drainage operations were complete well before 1978, as in Britain as a whole (Fuller *et al.*, 1995).

The cocktail of agricultural chemicals applied undoubtedly changed throughout the period, but no information is available concerning this. Nationally, very high levels of fertilisers, insecticides, molluscicides, fungicides and herbicides were applied during the period (Gibbons *et al.*, 1993) and there is no reason to believe that the same was not true in Saltford.

Hedges and scrub There was a slight increase in mean field size and while hedges were lost, most new boundaries were fenced. Most of the net loss of 450m of hedge in main area over the period comprised low-grade vegetation. Examination of Ordnance Survey maps from prior to the period show that by 1978 most historical hedges destined to be removed before 1992 had already gone; this is true for most of Britain (Fuller *et al.*, 1995). The area retained a density of hedging of high significance to the bird community. Most hedges were given minimal management in the last decade of the period. Short, annually-shorn hedges remained so, while the taller hedges, formerly subjected to periodic laying, were mostly cut mechanically to the side and otherwise unmanaged. This variety in hedge structure was important for maintaining bird species richness (see Duckworth, 1994). The many dead elms *Ulmus* spp. studding hedges and scrub in the late 1970s mostly went, as in Avon as a whole (Bland and Tully, 1992), and by the end of the period most hedgerows had few trees, live or dead.

Hedgerow removal was accompanied by the razing of several areas of mature scrub. About an equal area of managed land was abandoned during the period and changed slowly to scrub.

The greater part of the main area was owner/occupier farmed land at the start of the period, but by the end much of the land was leased to non-residents and much work was performed by contractors. Management became less

careful; several hedges were damaged severely by uncontrolled stubble burning and most winter-wet field depressions were ploughed.

The River Avon and other water sources The River Avon retains natural banks for almost its entire course through the study area, although cultivation and other human modification went right to the banks. Visually it changed little during the period; only a small number of bankside trees were lost, as few had been elms. Fishing was intensive outside the coarse fish close-season. During later years of the period, trees toppling into the river were left for considerably longer before clearing than previously. Some, despite their unsightly collections of bright litter, temporarily became focal food sources for insectivorous passerines, and provided shelter for shy ducks, notably Common Teal.

Ponds remained relatively widespread, although some streams and stagnant hedgeside ditches became seasonal in occurrence as a result of drainage operations. Outside the Sewage Farm, the number of ponds did not change, although an increase was perceived in Avon as a whole (Bland and Tully, 1992).

Major change took place in the Sewage Farm. In the early 1980s, sludge treatment, which had formerly occurred at Saltford, was transferred to Avonmouth Sewage Works, and this sparked a series of changes at the site, which were typical of those occurring at many other sewage works across the country (B. Gray *in litt.* 1996). However, even at the start of the period, it was difficult to visualise how it had ever merited inclusion in a national list (Fitter, 1969) of good birdwatching sites on the grounds of its wader passage. The 20 or so settlement beds then supported increasing scrub, although sufficient open mud remained for occasional passage waders to occur. During the early and mid 1980s, all such areas were released from sewage treatment functions and either grassed over, planted with saplings, or dug out to form deep-water pits. Large areas of dry land were spread approximately weekly with insoluble waste (containing many seeds and thus a valuable winter food source) at the start of the period; this was discontinued when sludge treatment ceased. Other management changes of significance for at least some bird species included reduction in the frequency and area of mowing and the removal of stock-heaps of sand and grit (see Duckworth, 1992); these latter had been an important part of the dewatering process of sludge treatment (B. Gray *in litt.* 1996). At the start of the period, fast-growing plants such as Goosefoots *Chenopodium* spp, thistles *Carduus/Cirsium* spp, annual grasses and others were abundant, but by the mid 1980s, the spreading, clearing and other activities which generated the open areas had largely stopped and these plants (many of which provide large amounts of seeds eaten by birds) no longer covered large areas. By the end of the period, the only special habitats provided by the Sewage Farm were three deep-water pits and many gravel filter beds. The former were stocked with coarse fish.

Other habitats Unimproved herb-rich grassland was restricted to small areas even at the beginning of the period, the most important of which was north of the Rectory along the disused LMS railway which, because of earlier railway management, still retained fundamentally grassy banks in the mid 1970s. By 1990, most of the banks were under dense mixed scrub to a height of 2.5-6m. This natural progression, which was extremely detrimental to butterfly and plant species richness, was accelerated when most of the best remaining grassy sections were planted with saplings in the mid-late 1980s. After the period, in winter 1993/94, however, the balance was somewhat redressed, with some short stretches being cleared. The grassy hillside south of Tennant's Wood, which was being rapidly covered by scrub, was cleared in the mid 1980s and again in late 1995; during latter years it was the only extensive unimproved grazed grassland in the study area and thus supported various plants and insects no longer found elsewhere.

As well as several small copses of mature trees, there were two small woods of mixed deciduous trees. No conifer plantations were of significant size. No areas of woodland on dry soil were lost and furthermore plantings of saplings in the mid 1980s and onwards in and around the Sewage Farm will provide new copses in coming decades. Management in Tennant's Wood was sporadic and patchily executed; substantial amounts of timber were removed in the early 1980s, but many dead trees were left, and the areas opened up supported vigorous woody regrowth of native species.

The small withy beds suffered sustained encroachment, as the dumping of solid builders' and domestic waste reduced their area in 1994 to below half that in 1974.

Salford town was largely excluded from survey (Fig. 1). Housing expanded in the area north of Long Wood in the early years of the period, and elsewhere small-scale construction occurred (the building of the marina, for example). Urban areas supported two common species which were local and sporadic in the surveyed areas, House Sparrow and Collared Dove. Both species used scattered habitations in the survey area and the former occurred in numbers on fields on occasion.

Human pressure

The area is scenically attractive, especially in and by the river (in the 1920s there was an unsuccessful effort to badge it as "The Henley of the West") and easily accessible from the cities of Bristol and Bath. Use of the area for recreational purposes soared during the period. At the start, such activity was strongly focussed on the river and a selection of paths, with people entering other areas (such as the disused railway line) on fine days, particularly in spring and autumn. Over most of the fields in the main area visitors were unusual. Public presence was particularly boosted by the conversion of the disused railway line to a cycle track in summer 1979, and the general tendency

Table 2 Species found annually, or almost so, with an indication of their status and habitat. (See notes at end for key.)

Species	Status	Breeding Change	Confid.	Status	Non-breeding Change	Confid.	Notes	Habitat	SPEC	Criteria
Little Grebe	Absent				stable	mid		R		
Great Cormorant	O/F	increase	high	C	increase	high	fb	R		ts
Grey Heron	C	stable	high	O/F	stable	high	fb	R		
Mute Swan	F	increase	high	F	increase	high		R		ts
Eurasian Wigeon	Absent			O	stable	high	hw	R		RDB
Common Teal	Absent			O	stable	high	hw, fv	R		RDB
Mallard	C	increase	mid	C	increase	high		R		ts
Common Pochard	Absent			O/L	increase	high	hw	R	4	ts, RDB
Tufted Duck	O	increase	high	L	increase	high	hw, fb	R		ts
Common Goldeneye	Absent			O	stable	high	hw	R		[RDB]
Goosander	Absent			F	fluctuate	high	hw	R		
Eurasian Sparrowhawk	C	stable	high	C	stable	high		A		
Common Buzzard	O/F	increase	high	O/F	increase	high	fb	F		ts
Common Kestrel	C	stable	low	C	stable	low		F	3	
Hobby	Absent/O	colonist	mid	Absent				A		ts, RA
Red-legged Partridge	Absent/O	colonist	mid	Absent/O	colonist	mid	r?	F	2	ts
Grey Partridge	C/O	decrease	high	C/O	decrease	high	r?	F	3	ts, RDB
Common Pheasant	F/C	increase	mid	F/C	increase	mid	r?	S		ts
Water Rail	Absent			Absent/F	colonist	mid		R		ts
Moorhen	C	stable	low	C	stable	low	ndc	R		
Common Coot	Absent/L	colonist	high	O/L	increase	high	hw	R		ts
European Golden Plover	Absent			O/Absent	extinct	mid	hw	F	4	ts, RDB
Northern lapwing	C/Absent	extinct	high	C/F	decrease	mid	hw	F		ts
Common Snipe	Absent			F	fluctuate	mid	hw	F		
Common Sandpiper	Absent			C	stable	high	Pass	R		
Black-headed Gull	Absent			C	stable	mid	fv	F, R		
Common Gull	Absent			C	stable	low	fv	F, R	2	
Lesser Black-backed Gull	C	stable	mid	C	stable	mid	fv, fb	F, R	4	
Herring Gull	L	stable	mid	L	stable	mid	fv, fb	F, R		
Rock Dove (Feral Pigeon)	O	fluctuate	mid	O	fluctuate	mid	fb, ndc	F		CA

Table 2 (continued)

Species	Status	Breeding Change	Confid.	Status	Non-breeding Change	Confid.	Notes	Habitat	SPEC	Criteria
Stock Dove	C	stable	mid	C	fluctuate	mid		F	4	
Wood Pigeon	C	stable	low	C	increase	low	ndc	F,S	4	
Collared Dove	O	stable	mid	L	stable	mid	ndc	U		
Turtle Dove	C/Absent	extinct	high	Absent				S	3	ts,RA
Common Cuckoo	C	stable	high	Absent				S		
Barn Owl	O	decrease	mid	O	decrease	low	r?	F	3	ts,RA,RDB
Little Owl	C	stable	high	C	stable	high		S	3	
Tawny Owl	L	stable	mid	L	stable	low		W	4	
Common Swift	C	stable	low	Absent			ndc	A		
Common Kingfisher	C	stable	high	C	stable	high		R	3	
Green Woodpecker	L	stable	mid	L	stable	mid		S	2	
Great Spotted Woodpecker	L	stable	mid	L	stable	mid		W		
Lesser Spotted Woodpecker	O/Absent	extinct	high	O/Absent	extinct	high		W		ts,RA
Sky Lark	C	stable	low	F	fluctuate	low	hw	F	3	
Sand Martin	F/O	extinct	high	Absent			fb now	R	3	ts, RA
Barn Swallow	C	stable	low	Absent				A	3	
House Martin	C	stable	low	Absent				A		
Meadow Pipit	Absent			C	stable		ndc	F	4	CA
Yellow Wagtail	Sporadic			F	fluctuate	high	hw	R		RA
Grey Wagtail	C	stable	mid	C	stable	mid		R		
Pied Wagtail	L	stable	low	C	stable	low	hw, fv	R,F		ts
Wren	C	stable	low	C	stable	low	ndc	S	4	
Hedge Accentor	C	stable	low	C	stable	low	ndc	S	4	
Robin	C	stable	low	C	stable	low	ndc	S	4	
Rufous Nightingale	O/Absent	extinct	mid	Absent				S	4	ts,RA
Common Redstart	Absent			O	stable	mid	Pass	S	2	
Whinchat	Absent			O	stable	mid	Pass	S	4	
Northern Wheatear	Absent			O	stable	mid	Pass	F		
Blackbird	C	stable	low	C	stable	low	ndc	S	4	
Fieldfare	Absent			C	fluctuate	mid	hw, fv	S,F	4	[RDB]
Song Thrush	C	stable	low	C	stable	low	ndc	S	4	

Table 2 (continued)

Species	Status	Breeding Change	Confid.	Status	Non-breeding Change	Confid.	Notes	Habitat	SPEC	Criteria
Redwing	Absent			C	fluctuate	mid	hw, fv	S, F	4	[RDB]
Mistle Thrush	L	stable	mid	L	stable	mid		F, S	4	
Sedge Warbler	F/O	extinct	high	Absent				R	4	ts
Reed Warbler	O/L	increase	high	Absent				R	4	ts
Lesser Whitethroat	C	stable	mid	Absent				S	4	ts
Common Whitethroat	C	increase	mid	Absent				S	4	CA
Garden Warbler	O	fluctuate	high	Absent				S	4	
Blackcap	C	stable	low	F	fluctuate	low		S	4	
Common Chiffchaff	C	increase	high	F	fluctuate	mid		S		ts
Willow Warbler	C	decrease	high	Absent				S		ts
Goldcrest	L	stable	mid	C	fluctuate	mid		S	4	
Spotted Flycatcher	L	stable	low	Absent				S	3	
Long-tailed Tit	L	stable	mid	C	stable	mid		S		
Marsh Tit	L	stable	mid	L	stable	mid		W		
Coal Tit	L	stable	mid	L	stable	mid		W		
Blue Tit	C	stable	low	C	stable	low	ndc	S	4	
Great Tit	C	stable	low	C	stable	low	ndc	S		
European Nuthatch	O	fluctuate	high	O	fluctuate	high		W		CA
Eurasian Treecreeper	L	stable	mid	L	stable	mid		S		
Eurasian Jay	L	stable	mid	L	stable	mid		S		ts
Magpie	C	increase	mid	C	increase	mid	ndc	S		
Eurasian Jackdaw	C	stable	low	C	stable	low	ndc	F	4	
Rook	C	stable	low	C	stable	low	ndc	F		
Carrion Crow	C	increase	low	C	increase	low	ndc	F		
Common Starling	L	stable	low	C	stable	low	ndc	F		
House Sparrow	L	stable	low	L	stable	low	fv, ndc	R, F		
Tree Sparrow	F/Absent	extinct	high	F/Absent	stable	high	ndc	F		ts
Common Chaffinch	C	stable	low	C	stable	low	ndc	S, F	4	
Brambling	Absent			O	fluctuate	high	hw	F		[RDB]
Greenfinch	C	stable	low	C	stable	low	ndc	S, F	4	

Table 2 (continued)

Species	Status	Breeding Change	Confid.	Status	Non-breeding Change	Confid.	Notes	Habitat	SPEC	Criteria
Goldfinch	C	stable	mid	C	stable	mid		S		
Siskin	Absent			C	fluctuate	mid		R	4	
Linnet	F	decrease	mid	C/F	decrease	high		F	4	ts
Common Redpoll	Absent			F	fluctuate	mid		R		
Common Bullfinch	C	increase	mid	C	increase	high		S		ts
Yellowhammer	C	stable	high	C	increase	high		F	4	ts
Reed Bunting	O	increase	mid	L	stable	mid		R		ts
Corn Bunting	O/Absent	extinct	high	O/Absent	extinct	mid	hw	F	4	ts,RA

Notes: Status codes (see also section on Assessment of species abundances): C = common, F = frequent, L = local, O = occasional. Two codes separated by / indicate the status at the beginning and end of the period respectively.

Change assessment: section on Assessment of trends in status explains the categories. Note that 'stable' indicates that no change was detected.

Notes: Pass = birds occurred only or overwhelmingly on passage (assessments are entered under the 'non-breeding' columns); fb = birds fed in the study area but did not breed there; fv = numbers were markedly higher during periods of extensive flooding; hw = numbers were markedly higher in hard winter periods; ndc = birds were not counted systematically during most or all of the period; r? = birds may have been released locally during the period.

Habitat: A = aerial forager, F = feeds primarily on or over fields; R = primarily associated with water; S = primarily associated with hedges and other scrub; U = primarily associated with urban areas; W = primarily occurs in woods and copses.

SPEC = Species of European Conservation Concern (Tucker and Heath, 1994); categories are explained in Selected species accounts.

Criteria (for the inclusion of a species in Selected species accounts): CA = the species bred in over 10% of tetrads in Avon (Bland and Tully, 1992), yet did not do so regularly in Saltford; RA = the species bred in fewer than 10% of tetrads in Avon (Bland and Tully, 1992); RDB = the species is included in Batten *et al.* (1990); ts = the species showed a clear change in population during this study; [RDB] = although included in Batten *et al.* (1990) as a Red Data Bird, this was based on the small U.K. breeding population. These species did not breed in Saltford and accordingly are not treated in the Selected species accounts.

of visitors to explore away from roads and tracks was encouraged during the period by the positioning of public footpath signs and refurbishment of stiles. In the latter few years it became almost impossible on a fine day to go anywhere except the Sewage Farm and not encounter dog-walkers and others. The establishment of a riding centre at Avon Farm also dispersed recreational presence across the main area. Although active persecution of birds remained exceptional in the area, the incidental disturbance and particularly its broad scale nature meant that shy species were under much greater stress at the end of the 14 year period than at the beginning.

Methods

Field observations

In a typical day, the majority of the main area (Fig. 1) was covered, with observations in one of the subsidiary areas occurring on about 15-25% of days. Table 2 lists all species found annually, or almost so, with an indication of their status and habitat. Usually, all birds of all species except 21 (indicated by *ndc* in Table 2) were counted to give a total for the time spent in the field. Careful notes were taken on precise locality for many species, primarily those of infrequent occurrence, those with patchy distributions, those prone to human disturbance or those of special interest at the time. Field time was frequently angled towards searching for particular species, but overall there was little change in the proportions of time allotted to the different habitats over the period.

Regular coverage of the site commenced in 1978, following incidental observations over the previous six years. By the start of 1980, I was familiar with occurrence patterns of most of the regular species. Between 1981 and 1992, my aptitude at finding and identifying birds showed little change and it is unlikely that any patterns in bird numbers recorded result from evolving observer capability.

Table 3 shows effort in observation days for each month. One observation day could be a full day in the field, two mornings, or several short periods. The longer days of summer give more time to find birds than do those of winter, but summer field time was devoted less to birds because insects and plants were also observed. To compensate for this, each observation day was about 6-8 hours of field time in winter and about 7-11 hours in summer.

The annual total and seasonal distribution of observations changed during the period. In 1978 observations averaged only a few hours per week, but during 1979-1987 there were 50-60 observation days on average per year; after 1983 effort was strongly peaked in April, August-September and December-January. Between 1988 and 1992, observations were more erratic, averaging only 30 observation days per year, but assessment of breeding and wintering

Table 3 Observation levels in Saltford, 1978-1996.

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1978*	3	2	3	5	4	3	4	2	3	2	3	5	39
1979	5	7	5	7	8	4	11	5	6	5.5	3.5	10	77
1980	5	5	6	7	5	2	13	3	4	3	3	6	62
1981	8	4	7	9	9	6	8	8	6	8	3	9	85
1982	10	6	5	14	6.5	3	1	2.5	3	3	1	4	59
1983	5.5	1	1	9	6	6	5	2	8.5	1	-	9	54
1984	4.5	-	5	8	2	1	4	7	10	5	-	8	54.5
1985	9	-	2	7	-	2.5	6	4	13	3	-	4	50.5
1986	5.5	3	1	6	2	1	2	-	1.5	9	10	10	51
1987	6	-	2	7	-	-	2	2.5	9.5	4	2.5	4.5	40
1988	4.5	-	1.5	9.5	-	-	-	1.5	-	-	1	6	24
1989	2	2	3	6	2	-	-	-	11.5	5	-	4	35.5
1990	4	-	2	5	2	-	3	-	-	6	2	4	28
1991	4	-	1	6	5.5	5.5	2.5	7	7.5	2.5	-	-	41.5
1992	4	-	-	3	7	-	3	-	3.5	2.5	-	-	23
1993	-	-	-	-	-	-	-	-	-	-	3.5	3	6.5
1994	2	-	4	7	-	-	-	-	-	2	-	-	15
1995	-	-	-	-	-	-	-	-	-	5	1	4	10
1996	5	-	-	-	-	-	-	2	1	3.5	-	2	13.5
78-92	80	30	44.5	108.5	59	34	64.5	44.5	87	59.5	29	83.5	724
78-82	31	24	26	42	32.5	18	37	20.5	22	21.5	13.5	34	322
83-92	49	6	18.5	66.5	26.5	16	27.5	24	65	38	15.5	49.5	402

Notes. Figures are for standard 'observation days' - see Methods. *Precise observation hours were not recorded in 1978, figures are thus estimated.

communities was usually possible because observation remained at high levels in April and mid-winter. Observation levels dropped substantially after autumn 1992, which is why this is taken as the end of the period for analysis. Notable observations made after the period, most of which continue the populations trends occurring prior to 1993, are included.

Very few records are incorporated from other observers; to do this would distort the ability to relate the number of birds recorded to search effort.

Categorisation of birds to season and habitat

The birds present were classified by habitat and season to facilitate the detection and understanding of population trends. Three seasonal bird communities are distinguished:

1. breeding or summering,
2. wintering,
3. passage.

Communities are separated on the annual cycles of the birds, which vary between species; for example, July includes many breeding warblers, many wintering gulls and some passage waders. The passage category includes only species absent or very scarce as summering or wintering populations, because of the difficulties of distinguishing individual birds of species which both breed or winter and occur on passage. Similarly, it was rarely possible with species present in both seasons to assess whether individuals were resident.

Each species was assigned a feeding habitat based on actual use in the study area:

1. *Fields*. Such species habitually feed out into the centres of fields and include partridges, plovers, gulls and pigeons.
2. *Hedges and scrub*. These species feed primarily in thick vegetation, including characteristic species of hedge-bottoms (e.g. Common Pheasant).
3. *Woodland*. Throughout the year these species occur primarily in the woods, although some (particularly Tawny Owl and Marsh Tit) may be seen outside, even commonly, during post-breeding dispersal.
4. *Water*. These species are strongly associated with the river and large ponds; some are aquatic (e.g. ducks) and some feed in adjacent vegetation (e.g. Moorhen).
5. *Urban*. These species are strongly associated with human settlement. The abundance assessments in Table 2 do not include the town: thus neither species is listed as 'Common', although both would be if the town was incorporated.
6. *Aerial*. It is difficult to assign some aerial feeding birds to a precise habitat.

Many species could be considered under more than one habitat; each has been assigned to a primary habitat, except where two habitats are of roughly equal importance, when both are given.

Assessment of species abundance

Each species was given a status assessment for each season, relating the number of birds detected and to the extent of available habitat:

Common: suitable habitat was extensive and mostly occupied.

Local: suitable habitat was restricted and mostly occupied.

Frequent: suitable habitat was extensive but patchily occupied.

Occasional: available habitat was mostly unoccupied and the species was not recorded on most days.

This categorisation allows for different birds having different spatial needs. The numerical density of Eurasian Sparrowhawks can never approach that of a healthy population of Common Chiffchaffs as the former have such large

hunting ranges. But in both cases, the species may be regarded as common, even though another warbler at the hawk's density would only rate as frequent. Categorisation applied only to birds using the habitat; flying birds were excluded if they were incidentally overhead (e.g. gulls flying to roost, migrating waders) but included if they were aerial singers, feeders or hunters.

The assessments were constructed intuitively on a continuously updated basis throughout the period. Major declines and local extinctions were validated by increased searching to confirm a species disappearance or rarity. Perceived declines in common species were less easy to confirm if they were not accompanied by range contraction, as the early data could be inaccurate or merely inadequate. Positive changes were even more difficult to confirm, and it remains possible that some were artifacts. After the period, each perceived trend (even that of stability) in a species's status was compared objectively with the run of counts from the 14 years to check the accuracy of field impressions.

Field counts were used to assess a species' status by population estimation or by calculation of encounter rates, depending on various characteristics of the species, such as degree of flocking, song output and others. The local population at appropriate seasons was estimated for some territorial birds with high levels of song (e.g. breeding season warblers) or calls (e.g. Little Owls establishing territories during September) and for flocking species. Where daily counts were highly dependent on whether or not any large flocks were in the area (e.g. Northern Lapwing, Siskin), the population was measured more accurately by considering the largest relatively frequent count, rather than using an occasional exceptionally high count. The former are more meaningful when assessing trends, and furthermore more amenable to analysis when observation levels are unequal between winters (as they are here: see Table 3). In years with relatively few observer days in the field the chances of a freak large count are correspondingly lower, but the ability to determine that it was an unusual influx is also reduced. Only for Grey Partridge were peak counts used, because as an inconspicuous bird of field centres it was not recorded well during general observations; but conversely it was easily counted by a special effort once or twice per season.

For most species, the number of birds seen were related to the number of observation days to give an overall encounter rate for the season and year in question, and no attempt was made to estimate the local population. The assumption is made that counts reflect the population (e.g. higher counts indicate a higher population) when years are compared with each other. Comparisons between years must use data from the same season or a similar mix of seasons. Bland (1996) discussed how the number of individual birds recorded in standardised year-round surveys varied with month, and furthermore related much more to song levels and activity patterns of the birds, than to the actual numbers of birds present. The distribution of observation effort was rather different in the years before 1983 than after (Table 3), but most years within each of these two periods had a fairly similar distribution of

observation effort per month. There was certainly no systematic change across either period, and thus there is a low likelihood of spurious population trends being claimed.

Assessment of trends in status

Populations during the period were assigned to one of six trend categories: colonised, increased, remained stable, fluctuated, decreased or became extinct. Fluctuating species are those where any long-term trends were difficult to detect because of large short-term changes. A population is recorded as stable if no change was detected; it is likely that populations of several common species changed during the period, but that this was not detected (see below).

Some populations, generally non-breeders, fluctuated markedly, sometimes in relation to local weather conditions, but probably more often owing to factors remote from Saltford. Running means reduce the difficulties of detecting population trends in such species. Siskin (Fig. 2) is used as an example because winter numbers are probably increasing nationally (Gibbons *et al.*, 1993), but the running means, although they do not completely hide fluctuations, make the data easy enough to interpret, showing that there is no evidence of this trend in Saltford.

A subjective judgement was made of the reliability of the trend assessment. It is easy to be certain that a once regular species now extinct in fact showed this pattern, but it can be difficult to demonstrate even a quite marked decline

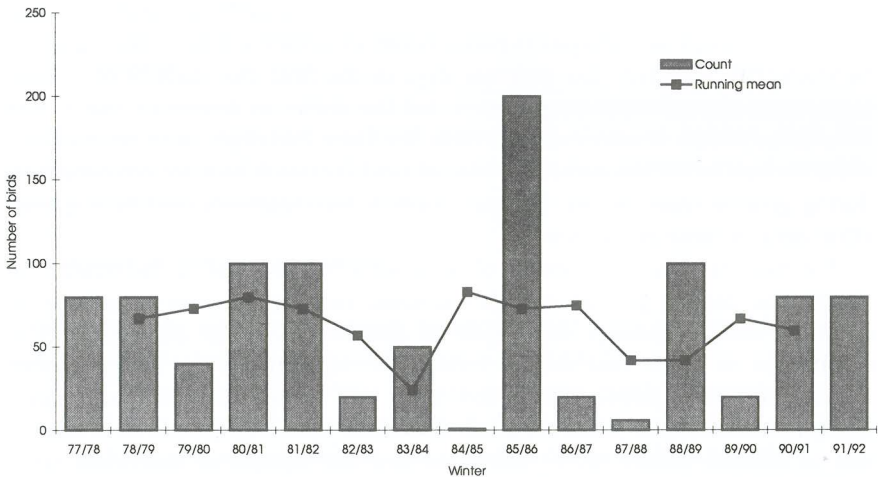


Fig. 2 Winter Siskin numbers in Saltford, 1978-1992. The number of birds represents the largest frequent count during the winter. Running means are taken across three years. The 77-78 column includes no data from 1977. Sample sizes (level of observer effort) for each winter are presented in Table 3.

of a very common species; a decrease from 30 to 20 pairs is numerically greater than the decline to extinction of a handful of pairs, but the former represents a 33% decrease, as compared with 100% loss for the latter. Trends in common species are particularly likely to be overlooked where the species is dispersed and weakly- or non-territorial (e.g. Blackbird) or where the population contains high levels of non-breeders. All species, even quite scarce ones, are likely to be accorded a lower reliability estimate if they:

1. have fluctuating populations;
2. are inconspicuous, e.g. skulking, non-vocal or nocturnal;
3. are most easily assessed during February, March, June or November, when relatively little observation was carried out;
4. are rare, so that sightings may depend upon chance;
5. were not counted during all observations throughout the period (indicated in Table 2). Much standardised information exists on these species in the early years of the period (from a Common Bird Census, BTO Winter Atlas counts and a half-hour year-round daily count along the urban-river fringe), but there was no opportunity to gather comparative data late in the period. For these species, therefore, all assessments are based entirely on subjective impressions.

Selected species accounts

The status of all species which occurred regularly in Salford in 1978-1992 is given in Table 2. Accounts are given below for species in one or more of the following categories:

1. those which changed status in Salford over the period;
2. Red Data Birds in Britain (*sensu* Batten *et al.*, 1990). Species are only discussed here if their status in Salford relates to the criteria for inclusion in Batten *et al.* (1990); e.g. several Red Data Birds are considered to be so because of their vulnerable British breeding populations; there are no species accounts for those which occur in Salford only in winter (e.g. Redwing). Twenty-four further Red Data Birds (mainly waterfowl, raptors, waders and terns) were recorded in Salford during the period, but too infrequently for their populations to be of even local importance;
3. those which breed in Salford but relatively rarely in Avon, i.e., in fewer than 10% of tetrads (Bland and Tully, 1992);
4. those which are surprisingly rare in Salford compared with their breeding status in Avon (present in over 10% of tetrads in the breeding season (Bland and Tully, 1992).

Species of European Conservation Concern (SPECs) as listed by Tucker and Heath (1994) are indicated in Table 2 with their category of concern: species

concentrated in Europe with an unfavourable European conservation status (Category 2); species with an unfavourable European conservation status but with populations not concentrated in Europe (Category 3); and species with a favourable European conservation status and with populations concentrated in Europe (Category 4). Time prevented preparation of accounts for the 26 SPECs (see Table 2) occurring regularly in Saltford which were not already considered for another reason. Numerous further SPECs were recorded during the period, but too infrequently for their populations to be of importance.

GREAT CORMORANT Prior to 1985, small numbers (up to three) of Great Cormorants flew over Saltford, but sightings were irregular (on average, one day in 30). In autumn 1985, three immatures used a group of riverside dead elms (which blew down in the following winter) as perches and fed in the river. During 1991, following a great upsurge in numbers flying over (up to two birds on one day in nine), the habit was resumed by at least six birds of all ages using a large living poplar *Populus* sp. on the riverbank of Saltford Mead. These birds fished regularly in the river and in the deep-water pits in the Sewage Farm. Numbers using the tree remained roughly constant until at least 1996, although some large flocks were seen flying along the river (peak, 27 on 4 January 1996). Although initially shy, by 1993 these birds were sufficiently confiding to remain in the tree while people walked beneath them. By comparison, the sole bird seen perched prior to 1982 flushed at 300 yards range.

These birds may be commuting from Bristol Channel breeding colonies, since adults occurred throughout the year (Gibbons *et al.*, 1993 suggested that most birds away from established breeding colonies are likely to be first years) and there was no October peak or summer trough in numbers, whereas both these trends were observed at another concentration of non-breeders (Lack, 1986).

Great Cormorant became a protected species in Britain in 1981 and the increase in numbers in inland Avon presumably reflects this (Bland and Tully, 1992). The accompanying reduction in local control measures may also explain the confiding behaviour of recent birds. Other factors such as fish stocking and a long-term improvement in water quality may also be important in explaining the species's changing status (D. L. Buckingham *in litt.*, 1996). There is no inland breeding colony anywhere near Saltford (Gibbons *et al.*, 1993) and colonisation by Great Cormorants is most unlikely, even if feeding numbers continue to grow. Numbers summering inland are increasing nationally and indeed numbers increased markedly throughout western Europe during the period (Gibbons *et al.*, 1993).

MUTE SWAN Mute Swans increased throughout the period and trends are best assessed by dividing the annual cycle into three periods:

1. breeding, when birds set up territory during February to March and build nests during April;
2. post-breeding, when families move over substantial distances of river; September was the best month for assessing numbers.
3. wintering, when families seem to roam less than in autumn, and many juveniles have disappeared. Unattached first-winterers were frequent, showing that the decline in family size by mid-winter is due partly to dispersal as well as mortality. Some wintering birds appear to remain in the same area to breed, while others disperse.

Assessment of the status of Mute Swan (Table 4) was less easy than their large size, confiding nature and open habitat might indicate. Long-stayers were sometimes not seen when their stretches of river were walked, even during nesting, and clearly often roamed outside of the study area. Non-breeders were proportionately frequent at all seasons and complicated assessment of the number of long-stayers.

Table 4 Numbers of Mute Swans in Salford, 1978-1992.

Year	Spring groups	September groups	Overwinter birds
1978	data too poor	poor data	sporadic only
1979	sporadic only	sporadic only	sporadic only
1980	1 pair, no breeding	2 adults	1 1st winter
1981	1 pair, no breeding	2 adults	1 pair
1982	1 pair, no breeding	sporadic only	1 pair
1983	2 adults, 1 1st year, no breeding	1 pair	2 single adults
1984	1 pair, no breeding	sporadic only	1 family
1985	sporadic only	sporadic only	sporadic only
1986	sporadic only	poor data	1 pair
1987	1 pair, success unknown	3 groups, ads only	1 pair
1988	1 pair nested	no data	1 family
1989	2 pairs, one of which nested	1 pair, 3 families	1 pair and 1 family
1990	2 pairs, one of which nested	poor data	1 pair and 1 single adult
1991	1 pair, no breeding, 2 1st summ.	3 groups, ads only	1 group of three adults
1992	2 pairs, at least one nested	2 pairs, 1 lone juvenile	no data

Up to 1986 most records were sporadic. Thereafter, the number of post-breeding parties increased, with four regular groups in 1989 and three in 1991. Prospecting pairs occurred from 1980, but nests were not built until 1988 (perhaps 1987). By the end of the period, three areas held potential pairs: Kelston Lock, Swineford Lock and the Sewage Farm, although only one pair bred successfully in any year. Six (the largest flock outside July - December) fed in a flooded field on 16 March 1982 (eight were noted at nearby Keynsham four days later and the number was also considered exceptional; Aldridge,

1987), but otherwise casual birds were not associated with flooding or hard weather.

Breeders keep territories throughout the year, while most non-breeders join winter flocks in traditional areas (Lack, 1986). There is no such flock in or near Saltford, and thus numbers are highest in late summer and autumn. In most winters late in the period, first-winterers occurred at least sporadically until the following spring.

A national decline during the 1970s and early 1980s was due to lead poisoning (Sears and Hunt, 1991), but Bland and Tully (1992) believed it had not occurred in Avon. This belief is not borne out by the status change in Saltford, nor is their implication that suitable nest sites in Avon were occupied throughout the period, as nest-sites used in Saltford during the late 1960s and early 1970s were not used during most of the period. Along with occasional birds suffering from lead poisoning in Saltford during the period (the last on 17 November 1986), this suggests that poisoning was affecting the Saltford population. The discrepancy between county and Saltford trends may arise because the county figures were strongly biased towards Chew Valley Lake and Blagdon Lake populations (R. L. Bland *in litt.*, 1996). If these lakes provide better habitat than sites such as Saltford, their populations would probably be more stable than those at marginal sites.

Lead fishing weights were banned in 1987; populations in the affected areas recovered (Gibbons *et al.*, 1993) and by the early 1990s were the highest ever documented (Marchant and Balmer, 1994b). The increases in Saltford may be due to these measures.

EURASIAN WIGEON Eurasian Wigeon were occasional visitors, mostly in hard weather, but small numbers sometimes occurred in mild winter weather. Additionally, single adult eclipse males were seen in the Sewage Farm on 3 October 1987, 14 September 1989 and 3 October 1989, and a female was on the river on 18-21 October 1996. Influxes occurred in the hard weather of 1981/82 (68 on 1 January and up to 11 on seven other dates, 11 December - 24 January), 1985 (two on 9-15 January), 1986 (up to 14 on 7-10 February) and 1987 (7 on 17 January). There were 12 records of 1-3 in December-January outside snowy periods, on the river, in flooded fields or, during 1987-1990, on pools in the Sewage Farm. Up to 12 fed in the damp centre of a riverside field planted with brassicas during December 1989.

Internationally important numbers of Eurasian Wigeon winter in Britain, hence the species' inclusion in Batten *et al.* (1990). The irregular small numbers in Saltford are of minimal national importance. Nationally, Eurasian Wigeon numbers rise in mid-winter, following arrival from continental Europe, and the species is one of the ducks most sensitive to hard weather (Batten *et al.*, 1990). Both of these features are reflected in the pattern of occurrences in Saltford.

COMMON TEAL Common Teal occurrences in Saltford during the period (Fig. 3) fell naturally into autumn passage, winter visitors and spring passage. Spring migrants were unusual, with six records of up to three between 26 March and 18 April; most were on the river, with two in the Sewage Farm. Numbers were higher on autumn passage, with records on 19 days, usually of under four birds but with up to 10 in 1989. The earliest was on 11 August 1983. Autumn birds were overwhelmingly on the Sewage Farm pits between 1982 and 1991. During the latter years, there were very high numbers of Mallard on these pools, but these plummeted in autumn 1992 and since 1991 no Common Teal were seen there in autumn. Elsewhere, there was a single autumn record from a farmland pool and two from a stretch of the river with thick fringing emergent vegetation.

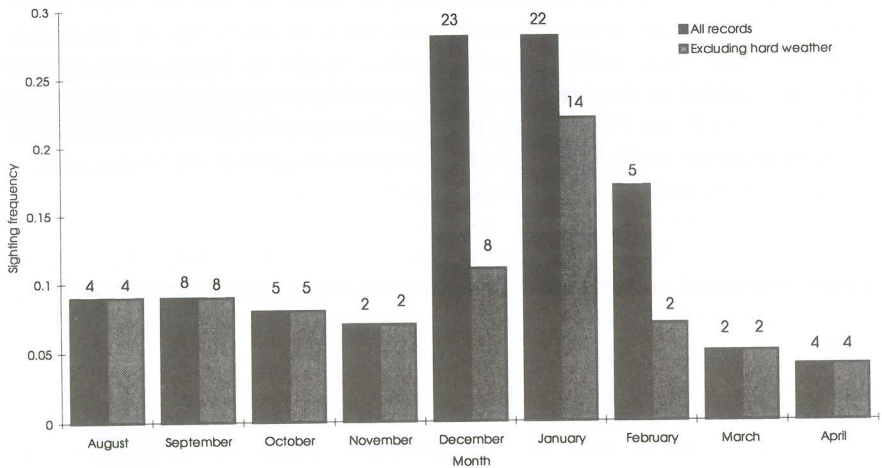


Fig. 3 Monthly distribution of Common Teal numbers in Saltford during 1978-1992. The sighting frequency represents the number of days with records of Common Teal divided by the number of observation-days. The numbers over each column represent the number of days that Common Teal was recorded. Sample sizes (level of observer effort) for each winter are presented in Table 3.

Birds were most frequent in December - February. The largest numbers occurred in thaw-generated flooding after prolonged snow. Birds also came in with winter flooding for other reasons and during icy or briefly snowy periods. If records during local hard weather are excluded, only January retains a disproportionately high level of occurrence, which is presumably due to distant severe weather bringing birds into Saltford. Outside hard weather, the highest count was six, but on the thaw of 17 January 1982, 129 were present. Winter birds were most frequent on the river, but records in the Sewage Farm or secluded farmland pools were not unusual. There were only two records from

the sewage farm pits after 1991: three on 3 January 1994 (with 80 Mallard) and up to eight on 1-3 January 1996 (with up to 30 Mallard); all seemed to be taking short-term refuge from disturbance on the river. Although birds were only seen in flooded fields twice, this probably reflects their predominantly nocturnal feeding pattern.

Apart from the high numbers in the autumns of 1989-1991, there was no clear change in status during the period, although the effects of weather on occurrence hamper detection of trends. The species is noted for its high mobility and rapid response to changing circumstances (Lack, 1986). Common Teal is classed as a Red Data Bird for the internationally important numbers wintering in Britain (Batten *et al.*, 1990) and the small numbers in Saltford are of minimal significance, even locally.

MALLARD Mallard increased during at least the last ten years of the period; they were not counted systematically prior to 1983 (Fig. 4). Each year, numbers were lowest in February - May, rose rapidly so that by late July over 100 were present in the latter years of the period, peaked in September (with the record of 290 on 7 September 1991) and remained high into mid January. Autumn numbers in the Sewage Farm changed during the period in response to changing conditions at the three pools which were excavated into deep pits during 1982-1984. Prior to 1986, counts of over 10 were exceptional. Numbers then rose, to over 200 by 1991, but in autumn 1992, and subsequently, regular numbers returned to fewer than a dozen. Small numbers of Common Teal and

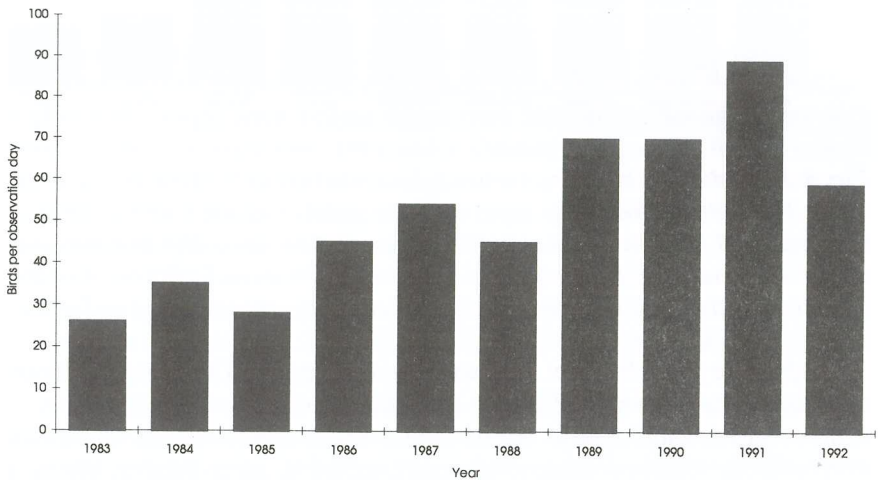


Fig. 4 Mallard numbers in Saltford, 1983-1992. The figures for each year sum daily counts of full-grown birds divided by the number of observation days. Data prior to 1983 are too patchy for inclusion. Sample sizes (level of observer effort) for each winter are presented in Table 3.

Eurasian Wigeon also used these pools in autumns prior to 1992. The similar occurrence patterns of these ducks (and Common Coot) presumably relate to features of the pools' developing ecologies, perhaps particularly to patterns of annual weed growth on the margins. Such weed seeds are important food sources for ducks (D. L. Buckingham *in litt.*, 1996). Numbers on the river and in fields remained high in 1992 and subsequently, demonstrating that the Sewage Farm pits were probably not responsible for the increase of Mallard in Salford.

In contrast to other ducks, numbers did not increase during freezing weather; the species is reluctant to move far, even in hard weather (Lack, 1986). Generally, birds on the river beside Mead Lane and the Shallows and around Swineford Lock and the Marina approached and fed readily from people, whereas those on less visited stretches of the river, on farmland and in the Sewage Farm were more flighty. Various individually identifiable birds during the period revealed that these differences in behaviour arose because each bird altered its actions according to locality, rather than that there were separate tame birds and wary birds. This is also the case with Mute Swan (D. L. Buckingham *in litt.*, 1996).

The sustained increase in Salford mirrors the national trend during the study period, during which the population almost doubled (Marchant and Balmer, 1994a).

COMMON POCHARD Annual numbers of Common Pochard visiting Salford rose slightly over the period, and their seasonal distribution and length of stay also altered. Initially, small numbers (1-4, with up to 50 in hard weather) visited the river, particularly between mid-December and February, with exceptional singles in the late summer or spring. After the construction of deep-water pits, 1-3 birds, increasing to 7-11 from winter 1989/90, were present sporadically from mid-November to late March in the Sewage Farm, but birds became less usual on the river. Throughout the period the species occurred on fewer days and in smaller numbers than did Tufted Duck; it probably prefers larger waters than the latter (Lack, 1986). Their preference for shallow water (Lack, 1986) also renders both the river and the Sewage Farm sub-optimal for Common Pochard.

A slight decrease in wintering numbers nationally during the period (Gibbons *et al.*, 1993) followed a dramatic increase during the 1960s-70s (Lack, 1986). Common Pochard is considered to be a Red Data Bird partly for the international importance of the British winter numbers (Batten *et al.*, 1990); numbers in Salford are insignificant in this context.

TUFTED DUCK Tufted Duck trends during the period resembled those of Common Pochard. Until 1983, under ten were present regularly during December - February on the river. Higher numbers were associated with cold weather, with a peak of 130 on 17 January 1982. Birds were exceptional in

April - October, although a pair remained from winter until 11 May 1979. The deep-water pits created in the Sewage Farm in 1982-1984 did not increase winter numbers, but birds then used them in preference to the river, which they visited mainly when flushed from these pits. Sporadic visits to the Sewage Farm by 1-3 non-breeders or moulting birds during summer and autumn occurred in later years.

Tufted Duck are not a likely breeding colonist as they require standing water bodies exceeding 1 ha (Marchant *et al.*, 1990); there is no such habitat in the area. Furthermore, they are highly sensitive to pre-nesting disturbance (D. L. Buckingham *in litt.*, 1996), during which season the river and banks in Saltford support heavy recreational use. Birds in later years were quite confiding, especially in the Sewage Farm, but, except in cold spells, birds on the river were commoner on sections with lower human presence. They were not seen taking food from the public, although this happens elsewhere (Lack, 1986). The stability of numbers in Saltford during the period is not surprising as although British breeding numbers rose strongly during those years (Marchant *et al.*, 1990), this was probably due to the increased wintering habitat, rather than a density increase (D. L. Buckingham *in litt.*, 1996). Non-breeders have increased dramatically throughout the last 100 years (Lack, 1986).

COMMON BUZZARD Common Buzzards increased spectacularly during the period. Although birds were regular over Tennant's Wood during spring 1978, this was not repeated until 1985, after which birds were present there all year. Prior to 1985, the species was a visitor to Saltford (once every 10-20 observation days) from the North Stoke and Lansdown area, but foraging birds subsequently increased in the main area, particularly in freshly ploughed and stubble fields. By the end of the period, up to five were observed on most days with fine weather. Breeding was not attempted within the main area during the study period. From 1993 a pair has established a territory in and around the Tennant's Wood area (Jeff Holmes, *pers comm.*). The rise in sightings occurred in all months as would be expected, as although most British birds are very sedentary, some non-breeders wander widely (Picozzi and Weir, 1976, Davis and Davis, 1992).

The Avon population grew during the period (Prytherch, 1989, Bland and Tully, 1992). Local expansion reflects and continues a nationwide population increase up to at least the mid 1980s, which is believed to be a recovery from low populations brought about by intense persecution well into this century, myxomatosis outbreaks and pesticide use (Marchant *et al.*, 1990). Common Buzzards are most numerous in areas dominated by pasture with many hedges, small woods and rough grassland (Gibbons *et al.*, 1993). The habitat changes in Saltford during the period were therefore unfavourable to the species, and although such habitat still dominates the North Stoke - Lansdown slopes, this does suggest that the population was recovering from an artificial low. Saltford

is towards the eastern edge of the main British population (Gibbons *et al.*, 1993) and it is at the edges that the most dramatic increases would be expected.

HOBBY No Hobby was seen before 1983. In and after 1983, 1-3 singles were seen annually, primarily from July to September, throughout the area. Nesting was never suspected within the main area, but observations were not intense enough in the subsidiary areas to assess the status of such a secretive species. The lack of records in 1978-1982 probably reflects a dearth of afternoon observation prior to 1983 (most sightings were after noon) combined with a genuine increase in birds. This timing reflects precisely a large upsurge in sightings on CBC plots (Marchant *et al.*, 1990) and nationally an increase has undoubtedly occurred, although its cause is unclear (Parr, 1994). Bland and Tully (1992) doubted that the recent national increase had generally occurred in Avon, but their assessment was hindered by the secrecy surrounding records of this species (R. L. Bland *in litt.*, 1996). Farmland is most suitable for Hobby if it has clumps of pine or hedgerows with mature broad-leaved trees (Gibbons *et al.*, 1993). The general decline of hedgerow trees is thus unfavourable to this species consolidating its status in Saltford.

RED-LEGGED PARTRIDGE Despite repeated and careful searching, Red-legged Partridges were not recorded in the area until 1983. In 1983-1989, small numbers (up to 16, typically 1-8), were found on 11 days spread across all months, mainly in fields west of Avon Farm and around Long Wood. Records were erratic, suggesting strongly that some or all involved released birds; however territories were held in some years. Few birds were seen well enough to confirm that they were pure-bred Red-legged Partridge, although no certain Chukar *Alectoris chukar* or interspecific hybrids were seen. Despite a strong effort to search for Grey Partridge, Red-legged Partridge was not recorded in 1990-1991 and only once in 1992 (three on 20 September). There were only two records after the period: seven on 1 January 1994 and one on 31 October 1995.

The species showed a strong national population increase from 1976 which was probably due to released birds (Marchant *et al.*, 1990). Numbers released across the country (and of Chukar and hybrids) increased rapidly up to 1984 (Gibbons *et al.*, 1993), coinciding closely with the species' appearance in Saltford. However, CBC indices in western England fell during the 1970s and 1980s (Marchant *et al.*, 1990) and the expansion in known county range during the same period (Bland and Tully, 1992) was probably due to better coverage by observers (R. L. Bland *in litt.*, 1996). Natural populations fell after 1985 (Gibbons *et al.*, 1993) and by 1992 were at an all-time low (Marchant and Balmer, 1994b). Avon is west of the species' main British range and the colonisation of Saltford (which is close to the species's stronghold in Avon; Bland, 1988), already perhaps faltering, may only be temporary unless populations are enhanced by local releases. The species favours areas with

arable crops (Gibbons *et al.*, 1993) and so the changes in field use in Saltford during the period may have benefitted it.

GREY PARTRIDGE This partridge showed a local collapse of population during the period (Fig. 5) and by 1996 was on the brink of extinction. Initially, the species inhabited fields throughout the study area, even, in the early 1970s, right up to the town. The species is one of the most sedentary of British birds (Lack, 1986). Winter coveys of up to 15 (sometimes 30) were common, but after 1987 no daily count reached double figures. By winter 1990/91 even special searches often failed to locate birds. After the period, none was found in 11 days in December 1993 / January 1994. Three were seen near Long Wood on 29 December 1995. In 1996, there were two astonishing records of large flocks in the heart of the main area: 16 on 18 January and 15 on 18 October. As these were the only records in 15 days in October 1995 - January 1996 and seven in August - October 1996, and were both in fields which were regularly traversed, they were probably transients from outside the study area.

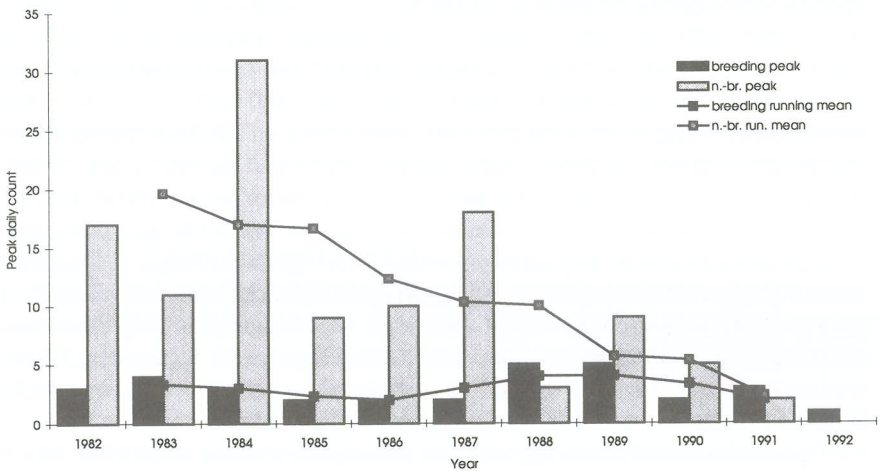


Fig. 5 Grey Partridge numbers in Saltford, 1982-1992. The peak daily count of full-grown birds for each year in the breeding season (April - July) and non-breeding season (August - March of the following year) is plotted. Data prior to 1983 are too patchy for inclusion. Running means are taken across three years. Sample sizes (level of observer effort) for each winter are presented in Table 3.

Breeding numbers showed a corresponding fall. In the early years of the period, the main area probably held 6-10 pairs (birds calling from 2-3 territories were sometimes heard from a single spot around dusk). Fig. 5 understates the true decline in breeding numbers, because from 1988 a special

effort was made to locate calling birds on several evenings during each April. By contrast, even into the 1980s the species had seemed so common that recording was not particularly rigorous. Furthermore, evening observations were unusual prior to 1983. Careful searches in 1992 (10 days, April - May) and 1994 (11 days, March - April) located only a single calling bird in each year. Fields north of Tennant's Wood and around Long Wood supported similar densities and these areas have also shown decreases.

The species has declined in Avon so drastically that Bland and Tully (1992) expressed concern about its future in the county. It is now concentrated in the eastern parts, particularly 10-km square ST66. A species in decline will persist for longer in areas that originally held high densities, so it is notable that Bland and Tully's estimated current density for Avon (including areas where the species was probably absent; R. L. Bland *in litt.*, 1996), of two pairs per tetrad, was greatly exceeded in Saltford at the start of the period. However, these densities are considerably lower than some cited by Lack (1986) and Gibbons *et al.* (1993).

It is not known whether the local position was complicated by releases (which are rarer than for *Alectoris* partridges; Lack, 1986), but the catastrophic decline in Saltford is in line with its trend in south-west England (Gibbons *et al.*, 1993). Avon is well west of the species's current British strongholds (Gibbons *et al.*, 1993). Nationally, populations halved during the last five years of the period (Marchant and Balmer 1994b) and indeed the species has been declining since the last century. The quickening decrease in the last 30 years (the population declined by 77% during 1970-1990; Fuller *et al.*, 1995) is attributable largely to changed farming practices, particularly herbicide-induced reduction of chick survival rates (Potts and Aebischer, 1994), and the species is considered to be a Red Data Bird on this basis (Batten *et al.*, 1990).

COMMON PHEASANT Common Pheasant numbers increased steadily up to 1984 and then fluctuated around a new high level (Fig. 6). This increase was particularly noticeable in farmland; numbers in Tennant's Wood probably changed little during the period.

Nationally, assessment of trends in the wild population is hampered by the huge numbers released for shooting (Marchant *et al.*, 1990), but no monitoring method suggested a decrease during the period. On CBC plots, Common Pheasant maintained high numbers with a further increase on farmland in the last few years, while game returns indicated a steady increase (Marchant *et al.*, 1990, Marchant and Balmer, 1994b). The sustained increase since 1800 has been one of the strongest of all British breeding birds (Gibbons *et al.*, 1996). The Common Pheasant in the U.K. is strongly associated with woodland edge and hedgerows. Arable field borders support three times as many breeding territories as do those in grass-dominated areas (Woodburn and Robertson, 1990) and the large increase in Common Pheasant in Saltford during the period may stem at least partially from the changing field usage.

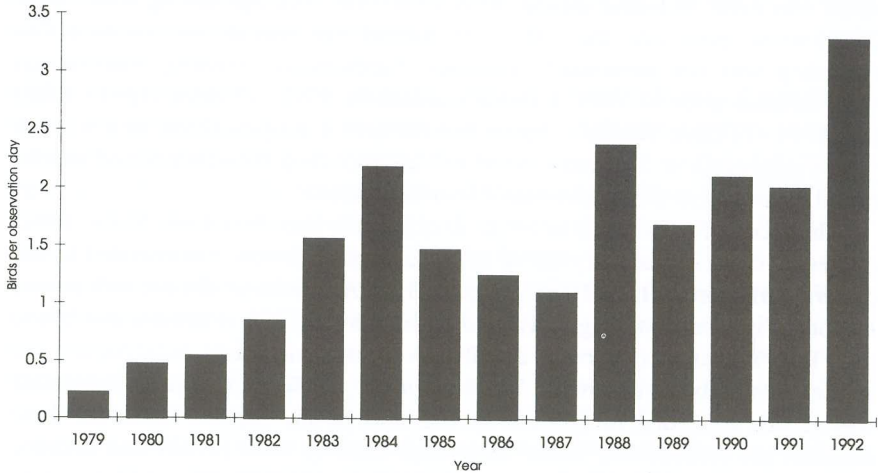


Fig. 6 Common Pheasant numbers in Saltford, 1979-1992. The figures for each year sum daily counts of full-grown birds divided by the number of observation days. Data from 1978 are too patchy for inclusion. Sample sizes (level of observer effort) for each winter are presented in Table 3.

WATER RAIL Water Rail showed a striking burst of records in winter 1983/84 (1-2 birds on 8 of 26 days) which was maintained thereafter. There were no records prior to this. Birds occurred in dense riverbank cover and in overgrown ponds and ditches. They arrived from mid-October and stayed until mid-April, with the highest numbers in December-January. Individuals were often seen in one place throughout their stay, but in some winters (1987/88, 1989/90 and perhaps 1991/92) no long-stayers were found. Calling was rare, occurring mainly when territorial birds, which usually foraged singly, met.

There is little suitable breeding habitat, although calling was heard from a reed-fringed pit in the Sewage Farm at dusk on 2 May 1990. This is less than two weeks later than the departure of some winter territory holders, which anyway may call, even on passage (Bayliss, 1985). There were high May levels of evening and night-time observation in later years of the period, meaning that regular calling would probably have been detected. However, as with many species, Water Rail are less vocal at low density and thus easier to overlook (D. L. Buckingham *in litt.*, 1996).

Birds occurred in areas which were checked regularly in all years of the period. The first five winters may have lacked long-stayers, but even so, such a strong and sudden change in the number of records seems likely to represent a real increase. This is surprising as the British breeding population has declined (Gibbons *et al.*, 1993) and wintering populations (from north and east Europe: Flegg and Glue, 1973) have probably done likewise.

COMMON COOT During the 1970s and early 1980s, Common Coot were mainly hard-weather visitors, with influxes usually remaining below 10 (although 46 arrived in the winter 1981/82). Otherwise, one wintered on the river from 27 October 1979 to 19 April 1980 and sporadic birds, perhaps from the small colony at Newton Park, were seen on the river on 23 August 1979, 31 March, 7 October and 22 November 1981 and 25 September 1982. The deep-water pits created in the Sewage Farm during 1982-1984 caused a dramatic change in the status of Common Coot. After one on 25 July 1983, two wintered in 1983/84 (28 September - 2 April) and sporadic singles occurred from 1984 to 1987, with up to five during hard weather. Birds overwintered in 1987/88 (at least December - 31 March; one), 1988/89 (at least 23 November - 25 April; two) and 1989/90 (two birds had arrived by 4 September and up to six were present later). Three pairs bred in 1990, 1991 and 1992, and a post breeding flock wintered (20, 1990; 11, 1991; 8, 1992). Numbers on the pits declined between January and March so that three pairs remained at the start of each breeding season.

Subsequent to the period, breeding occurred in the Sewage Farm in at least 1994 but large numbers no longer overwintered (maximum: seven), echoing the collapse in duck numbers there from 1992 onwards. Birds were seen on the river in the 1990s much more frequently than prior to 1990, especially in late summer, and were probably the individuals from the Sewage Farm.

The time lag of eight years from pit creation to breeding presumably reflected the time taken for suitable aquatic conditions to become established as breeding Common Coots favour abundant benthic and marginal vegetation (Gibbons *et al.*, 1993). Elsewhere, birds breed on rivers, especially in eastern England, but non-flowing water is greatly favoured (Marchant *et al.*, 1990), so the lack of breeding attempts on the river Avon is not surprising.

Common Coot has spread onto other small waters in Avon (Bland, 1988) and breeders have colonised newly-created waters (Bland and Tully, 1992). Nationally the species increased during the period (Marchant *et al.*, 1990). Saltford is towards the edge of the main English block of high breeding density (Gibbons *et al.*, 1993).

EUROPEAN GOLDEN PLOVER European Golden Plover records in the main area were erratic but not obviously related to local weather conditions. Birds occurred in the winters of 1978/79 (36, 14 January), 1980/81 (up to 109, December - January), 1981/82 (71, 13 February), 1983/84 (up to 59, mid-December), 1984/85 (up to 77, December - early January), 1985/86 (up to 67, January - February) and 1986/87 (35, December). No birds were seen on the ground in 1987-1992, despite substantial observation effort in four of the five subsequent winters, nor were any found in 11 days of careful searching in 1993/94. Up to five were seen during a cold spell in December 1995 - January 1996. Certain flat, large fields were favoured by this species, often in

association with large Northern Lapwing flocks, the two species frequently feeding together (Barnard and Thompson, 1985).

In fields south of Long Wood records also dwindled, with 318 in January 1981, 306 in January 1982, 17 in December 1982 and 39 in September 1983. Outside hard weather, none was seen subsequently, despite one or two searches most subsequent winters. These birds were probably part of the Marksbury Plain wintering population.

Throughout the period, and afterwards, small numbers flew over in autumn (earliest: 29 August 1987) and during periods of freeze. Exceptionally they paused briefly, usually on autumn stubbles. A flock of 40 on 24 October 1996 on a freshly ploughed field was most unusual.

Care must be taken in concluding trends in this species as its occurrence is so dependent on weather, and two main months when birds occur (February and November) were poorly covered in most years. However, regular wintering appeared to cease during the period. The British breeding population declined markedly over this time (Gibbons *et al.*, 1993), continuing a sustained decline over 200 years (Gibbons *et al.*, 1993), although it was classified as a Red Data Bird on account of the international importance of the wintering numbers (Batten *et al.*, 1990). Wintering birds are faithful to areas over long periods (Fuller and Youngman, 1979) and it may be that once the use of a site ceases, regular wintering is less likely to be re-established than for species which are less traditional in their local use patterns. The decline in numbers in Saltford is probably due to the loss of permanent pasture which, with its high worm biomass, is the favoured feeding habitat of inland wintering birds (Fuller and Youngman, 1979, Fuller and Lloyd, 1981, Barnard and Thompson, 1985, Tucker, 1992). Cereal stubbles and grass leys are favoured over winter cereals, bare earth and oilseed rape fields (Tucker, 1992), but throughout the period stubbles were rare in Saltford and the area of grass leys declined, meaning that there was little alternative habitat available. Furthermore, European Golden Plovers (and Northern Lapwings) may associate with cattle in winter (Tucker, 1992) and the numbers of cattle in Saltford declined over the period.

NORTHERN LAPWING Breeding Northern Lapwing showed a change in status among the most dramatic of any species during the period. In the early 1970s, birds were heard displaying from within the town (e.g. High Street and Primary School). Extensive fields adjoined the school to the west in these years but this was no longer so by 1978, suggesting that a decline had already set in. In the early years of the period, roughly 3-4 pairs bred in the main area, with a lack of breeding in 1985 preceding cessation by 1988 (Table 5). Table 5 underestimates the change in the first five years, as the species was not then counted particularly carefully.

Post-breeding flocks used to be regular (Table 5). In contrast to the flyover records noted at Keynsham at this season (Aldridge, 1987), these birds fed in the area for substantial periods. They disappeared during July and only

occasional flyover birds were recorded until wintering birds arrived, generally in October or November. Numbers at this season fluctuated wildly, perhaps because of year-to-year differences in crops grown, but appeared to collapse in 1985, coinciding with the first year when no birds bred in Salford. A striking observation is that in 1991 and 1992, despite a general absence of post-breeding flocks, August and September flocks of up to 150 and 212 respectively were present.

Table 5 Breeding and post-breeding Northern Lapwing numbers in the main area of Salford, 1978-1992.

Year	Breeding season	Post-breeding season	Absent period
1979	6	43	Aug - 1st Oct
1980	6	none	1st Jul - Nov
1981	4	70	1st Jul - mid Nov
1982	6	300	Aug - early Dec
1983	6	105	Aug - 1st Sept
1984	6	260	no absence
1985	1, sporadic	none	Jun - 1st Sept
1986	3	none	poor data
1987	4	poor data	poor data
1988	1, sporadic	poor data	poor data
1989	1, sporadic	no data	poor data
1990	1, sporadic	1, sporadic	no data
1991	1, sporadic	92, sporadic	no absence
1992	none	none	no absence

Note. All figures are the highest frequent daily totals of individual birds. The true breeding population until 1985 was probably higher than recorded on any given day. Other figures probably approximate closely to the total population.

As with European Golden Plover, winter numbers varied between years (Fig. 7), particularly prior to 1983/84. After regular flocks of 500-800 during 1983/84-1986/87, in the last five winters of the period only one flock exceeded 250, suggesting that wintering numbers declined in the latter half of the period. Caution is needed in interpreting these figures as Lapwing numbers are highly susceptible to weather-related fluctuations; these cannot easily be allowed for in analysis as influxes may be due to hard weather many hundreds of miles away.

Trends in the fields above Tennant's Wood (which formerly supported a few breeding pairs) and around Long Wood (which formerly held winter flocks approaching a thousand and breeding pairs in several fields) are similar. Both areas were checked carefully for breeding birds in the final two summers of the period and none was found.

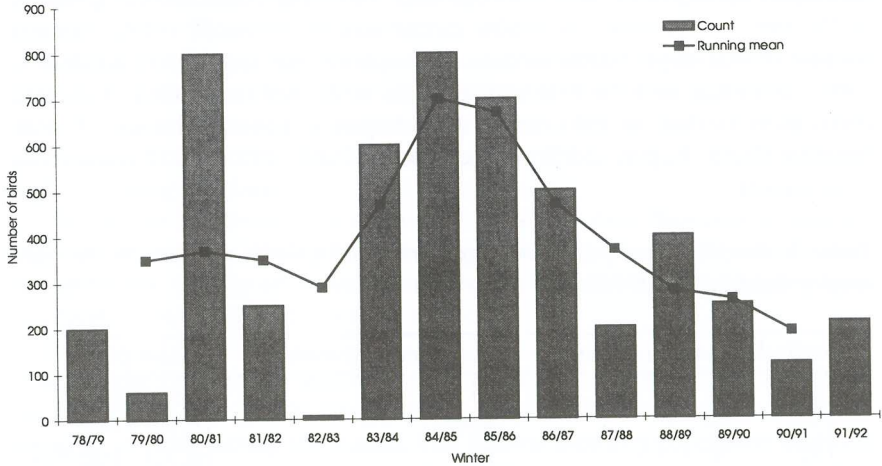


Fig. 7 Winter Northern Lapwing numbers in Saltford, 1978-1992. The number of birds represents the largest frequent count during the winter (November - February inclusive). Running means are taken across three years. Sample sizes (level of observer effort) for each winter are presented in Table 3.

Saltford is at the edge of one of three concentrations of breeding Northern Lapwing found in 1980-1982 in Avon. The concentration which included Saltford was mainly on arable and grazing farmland and many sites were occupied for only part of the three-year period, reflecting the disturbance from farming activities (Payne, 1983). The decrease in Saltford is reflected in a county-wide decrease at all seasons (Bland and Tully, 1992), although earlier Bland (1988) had found an increase in breeding numbers in the county. The national breeding population, in steady decline over the last 200 years (Gibbons *et al.*, 1996), declined sharply and continuously from 1984 (Marchant and Balmer, 1994b), particularly in southern England (Shrubb and Lack, 1991); 1985 was the first year that no breeding pairs were found in Saltford and post-breeding numbers also collapsed. The lower wintering numbers are probably related to the changes in field use in the study area. Breeding birds prefer a mosaic of grassland and spring-sown arable (Hudson *et al.*, 1994) and in winter birds are much more common in permanent pasture than in leys, stubbles or bare fields (Tucker, 1992). Thus, the change from mixed farming to mainly autumn-sown arable during the period is unlikely to have benefitted Northern Lapwings.

ROCK DOVE (FERAL PIGEON) Free-flying pigeons were kept by several households in Saltford and Swineford, but feral stock were not established during the period. Birds bred, less than annually, under railway bridges over the River Avon. Non-breeders appeared at any season but for many months

only overflying birds were seen. Large flocks (over 100) sometimes occurred, mostly in late winter and early spring in rape fields. The erratic occurrence of large flocks in particularly suitable fields is a notable feature of the species' feral ecology (Lack, 1986).

Of the four widespread breeding birds in Avon which did not breed regularly in Saltford, this species has the widest county distribution, occurring in 43% of tetrads (Bland and Tully, 1992). In national terms, densities in Avon outside of Bristol are only moderate (Gibbons *et al.*, 1993). Saltford is too small a town to support a population. Nest-sites in suburban areas are limited and the species may be tied to ledges under bridges (Lack, 1986), as in Saltford. The great and continuing increase in recreational use and littering of riverside areas could conceivably support small numbers in the future; during the period birds depended entirely on agricultural food sources.

TURTLE DOVE Turtle Dove numbers collapsed in the early 1980s from an estimated 8-12 pairs in the whole area in the late 1970s. Records were irregular after 1985 and I have seen only one (on 17 October 1995, thus clearly a passage bird) since the records discussed in Duckworth (1992). Bland and Tully (1992) believed that extinction in Avon could occur soon and the county now supports negligible breeding numbers, being well west of the main British range (Gibbons *et al.*, 1993). The national population is declining sharply; it fell by 72% between 1970 and 1990 (Fuller *et al.*, 1995) and recolonisation of Saltford is thus entirely unlikely at present.

BARN OWL The four records of Barn Owl in 1979-1982 (once each in January, February, May and June) were scattered throughout the area. These few observations probably represented a resident population, as other observers saw birds in these years. The low frequency of nocturnal and evening observations then contrasted with much higher levels in 1983 and subsequently, yet no more birds were seen until 1991, when two appeared in Saltford Mead. Two were still present in late 1995, when a further bird was seen by Tennant's Wood. The provenance of all birds is unknown. Some artificially released birds certainly appeared during the 1980s, typified by one in the Norman Road area in September 1985 which investigated house windows (B. Coombes verbally, 1985).

A decline has occurred in Keynsham (Aldridge, 1987) and indeed the species has declined in Britain steadily for 200 years (Gibbons *et al.*, 1996); this accelerated in the last few decades. Loss of nest sites may be a contributory factor (Marchant *et al.*, 1990) but is unlikely to have been so in Saltford as numerous trees with large cavities remained during the period. Loss of rough grassland has also been problematical for the species (Batten *et al.*, 1990, Marchant *et al.*, 1990) and occurred in Saltford during the period, particularly following the ill-considered planting with shrubs of the banks of the disused railway line during the late 1980s. Of the four records in 1979-1982, two were

along grassy stretches of this line. The birds in 1991-1996 were around the Sewage Farm, when numerous old trees (principally pollarded poplars) in Saltford Mead provided suitable potential nest sites. The additional bird seen in 1995 was hunting over the grassy slope south of Tennant's Wood. These two areas are the only extensive rough unsprayed grassland in the study area. After the period, the Set-Aside policy resulted in various fields being left as weedy stubble for periods of almost a year; such areas can support high densities of owls (Aldridge, 1992) and are likely to be important feeding areas.

LESSER SPOTTED WOODPECKER One or two Lesser Spotted Woodpeckers were seen regularly in 1977-1981 in Tennant's Wood and in riverside alders between Saltford and Kelston Locks. Apart from one heard in Tennant's Wood on 15 January 1985, during a prolonged freeze, there were no subsequent records and the species is doubtless extinct as a resident.

Saltford lies in the narrow band from the Wash to Cornwall which forms a peculiar gap in this species' English distribution (Gibbons *et al.*, 1993). The national population peaked in the late 1970s, declined during the early 1980s with very low numbers from 1985 (Marchant *et al.*, 1990) and by the end of the period, it was too rare to be monitored by the Common Bird Census (Marchant and Balmer, 1994b). These population changes were reflected in Avon (Bland and Tully, 1992) and numbers declined in Keynsham after 1979 (Aldridge, 1987). The population increase was due to the large numbers of dead elms providing productive foraging habitat (Osborne, 1982), but this period lasted only a few years as dead elms support few invertebrates after bark loss (Lack, 1986). Hedgerow elms had formerly been particularly frequent in the gap in national distribution (mentioned above), meaning that once they had died and shed their bark, little suitable habitat remained in farmland for Lesser Spotted Woodpeckers (Gibbons *et al.*, 1993). Much of Tennant's Wood was dominated by elms, which died during the 1970s. Many were removed in 1981-1982, and those that remained had lost their bark by the mid 1980s. Thus, the Saltford records came during a high local population and Lesser Spotted Woodpecker was probably just a temporary addition to the avifauna. Birds wander in winter, so odd records may be expected in the future.

SAND MARTIN Always much the scarcest breeding hirundine in Saltford, as in Avon as a whole (Bland and Tully, 1992), a colony of 1-3 pairs of Sand Martins used the south river bank downstream of Swineford Lock at least into 1980. Careful checking showed that this certainly did not occur in 1991 or 1992. The number of birds using the river valley for foraging declined from 3-5 seen per day in 1979-1980 to 1-2, with many blank days, in 1981-1992 (although 4-5 were seen on exceptional days in later years).

Sand Martin populations have crashed several times since CBC monitoring began, and some populations abroad show clear cycles in numbers (Persson, 1987). The British population was high in the late 1970s (Marchant *et al.*,

1990) and thus breeding in Saltford may have been only a temporary occurrence. Many suitable earth faces remained along the river banks throughout the period. Abundances in Avon and surrounding counties are generally low compared with most of Britain (Gibbons *et al.*, 1993).

MEADOW PIPIT Meadow Pipit did not breed in Saltford during the period, despite occurring in 30% of Avon tetrads in the breeding season, including some nearby (Bland and Tully, 1992). Saltford lacks any suitable breeding habitat (extensive rough grassland) for Meadow Pipits, which were common from early September to late April (exceptionally, early May). Large autumn passages sometimes occurred (peak: 540 in 11 hours on 5 October 1985), although these are much lower than the numbers passing over Keynsham (Aldridge, 1987). As in Keynsham (Aldridge, 1987), numbers were smaller in spring (no one-day count was over 150). Winter numbers fluctuated with the severity of the weather, but on average in the main area, 30-60 birds fed in fields, especially those partially waterlogged, and on gravel filter beds in the Sewage Farm. Larger numbers roosted, but these probably included birds which fed outside the area. Some roost-sites were used only for a few nights in succession. Winter numbers south of Long Wood and beside Tennant's Wood occasionally exceeded 100, although single figure counts were more usual.

Birds not infrequently sang and parachuted half-heartedly during April, but the Avon breeding and wintering populations are distinct (Lack, 1986, Bland and Tully, 1992), suggesting that breeding by lingering winter visitors would be unlikely.

YELLOW WAGTAIL Yellow Wagtail was not proved to breed during the period, but in 1983 at least one summered at Avon Farm and on 20 July 1980 a female and young juvenile in the Sewage Farm were probably local. The only June record for Keynsham listed by Aldridge (1987) was also in 1983. Typically, up to three (occasionally six) were present on half the days in the latter half of April and the first third of May, but numbers fluctuated and birds were notably scarce in spring 1982, when only one was seen during 15 days observation. Autumn passage birds usually came in pulses separated by blank periods of up to a fortnight. On average, up to six were seen on about 30% of observation days between mid-August and late September, with occasional birds from late July and into early October; numbers occasionally exceeded 20. There was no indication of changing passage numbers during the period, whether birds per day, the frequency of days with high counts, or the magnitude of counts themselves are compared. Birds were usually in wet fields with cattle or in the Sewage Farm.

During the period, breeding numbers declined nationally (Marchant *et al.*, 1990, Marchant and Balmer, 1994a,b) and the breeding range in Avon contracted markedly (Bland and Tully, 1992). The county now supports insignificant densities away from the coast (Gibbons *et al.*, 1993). Thus,

breeding in Saltford is unlikely to become more frequent. The absence of any indications of breeding in or around Saltford since 1983 accords with the change from grassland to arable which occurred in the main area from 1984 onwards; the species declines when this occurs (Moller, 1980).

RUFOUS NIGHTINGALE The only records of Rufous Nightingale concern single pairs, probably attempting breeding, in 1982 and 1983 on developing hillside scrub southeast of Tennant's Wood. This area was checked only once or twice in each subsequent season and observation was insufficient to judge the species's status prior to 1982. The scrub was cleared in the mid 1980s. Rufous Nightingale range in Avon contracted during the period (Bland and Tully, 1992), making recolonisation unlikely, especially as these local trends reflect a nationwide range contraction and population fall throughout the last 200 years. Avon now lies entirely outside the areas of England with even moderate breeding densities (Gibbons *et al.*, 1993, 1996).

SEDGE WARBLER Sedge Warblers appeared on passage from mid-April to early May and from early August (exceptionally late July) into late September (sometimes early October). In an average autumn, 1-2 birds were seen on about a quarter of observation days, but spring birds (usually singing) were found on only a sixth of days. During 1979-1982, birds bred; in the best year, 1981, there were two pairs each beside the river both upstream and downstream of the town. Subsequently, no birds summered in at least 1983-1986 and 1990-1992, and observations were too patchy in 1978 and 1987-1989 to assess breeding status. Early August observations in 1996 indicated that at least one pair and perhaps three had bred beside the River Avon between the Rectory and the inflow of the River Boyd.

Sedge and Reed Warblers frequently compete for breeding habitat, with the later-arriving Reeds sometimes evicting the former from their territories (e.g. Catchpole, 1972). The temporary extinction of Sedge Warbler in Saltford coincided with an increase in Reed Warblers, but these two trends are unrelated as the species occupied different areas and each was faithful from year to year in the vegetation clumps used. There were no cases where Reed Warblers settled in areas which had held Sedge Warblers earlier in the spring.

Sedge Warbler does not breed widely in Avon and Saltford lies remote from the two centres of population; the coastal flatlands and the major reservoirs (Bland and Tully, 1992). The county supports relatively low densities (Gibbons *et al.*, 1993). The timing of extinction in Saltford during the period reflects a national long-term decline since the 1960s, with a particularly sharp downturn in 1983 (Marchant *et al.*, 1990). However, by 1988-91, national populations had returned to the levels of the 1970s (Gibbons *et al.*, 1993), yet Saltford was not recolonised by 1992. There were no observations during the breeding seasons of 1993-1995, but birds did breed in 1996. The Saltford population,

never large, may merely be a fluctuating extension into marginal habitat in periods of high population in more favourable areas.

REED WARBLER In 1980, 1982, 1983 and annually from 1985 onwards, 1-2 male Reed Warblers held territory in small bankside reedbeds downstream of Swineford Lock. After each summer, the dead reed stems were removed by high winter river levels and thus no suitable reeds were available until mid-June. This resulted in young remaining late in the nest, exceptionally into September. In areas where reed stems remain over winter (such as Wicken Fen, Cambridgeshire) nesting is earlier and almost all birds leave the nest by mid-August (own data). By 1991, the deep-water pits in the Sewage Farm had dense reed fringes which were occupied by Reed Warblers. These stands retained the previous year's dead stems, and so settlement occurred earlier than in the river vegetation; in 1992, a female had arrived and paired within May. Fewer than four pairs bred in the area each year, and, despite occasional singers in rape fields, breeding away from water was never suspected. Unpaired Reed Warblers sing frequently and are thus conspicuous, but if a male and female arrive in quick succession and occupy an isolated patch of reeds, there is no regular singing and the pair may easily be overlooked, especially if breeding is unsuccessful. The lack of records in the various years early in the period may thus not indicate absence.

By contrast with Sedge Warbler, passage birds were seen only exceptionally; singles on 18-21 September 1987 and 14 September 1989 were the only records. This may reflect in part their more skulking behaviour, but as substantial periods were spent searching for them, they were clearly extremely scarce.

The species increased in Avon during the period (Bland and Tully, 1992), as part of a national westward range extension; nonetheless, most of Avon supports relatively low densities (Gibbons *et al.*, 1993).

COMMON WHITETHROAT Common Whitethroat showed a long-term increase although there was a collapse in numbers in 1984. In the main area in the main season (mid-May to mid-June), three to four singing birds were found per observation day prior to 1984. In 1984-1985 only singles were seen per day. Data were too poor in 1986-1989 to assess the population, but by 1990-1992, five to six and frequently up to nine singing birds were found daily. Whitethroats were always at higher densities in the hedges around Long Wood than in the main area, but data are too sparse to assess trends.

Common Whitethroat is the only warbler whose territories were mostly held in hedges or in riverside scrub. Other species were strongly associated with the disused railway line, but even at the start of the period the height of scrub along this line was rather too high to support substantial numbers of Common Whitethroats, which are typical of young, open scrub (Fuller, 1982). Some of

the increase during the period comes from birds colonising the new scrub in the Sewage Farm, but numbers also increased in farmland hedges.

The national population fluctuated during the early years of the period, crashed in 1984, then increased up to another sharp decline in 1991 (Marchant *et al.*, 1990, Gibbons *et al.*, 1993, Marchant and Balmer, 1994a). Birds in Saltford reflected this pattern except for a notable divergence in 1991-1992, when numbers were the highest ever. Common Whitethroat populations are limited more by rainfall patterns in the Sahel than by features in Britain (Gibbons *et al.*, 1993), and therefore care must be taken in suggesting cause for changes in populations, but the high numbers in 1991-1992 probably result from the scrub in the Sewage Farm being at the optimal stage of maturity for this species.

GARDEN WARBLER Garden Warblers held territories in only four years of the period (1979, 1986, 1991, 1992 and perhaps in 1989) and breeding certainly did not occur in 1980-1983 inclusive. Certain sites seemed to be favoured by the species; the 1979 and 1986 pairs were in a patch of wet scrub and ruderals which were cleared in 1987, while the stretch of the disused railway line occupied by the 1991 and 1992 pairs lacked obvious features differentiating it from the adjacent lengths. Regrowth in Tennant's Wood following partial logging seemed ideal for this species but despite much searching, none was found. Passage birds were also scarce, with only nine found over the period, a total approached on many individual days by each of the other three *Sylvia* species.

Saltford lies in a region of medium breeding density for Garden Warblers (Gibbons *et al.*, 1993); they occurred in 40% of tetrads in Avon (Bland and Tully, 1992). Their scarcity in Saltford is thus not easily explained. The scrub along the railway line supported numerous Blackcaps, although it should be more suitable for Garden Warblers as Blackcaps generally predominate in areas with mature trees (Marchant *et al.*, 1990). Aldridge (1987) also considered that Garden Warbler was not found often around Keynsham.

COMMON CHIFFCHAFF Common Chiffchaff increased as a breeding bird along the disused railway line (where the bulk of the population in the main area breeds), the trend being particularly obvious after 1990 (Duckworth, 1996). The national CBC index shows an upturn after a trough in the early 1980s (Marchant *et al.*, 1990), which accords well with the patterns observed in Saltford.

Wintering birds showed no such increase, although in some later winters effort was too low to detect birds if they occurred only at the rates of some earlier years (Fig. 8). The spate of records in 1984/85 - 1986/87 was due to resident birds which were seen each winter on most visits to the developing scrub in the Sewage Farm. Penhallurick (1978) described birds in Cornish sewage farms feeding in gravel filter beds; this was seen in Saltford only in

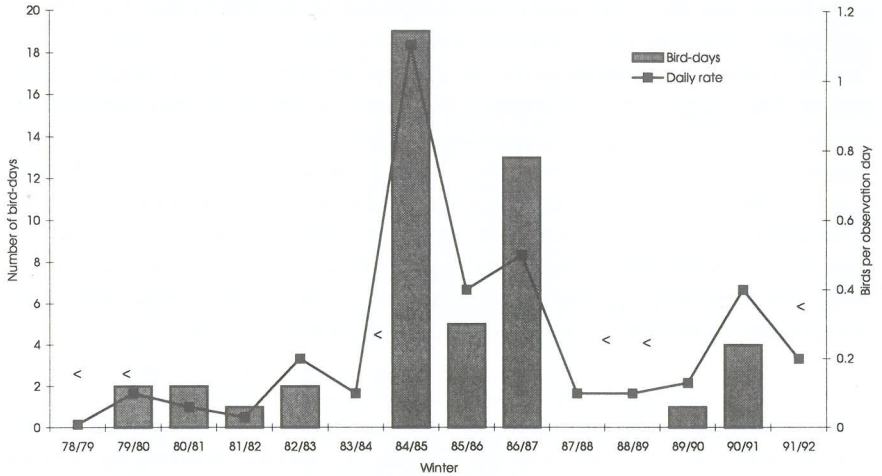


Fig. 8 Winter Common Chiffchaff numbers in Saltford, 1978-1992. The number of bird-days and the encounter rate (number of birds per observation-day) for each winter (15 November - end February) are shown. In winters where no birds were recorded, the maximum possible encounter rate (if one bird had in fact been recorded in the winter) is plotted (with a '<' sign above the column) to minimise the distortion to true figures from low levels of observation in some winters. Sample sizes (level of observer effort) for each winter are presented in Table 3.

December 1995. A few specific sites hosted most winter birds; certain streams and pools with a good surrounding scrub cover, a pattern echoing that of autumn Willow Warblers (Duckworth, 1996). Avon supports a concentration of wintering birds. Nationally, at least in the first half of the period, there was no clear long-term trend in wintering numbers (Lack, 1986).

WILLOW WARBLER The changing population of the Willow Warbler at the site was considered by Duckworth (1996). After a long period of stability, breeding numbers decreased in and from 1990; this pattern fits national CBC trends, although it is also explained by changing local habitat conditions, in particular the maturation of the scrub along the disused railway line.

EUROPEAN NUTHATCH European Nuthatch was a transitory resident during the period. After a family party in a High Street garden on 23 June 1979, two were seen in Tennant's Wood in February 1981 and in February - May 1982. Two reappeared there in September 1985 and birds were seen on most visits until October 1990. There were no subsequent records despite repeated searches. There was no evidence that more than one pair ever held territory. Birds from Tennant's Wood occasionally wandered to the withy beds

in tit flocks, but they were never seen over most of the main area. The species establishes territories in the autumn and retains them all year (Nilsson, 1976). Despite a wide distribution in Avon; 32% of tetrads in the breeding season (Bland and Tully, 1992), European Nuthatch is generally less common in woods scattered among non-woodland areas, such as farmland, than in extensive woodlands (Gibbons *et al.*, 1993) because it is extremely sedentary (Lack, 1986) and thus is probably vulnerable to local random extinction. Woodlands in Saltford seem not to be extensive enough to support a population. Recolonisation might occur in the future as the species is showing a long-term population increase (Gibbons *et al.*, 1996), which, with short-term fluctuations, continued during the period (Marchant *et al.*, 1990).

MAGPIE Although not counted accurately on a regular basis, Magpies increased at least in the town and on its fringes. Near-daily counts along a half-mile stretch from the Marina to the Church in 1980-82 recorded the species only infrequently (42 of 410 days); by 1992 many were present daily in this area. Subjectively, numbers seemed to remain relatively stable on farmland, reflecting the pattern in Avon as a whole (Bland and Tully, 1992), although nationally, rural populations have increased as strongly as have urban ones (Marchant *et al.*, 1990). Avon supports relatively high densities. The bird's increase and spread into residential areas is probably related to the decline in gamekeeping since World War I (Gibbons *et al.*, 1993).

TREE SPARROW Tree Sparrow bred in small numbers and wintered in fluctuating numbers in the early years of the period. A colony of 2-3 pairs used dead elms west of Avon Farm for breeding. The highest count there was of 14 in August 1981; the nesting trees blew down the following winter. Birds were seen in the main area on 1-2 dates in April and May each year in 1982-1984 but probably did not breed. One on 26 May 1992 was the only subsequent breeding season record; it was in the railway scrub in the exact former breeding area, but was not found in four other late May checks that year.

Numbers fluctuated within and between winters; they increased until 1984 and then declined (Table 6). No birds were seen in the final four winters of the period, or subsequently. Wintering birds fed chiefly in stubble fields; the last few flocks were all in maize stubbles, the only cereal which remained unploughed through the winter. However, such stubbles existed (and supported large flocks of other seedeaters) in later winters, so other factors are clearly important in this species' decline. Even in years of breeding, birds were not recorded during February - March and September - early October (although four flew over on 12 October 1994), so different individual birds may have been involved in breeding and winter periods.

Tree Sparrow contracted markedly in distribution in Avon during the period (Bland and Tully, 1992) and by the late 1980s the county was outside the species' main British distribution and supported negligible densities (Gibbons

Table 6 Wintering Tree Sparrows in Salford, 1978-1992.

Winter	Numbers of birds and dates present
1977/78	1-2, 5th Feb; Favoured areas rarely visited
78/79	no records; favoured areas rarely visited
79/80	no records (31 dates)
80/81	1-8, 25th Oct - 3rd Feb
81/82	1-14, 18th Oct - 7th Jan
82/83	1-31, 18th Oct - at least 2 Feb
83/84	1-46, at least 3rd Dec - at least 16th Jan
84/85	11 on 4th Jan
85/86	no records (13 dates)
86/87	1-4 on 3 (of 25) dates, 18th Oct - 29th Dec
87/88	1-48, at least 22nd Dec - at least 18th Jan
88/89	no records (11 dates)
89/90	no records (8 dates)
90/91	no records (13 dates)
91/92	no records (5 dates)

Note. Calls of this species were not known to the observer until mid 1979, so no significance should be attached to the scarcity of records in the first two winter periods.

et al., 1993). Even in the early 1980s, Salford had been on the western edge of the main range (Lack, 1986). The species declined nationally by 85% during 1970-1990 (Fuller *et al.*, 1995). The flocks of almost 50 in Salford approach the county maximum (of 80) during the period (Bland and Tully, 1992).

LINNET Linnets numbers declined in the main area, particularly in the non-breeding season but also during the breeding season (Fig. 9). Breeding numbers are difficult to monitor as Linnets are semi-colonial, weakly territorial, and may fly long distances to suitable feeding habitat (Newton, 1972). Even winter numbers may be difficult to assess as birds from a wide area congregate in one or a few flocks (Lack, 1986).

Numbers were highest during September and October, on stubbles and recently-ploughed fields, exceeding 60 (once 120) in most autumns in the first half of the period, but not subsequently. There was a lesser March-April peak in most years with maxima of 80 in 1980, 90 in 1983 and 74 in 1986. No subsequent spring count exceeded 30, and none in 1990-1992 reached a dozen, although up to 38 were found on several dates in 1994. Flocks were regular in only four winters of the period: 1981/82 (40-60 birds), 1982/83 (17), 1984/85 (70-115) and 1985/86 (30-50). The birds were associated with hard weather, except in 1982/83. There were one-day records of flocks in several other winters: 107 on 4 December 1982, 50 on 8 December 1984, 57 on 18 January

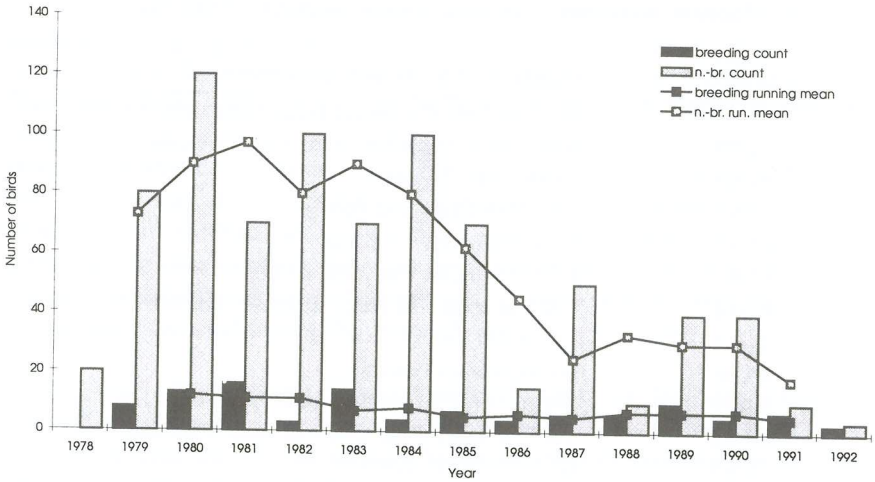


Fig. 9 Linnets in Saltford, 1978-1992. The number of birds represents the largest frequent count during the breeding season (May - June) and non-breeding season (July - April of the following year). Breeding season data from 1978 are too patchy for inclusion. Running means are taken across three years. Sample sizes (level of observer effort) for each winter are presented in Table 3.

1991 and 38 on 1 January 1996. In the last few years of the period, there were frequent runs of several field days in a row in mid-winter with no records. Birds were usually present in flocks of up to 20 year-round in fields around Long Wood; visits to this area were too infrequent to assess trends.

Patterns in the main study area argue against Bland and Tully's (1992) view that no declines were evident in Avon during the period. Nationally the species has been decreasing for 200 years (Gibbons *et al.*, 1996) and the decline steepened from the late 1970s (Marchant *et al.*, 1990); between 1970 and 1990, the population decreased by 56% (Fuller *et al.*, 1995). In 1988-1991, much of eastern Avon supported relatively high breeding densities (Gibbons *et al.*, 1993). Declines were particularly severe on arable farms (Marchant and Gregory, 1993), and were probably due largely to changes in agricultural practice, particularly increased chemical weed control (O'Connor and Shrubbs, 1986). The increase in arable area in Saltford and the likely changes in agrichemicals used over the period may explain the declines in Saltford.

COMMON BULLFINCH Common Bullfinch numbers were highest along the disused railway line and in Tennant's Wood, with a few in patches of scrub elsewhere. Over the period, numbers rose in the non-breeding season and probably also in the breeding season (Fig. 10). The species became a regular visitor to the maturing scrub in the Sewage Farm during the late 1980s.

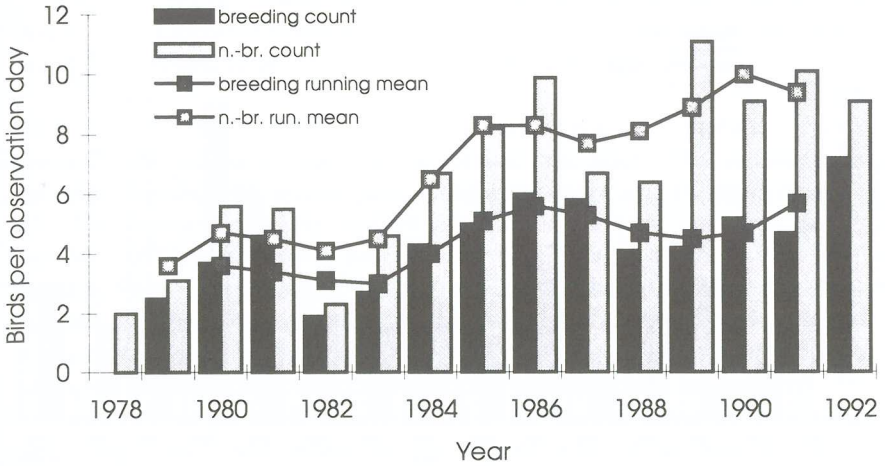


Fig. 10 Common Bullfinch numbers in Saltford, 1978-1992. The figures for each year sum daily counts divided by the number of observation days during the breeding season (April - July) and non-breeding season (August - March of the following year). Breeding season data from 1978 are too patchy for inclusion. Running means are taken across three years. Sample sizes (level of observer effort) for each winter are presented in Table 3.

Nationally, numbers declined during the period, probably as a result of hedge clearance (Marchant *et al.*, 1990, Gibbons *et al.*, 1993). No changes were apparent in Avon during the period (Bland and Tully, 1992). In Saltford Bullfinches fed to a large extent on the seeds of Ash *Fraxinus excelsior*, brambles *Rubus* spp. and Travellers' Joy *Clematis vitalba*, all of which increased with the maturation of scrub along the disused railway line. Scrub cleared during the period in the study area was composed primarily of elms and Hawthorns *Crataegus monogyna*, which are plants of less value to Bullfinches, and hedge loss was presumably outweighed by the changes in scrub along the railway line.

YELLOWHAMMER Yellowhammer breeding numbers (Fig. 11) remained remarkably stable during the period. The abnormally high counts in 1989 are due to a winter flock persisting late into April on unploughed stubble. In the non-breeding season, 3-4 birds were seen per observation day up to 1984 and flocks were scarce. Numbers then rose steadily and in the last few years a dozen or more were seen per field day. In most winters flocks were present.

Populations in peripheral areas of Britain contracted in range and declined in numbers during the period, but there was little change in range on the favoured habitat, lowland farmland (Gibbons *et al.*, 1993). Avon populations were fairly stable during the period (Bland and Tully 1992). Yellowhammer

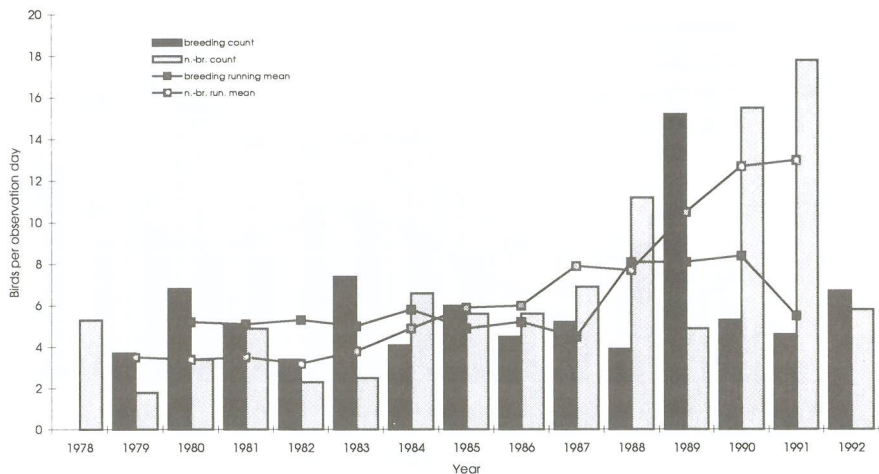


Fig. 11 Yellowhammer numbers in Saltford, 1978-1992. The figures for each year sum daily counts divided by the number of observation days during the breeding season (April - July) and non-breeding season (August - March of the following year). Breeding season data from 1978 are too patchy for inclusion. Running means are taken across three years. Sample sizes (level of observer effort) for each winter are presented in Table 3.

has a larger bill than do some other declining seedeaters (e.g. Tree Sparrow and Linnet) and feeds to a large extent on cereal seeds, whereas the smaller-billed species feed on weed seeds. Thus, during the period, national numbers did not decline as did the smaller-billed seedeaters (Marchant *et al.*, 1990, Fuller *et al.*, 1995). The increase in cereals in Saltford during the period probably helped the species as did four other factors: the rising numbers of horses kept during the late 1980s (birds frequently fed in their fields), the low rate of hedge loss (farmland breeding densities are positively correlated with length of hedging per unit area, Morgan and O'Connor, 1980), the presence of a maize stubble over several winters in latter years and the cessation of cultivation of one field in autumn 1988 and its natural reversion to grass. This latter field supported high numbers only for two years. After this time, the annual grass species (on the seeds of which Yellowhammer feeds; D. L. Buckingham *in litt.*, 1996) had been replaced by coarse perennials.

Compared with other stubbles, most maize fields are poor for seed-eaters, since high herbicide concentrations are applied to the seed. In most stubbles, weed rather than crop seeds are the important food source for birds (Evans and Smith, 1994). One individual field was used over several seasons for growing maize and it is not clear why it was so productive not only for Yellowhammers, but also for Tree Sparrows, Chaffinches, Bramblings, Greenfinches and crows (although not Sky Larks).

After the period, winter numbers continued to increase as rotational Set-Aside fields supported flocks sometimes exceeding 100. Set-Aside elsewhere in south Avon hosted large Yellowhammer flocks (Aldridge, 1992).

REED BUNTING Reed Buntings nested infrequently (probably less than annually) in the early years of the period, but after 1988 numbers were markedly higher, with several pairs breeding per season in the main area (Fig. 12). Non-breeding numbers showed a hint of an increase, but when the high numbers of winters 1987/88 and 1988/89 (flocks of up to 15, usually in the Sewage Farm) are removed, in the context of the widely varying winter numbers of other seed-eaters (e.g. Tree Sparrow, Linnet) it is not clear whether a real change occurred. Various winter roosts were used, in small riverside reed clumps and beside the Sewage Farm pits, but no roost count exceeded six.

Saltford is at the south-eastern extent of the species' range in Avon (Bland and Tully, 1992) and indeed at the western edge of an area where it is extremely scarce (Gibbons *et al.*, 1993). There was no marked change in range locally or nationally during the period (Bland and Tully, 1992, Gibbons *et al.*, 1993). The increase in Saltford during the period contrasts with a national population decrease of 59% in 1970-1990 (Fuller *et al.*, 1995); there was a steep decline to 1983 with a relatively constant population thereafter (Marchant *et al.*, 1990). The high breeding numbers in Saltford in 1988 and subsequently

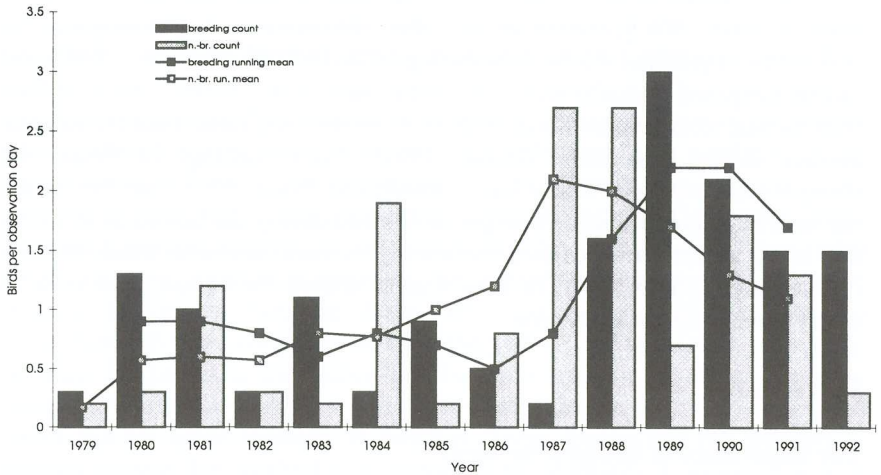


Fig. 12 Reed Bunting numbers in Saltford, 1979-1992. The figures for each year sum daily counts divided by the number of observation days during the breeding season (April - July) and non-breeding season (August - March of the following year). Data from 1978 are too patchy for inclusion. Running means are taken across three years. Sample sizes (level of observer effort) for each winter are presented in Table 3.

were tied closely to oilseed rape (which increased at this time) and the waterside vegetation around the Sewage Farm pits (which matured). These local habitat changes probably allowed directly the increase in numbers in Saltford in the face of a national decline.

CORN BUNTING One or two male Corn Buntings sang in summers of 1980 and 1981 around Long Wood. This area was barely visited in summers 1978 and 1979 and its seedeater flocks were rarely checked in the early winters of the period. The only records in the main area were of one to six birds, with a large mixed flock feeding on grain in the Sewage Farm during the exceptionally hard weather of 22-27 December 1981, and a single flying upstream along the Avon on 24 December 1980. There were no subsequent records, despite several specific searches around Long Wood in summers 1982 and 1983, and in the context of earlier records from the area (Bland, 1993; Map 1), it is clear that the species was just recorded at local extinction. Long Wood is a well-drained arable area, with dry stone walls, stunted hedges and extensive bramble scrub and visually resembles other sites around Bath with Corn Buntings.

By 1982, no populations in Avon were known away from Mendip and the Cotswolds (Bland, 1993) and county extinction may be imminent (Bland and Tully, 1992); Avon is now on the very edge of the species's range (Gibbons *et al.*, 1993, Donald *et al.*, 1994). There has been a sustained national decline since at least 1800 (Gibbons *et al.*, 1996) which continued throughout the period (the population fell by 76% during 1970-1990 (Fuller *et al.*, 1995)) and indeed steepened abruptly after 1981 (Marchant *et al.*, 1990). This coincided with the last records in Saltford; birds in Avon declined faster than the national average during this period (Bland, 1993). Corn Buntings in Britain are strongly associated with arable land (Donald and Evans, 1995), but they would not have benefitted from the changes in Saltford during the period as in winter they avoid autumn-sown cereals and are highly associated with weedy stubbles (Donald and Evans, 1994). In most winters during the period there were no weedy stubbles in the study area.

Discussion

The importance of Saltford for birds

Saltford does not support important populations of any nationally rare bird species. Following the population estimates of Gibbons *et al.* (1993), the species breeding in or around Saltford with the smallest national populations (below 8000 pairs in the British Isles) are Hobby, Barn Owl, Common Kingfisher, Lesser Spotted Woodpecker and Rufous Nightingale. Of these, only Common Kingfisher bred throughout the period. Barn Owl retains a toehold

and the rarest nationally (Hobby) probably did not breed within the study area. The other two others ceased breeding.

The Avon valley has a higher species richness than average across the British Isles but has very low numbers of breeding Red Data Birds (Gibbons *et al.*, 1993: Figs 11 and 12). At a local level, its breeding avifauna is representative for Avon as a whole: of the 60 species typical of the county listed by Bland and Tully (1992: appendix 1), all but four bred annually at some stage in the period in Saltford and only one (Meadow Pipit) was never recorded breeding. In the Avon breeding atlas (Bland and Tully, 1992), the tetrads comprising most of the area considered here (ST66 y and z) had well above average species totals (58 and 65 respectively). Absolute totals mean little, due to varying effort over tetrads, but in standardised two-hour surveys (explained in Bland and Tully, 1992), the tetrads more than held their own, with 33 species detected apiece.

During the period, eight species bred in or around Saltford which Bland and Tully (1992) found to be restricted to fewer than 10% of tetrads in Avon (Table 2), but only one of these (Hobby) increased, while one (Yellow Wagtail) summered only sporadically, one (Barn Owl) decreased and the other five (Turtle Dove, Lesser Spotted Woodpecker, Sand Martin, Rufous Nightingale and Corn Bunting) became extinct. Thus, the breeding species for which the birds in Saltford were most important at a county level suffered disproportionate losses compared with the overall bird community.

It is less easy to consider the relative importance of the area in winter, because bird numbers fluctuate greatly between winters. Comparison with BNS (1985), which lists the number of tetrads in the county in which each species was found during the BTO Winter Atlas survey, allows isolation of the species where Saltford is most likely to support regionally important numbers. Of the species listed in Table 2, ten were found in 12% or fewer tetrads across Avon. Of these ten, only five (Great Cormorant, Common Pochard, Goosander, Water Rail and Common Redpoll; all associated with the river Avon) were recorded frequently over substantial parts of the period. The other five (Eurasian Wigeon, Red-legged Partridge, Barn Owl, Lesser Spotted Woodpecker and Corn Bunting) were scarce throughout the period, and three showed marked declines. In contrast to the county distribution of birds in the breeding season, there were no species widespread in Avon (recorded in over 12% of tetrads) which did not occur regularly in Saltford. These figures and the diversity of habitats suggest that Saltford is as important for landbirds in winter as it is in summer. The River Avon never froze during the period (except in small areas around locks) and forms therefore a valuable short-term haven for water and waterside birds during cold weather.

Changes in the avifauna during the period

The species which changed status in Saltford during the period 1978 to 1992, and some suggested causes for their change, are given in Table 7. Eight breeding species became extinct, while only three colonised. Over winter, the respective figures were four and two. Thus, at both main seasons, more species disappeared than arrived, although there were no significant changes in passage species. Paradoxically, more species increased than declined during the period, but overall the avifauna of Saltford is likely to be poorer in species in the coming decades unless steps are taken to ensure the contrary.

A net loss of five breeding species in 14 years means approximately one per 2-3 years. This rate of change echoes that for Avon between 1968-1972 and 1988-1991, when 18 species increased in range yet 54 declined, although, surprisingly, there was no significant change in total breeding species; six ceased breeding and eight colonised (Bland and Tully, 1992). Bland (1988) listed 20 species which had declined markedly in Avon between 1968-1972 and 1985-1987. Only eight of these bred in or around Saltford during the study period, but six became locally extinct; the other two, Grey Heron and Common Kingfisher showed no trend in Saltford. The river Avon provides prime habitat for Common Kingfisher and would probably be among the last areas in the county to be affected by a population decrease. The contraction in range of Grey Heron in Avon is the opposite of the national trend of a shallow increase during the study period (Carter, 1994). The greatest discrepancy between population trends in Saltford and those given for Avon by Bland (1988) is for Lapwing, which expanded its breeding distribution in Avon between the surveys in 1968-72 and 1985-1987. However, Bland and Tully (1992) found that the species had decreased in Avon at all seasons.

Status changes in some species seemed clearly linked to local changes in habitat. Reversal of the habitat change would probably return the species to its former status. For example, the Common Coots would stop breeding in the Sewage Farm if the deep water pits were filled in. But where no relevant change in local habitat conditions was apparent, the increase or decrease shown by the species may have its cause remote from Saltford, e.g. in the winter quarters of summer migrants, or in a feature which is not particularly obvious visually such as changes in climate or agrichemical input. A high proportion of population changes with no obvious local cause (19 in total) in Saltford reflect national trends (14 of 17; for two others the national trend was not clear), suggesting that overlooked but purely local causes were not important in causing population changes in these species in Saltford. Of these 19 species, 10 declined in Saltford and nine increased.

Among species for which a local cause can be suggested (12) most (9 of 11; for Water Rail the national trend was unknown) show trends reflecting their national pattern. This probably indicates both that habitat patterns in Saltford

Table 7 Species showing a change in status over the period 1978-1992 in Saltford. (See Notes at end for further details.)

Species	Suggested cause	National trend
INCREASING SPECIES		
<i>Breeding season only</i>		
HOBBY	Unknown	Increased
Reed Warbler	Local habitat change	Increased
Common Whitethroat	Unknown	Fluctuated
Common Chiffchaff	Local habitat change	Increased
Reed Bunting	Unknown	Declined
<i>Non-breeding season only</i>		
Common Pochard	Local habitat change	Unknown
WATER RAIL	Unknown	Unknown
Yellowhammer	Local habitat change	Stable
<i>All year</i>		
Great Cormorant	Cessation of local population control	Increased
Mute Swan	Unknown	Increased
Mallard	Unknown	Increased
Tufted Duck	Local habitat change	Increased
Common Buzzard	Unknown	Increased
RED-LEG' PARTRIDGE	Released?	Fluctuated
Common Pheasant	Unknown; released?	Increased
COMMON COOT	Local habitat change	Increased
Magpie	Unknown	Increased
Common Bullfinch	Local habitat change	Decreased
DECLINING SPECIES		
<i>Breeding season only</i>		
TURTLE DOVE	Unknown	Decreased
SAND MARTIN	Unknown	Fluctuated
R. NIGHTINGALE	Local habitat change	Decreased
SEDGE WARBLER	Unknown	Fluctuated
Willow Warbler	Local habitat change	Decreased
<i>Non-breeding season only</i>		
E. GOLDEN PLOVER	Unknown	Unknown
<i>All year</i>		
Grey Partridge	Unknown	Decreased
NORTH'N LAPWING	Unknown	Decreased
Barn Owl	Unknown	Decreased
L. S. WOODPECKER	Local habitat change	Decreased
TREE SPARROW	Unknown	Decreased
Linnet	Unknown	Decreased
CORN BUNTING	Unknown	Decreased

Notes. Species names are in upper case if they became extinct or colonised during the period, in either the breeding or non-breeding season. Except for Great Cormorant, possible causes are assigned solely from my own site-specific observations. National trends are taken from Marchant *et al.* (1990) modified with Gibbons *et al.* (1993) and Marchant and Balmer (1994a, b).

are nationwide (e.g. loss of bark from diseased elms during the 1980s and its effect on Lesser Spotted Woodpeckers) and that some some presumed local causes may have been spurious and the species would have changed status with or without the local habitat change (e.g. increases of breeding Common Chiffchaffs relative to the maturation of scrub along the disused railway line). Of these 12 species, nine increased and three declined. It seems easier to suggest local factors for population increases than for decreases. The reason for this is discussed later.

No clear change in status was perceived in Saltford for many species which increased or declined nationally during the period. In many, such changes may be occurring but were not apparent from the current crude analysis. For example, although Willow Warblers showed a clear change in Saltford during the period (Duckworth, 1996), this was apparent only with an analysis in more detail than the one used here. Such analyses are desirable for all species in Table 2, and possible for most, but there was not time to perform them. The characters of birds where status changes are likely to be difficult to detect or confirm were listed earlier (see p4). In particular, common species such as Sky Lark, Barn Swallow, Common Starling and House Sparrow, which all declined nationally, may also have done so in Saltford without any change being noticed.

Some species showing national population changes were probably genuinely stable in Saltford during the period. A change is more likely to occur in areas of poor habitat for the species than in areas of prime habitat, because in many species birds spill over to sub-optimal habitats only when the preferred ones are full. Even quite substantial declines in numbers can result in little observable change in populations in areas of good habitat, since birds which (if the population had not changed) would have bred in the sub-optimal habitat move into vacant territories in the optimal areas. Thus, if Saltford provides optimal habitat within the heart of a species' geographical range, a stable population might be expected even with a substantial national contraction (or expansion) of range and population decline (or increase). Song Thrush, Blackcap (breeding season) and Siskin may be such species. Conversely, if Saltford is peripheral to the main range or acts as an overflow area of low-grade habitat, population changes are likely to be much more dramatic than nationally or in Avon as a whole. Common Buzzard, Turtle Dove and Tree Sparrow are all close to the edge of their main British range in Avon (although less so for the first), while Saltford may provide only marginal habitat for Mute Swan, Northern Lapwing, Lesser Spotted Woodpecker, Sand Martin, Sedge Warbler

and European Nuthatch. All these nine species showed dramatic population trends.

Possible reasons for changes in the avifauna

Intensification of agriculture is causing major population declines for many farmland birds across the U.K. and Europe. Lowland farmland supports more species of European Conservation Concern than does any other habitat (Tucker and Heath, 1994). Climatic change is also frequently cited as a possible cause for changes in British bird populations. If climatic change is occurring, it should, in the long run, be moving climatic and thus habitat zones across Europe. Most birds of human-influenced temperate habitats are highly mobile (Huntley, 1994) and would be well able to move with changing climate zones, and at any given site the disappearing species should be offset by at least some colonists. A short term decrease overall of bird species richness is likely, as the plants and insects (upon which birds depend) are considerably less mobile and in some cases ecological replacement species might thus not colonise for considerable time. The overall loss of bird species from Saltford during the period is thus consistent with climatic change as a partial cause.

Table 8 Status changes according to habitat

Pattern	Field	Scrub	Water	Other	Total
Decline	7	3	2	1	13
Stable/Fluctuating	10	15	12	7	44
Increase	3	5	9	1	18
Total	20	23	23	9	

Note. Species are included only when there is high or medium confidence in the assessment of the population trend. Other habitats include urban and woodland areas and aerial feeders.

Climatic change should affect bird communities of all habitats. Excluding population changes which are explicable by purely local causes, birds showing clear population changes in Saltford are not randomly distributed with respect to habitat (Table 8). Water-based habitats had the highest proportion of increases, reflecting various factors, particularly the creation of deep water pits at the sewage farm. By contrast, many field birds decreased relative to those stable or increasing. Furthermore, of the three increases, Common Buzzard was recovering from an artificial low and the status of Red-legged Partridge is complicated by the possibility of releases. The disproportionate decrease of field birds in Saltford suggests that losses to the bird community are caused largely by changes in agricultural practice.

Such a loss of farmland birds has occurred across Britain. In the period of 1970-1990, 24 of 28 farmland species contracted in range, and of the 18 for which a population trend could be assessed, 15 declined. Populations of seven species decreased by over 50%. As in Saltford, these population declines and range contractions were not found in groups of birds classified by other habitats (Fuller *et al.*, 1995). Seed-eating species are showing particularly steep national declines; all of these seven species decreasing by over 50% subsist predominantly on seeds at least at some stage in the year (Fuller *et al.*, 1995). Three of the seven (Turtle Dove, Tree Sparrow and Corn Bunting) declined to extinction in Saltford during the period and declines were large for Grey Partridge and Linnet. Data for Sky Lark were inadequate for analysis and the breeding population of Reed Bunting increased, an anomaly which was clearly the result of local habitat changes. General declines among farmland birds nationally were much steeper during 1970-1995 than in any other period since 1800 (Gibbons *et al.*, 1996).

For several species, particularly seed-eaters (Grey Partridge, Northern Lapwing, Turtle Dove, Sky Lark, Tree Sparrow, Corn Bunting; all of which declined in Saltford) populations nationally were relatively stable until the mid-late 1970s, and then entered steady decline (Fuller *et al.*, 1995). At this time, several fundamental changes were taking place in British agriculture: reduction in the sowing of spring cereals, loss of winter stubbles, simplification of crop rotations, increased use of chemical pesticides and fertilisers, and intensification of grassland management (Fuller *et al.*, 1995). By the start of the period of analysis of Saltford records (autumn 1978), with the possible exception of agrochemical application, all the changes listed by Fuller *et al.* (1995) had already occurred locally. Weather, climate and disease were rejected as explanations by Fuller *et al.* (1995) for the general decline in farmland birds, although they did conclude that the possibility of increased predation (from increasing populations of corvids, Eurasian Sparrowhawks and Red Foxes *Vulpes vulpes*) deserved further attention. The similarities between Saltford and Britain as a whole regarding environmental changes and in the list of species in major decline is so striking that it is reasonable to transfer the conclusion of Marchant *et al.* (1995), that the "pervasive intensification of agriculture" was responsible for major negative changes to the British avifauna during 1970-1990, to the changes observed in Saltford in 1978-1992.

If this hypothesis is correct, it is clear why it was easier to suggest local causes for population increases in Saltford than for decreases. The factors causing the decline of farmland bird populations are visually rather subtle (e.g. changes in agrochemical application) or not obviously related to most birds' needs (changes in sowing and harvesting dates), whereas the changes which allowed population increases were easily seen, and intuitively easy to link to bird populations (e.g. the construction of deep-water pits and rapid maturation of railway-line scrub).

Despite the net decline in bird species richness over the period, there is cause for optimism. Farming behaviour is determined largely by government policy. This means that, should it be deemed worthwhile, it would be possible to reverse or halt many of these declines by changes in agricultural subsidy allocation.

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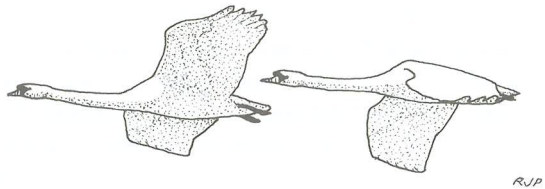
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Appendix

List of all bird species mentioned in the text. It follows the sequence and nomenclature of the *British Birds List of Birds of the Western Palearctic* (1997). Alternative English names as listed in the *List of Recent Holarctic Species* (K.H. Voous, 1977) are added where these vary from the new ones.

Little Grebe *Tachybaptus ruficollis*

Great Crested Grebe *Podiceps cristatus*

Great Cormorant (Cormorant) *Phalacrocorax carbo*

Grey Heron *Ardea cinerea*

Mute Swan *Cygnus olor*

Eurasian Wigeon (Wigeon) *Anas penelope*

Gadwall *Anas strepera*

Common Teal (Teal) *Anas crecca*

Mallard *Anas platyrhynchos*

Northern Shoveler (Shoveler) *Anas clypeata*

Common Pochard (Pochard) *Aythya ferina*

Tufted Duck *Aythya fuligula*
Common Goldeneye (Goldeneye) *Bucephala clangula*
Goosander *Mergus merganser*
Eurasian Sparrowhawk (Sparrowhawk) *Accipiter nisus*
Common Buzzard (Buzzard) *Buteo buteo*
Common Kestrel (Kestrel) *Falco tinnunculus*
Hobby *Falco subbuteo*
Red-legged Partridge *Alectoris rufa*
Grey Partridge *Perdix perdix*
Common Pheasant (Pheasant) *Phasianus colchicus*
Water Rail *Rallus aquaticus*
Moorhen *Gallinula chloropus*
Common Coot (Coot) *Fulica atra*
European Golden Plover (Golden Plover) *Pluvialis apricaria*
Northern Lapwing (Lapwing) *Vanellus vanellus*
Common Snipe (Snipe) *Gallinago gallinago*
Woodcock *Scolopax rusticola*
Whimbrel *Numenius phaeopus*
Green Sandpiper *Tringa ochropus*
Common Sandpiper *Actitis hypoleucos*
Black-headed Gull *Larus ridibundus*
Common Gull *Larus canus*
Lesser Black-backed Gull *Larus fuscus*
Herring Gull *Larus argentatus*
Rock Dove (Feral) *Columba livia*
Stock Dove *Columba oenas*
Wood Pigeon *Columba palumbus*
Collared Dove *Streptopelia decaocto*
Turtle Dove *Streptopelia turtur*
Common Cuckoo (Cuckoo) *Cuculus canorus*
Barn Owl *Tyto alba*
Little Owl *Athene noctua*
Tawny Owl *Strix aluco*
Long-eared Owl *Asio otus*
Common Swift (Swift) *Apus apus*
Common Kingfisher (Kingfisher) *Alcedo atthis*
Green Woodpecker *Picus viridis*
Great Spotted Woodpecker *Dendrocopos major*
Lesser Spotted Woodpecker *Dendrocopos minor*
Sky Lark *Alauda arvensis*
Sand Martin *Riparia riparia*
Barn Swallow (Swallow) *Hirundo rustica*
House Martin *Delichon urbica*
Tree Pipit *Anthus trivialis*

Meadow Pipit *Anthus pratensis*
Yellow Wagtail *Motacilla flava*
Grey Wagtail *Motacilla cinerea*
Pied Wagtail *Motacilla alba*
Wren *Troglodytes troglodytes*
Hedge Accentor (Dunnock) *Prunella modularis*
Robin *Erithacus rubecula*
Rufous Nightingale (Nightingale) *Luscinia megarhynchos*
Common Redstart (Redstart) *Phoenicurus phoenicurus*
Whinchat *Saxicola rubetra*
Common Stonechat (Stonechat) *Saxicola torquata*
Northern Wheatear (Wheatear) *Oenanthe oenanthe*
Blackbird *Turdus merula*
Fieldfare *Turdus pilaris*
Song Thrush *Turdus philomelos*
Redwing *Turdus iliacus*
Mistle Thrush *Turdus viscivorus*
Grasshopper Warbler *Locustella naevia*
Sedge Warbler *Acrocephalus schoenobaenus*
Reed Warbler *Acrocephalus scirpaceus*
Lesser Whitethroat *Sylvia curruca*
Common Whitethroat (Whitethroat) *Sylvia communis*
Garden Warbler *Sylvia borin*
Blackcap *Sylvia atricapilla*
Common Chiffchaff (Chiffchaff) *Phylloscopus collybita*
Willow Warbler *Phylloscopus trochilus*
Goldcrest *Regulus regulus*
Firecrest *Regulus ignicapillus*
Spotted Flycatcher *Muscicapa striata*
Long-tailed Tit *Aegithalos caudatus*
Marsh Tit *Parus palustris*
Coal Tit *Parus ater*
Blue Tit *Parus caeruleus*
Great Tit *Parus major*
European Nuthatch (Nuthatch) *Sitta europea*
Eurasian Treecreeper (Treecreeper) *Certhia familiaris*
Eurasian Jay (Jay) *Garrulus glandarius*
Magpie *Pica pica*
Eurasian Jackdaw (Jackdaw) *Corvus monedula*
Rook *Corvus frugilegus*
Carrion Crow *Corvus corone*
Common Starling (Starling) *Sturnus vulgaris*
House Sparrow *Passer domesticus*
Tree Sparrow *Passer montanus*

Common Chaffinch (Chaffinch) *Fringilla coelebs*
Brambling *Fringilla montifringilla*
Greenfinch *Carduelis chloris*
Goldfinch *Carduelis carduelis*
Siskin *Carduelis spinus*
Linnet *Carduelis cannabina*
Common Redpoll (Redpoll) *Carduelis flammea*
Common Bullfinch (Bullfinch) *Pyrrhula pyrrhula*
Yellowhammer *Emberiza citrinella*
Reed Bunting *Emberiza schoeniclus*
Corn Bunting *Miliaria calandra*

Club Activities, 1997 & 1998

At the beginning of 1997 Club membership stood at 596, and by the end of 1998 was 671 - the highest ever membership total.

1997

Activities in 1997 started with the usual New Year visit to the Wildfowl and Wetlands Trust at Slimbridge, followed by thirty-one field trips to a variety of locations, including Blagdon Lake, Cheddar Res./Stock Hill, the Gwent coast, St. Catherine's Valley, Sand Point, West Sedgemoor, Velvet Bottom (with Dartford Warbler as a highlight), Gordano Valley, Nagshead/Forest of Dean, Blaise (Spotted Flycatcher), the Dinas Reserve in mid-Wales, Stourton Woods, Exmoor (Ring Ouzel), Cotswold Water Park (led by John Grearson of the Wiltshire O. S.), Keyhaven (followed by a visit to Black Gutter Bottom in the New Forest for Montagu's Harrier and Hobby), Clevedon, Severn Beach, the Somerset Levels, Oldbury (one Long-eared Owl), Kenfig Dunes (Sabine's Gull), Chew Valley Lake (Black-necked Grebe, Long-tailed Duck, Common Scoter, Smew and Red-breasted Merganser) and Compton Dando, ending with a visit to Imber Ranges on Salisbury Plain (led by Mike Hamzija of the Wiltshire O.S., three Barn Owls). Evening trips were to Frampton Pools, Stock Hill and Marshfield. The Beginners' field meeting was held at Snuff Mills. Three coach trips were organised to the Exe Estuary, Durlston/Studland and Portland (Short-eared Owl and Firecrest) - all being well supported.

The 1997 Club holiday was a two week visit to Romania, led by James Roberts with Judy Copeland organising the travel arrangements. The holiday was much enjoyed by everyone despite the rather poor weather. 1997 weekend field trips were to Lancashire, Suffolk (Marsh Harriers, Stone Curlew and Wood Lark at Weeting) and Cornwall.

The 1997 indoor meetings provided a variety of speakers with a wide range of interesting topics, all illustrated. David Cottridge started the year with some superb slides of some of the rarer visitors to Britain, followed by the Members' Evening in February, with items by Richard Bland, Jane Cumming, Clive Leyman, Robin Prytherch and Ron Small. In March Club member Roderick Leslie gave an excellent talk, 'Birds and Forestry' and in September Mike Wilkes passed on his enthusiasm for birding on the Greek island of Lesbos. Club member Mike Lord came back to Bristol in October to tell members about birds and bird places in his home county of Cornwall. In November David Harper was unable, through illness, to give his Corn Bunting talk and Robin Prytherch stepped into the breach at the last moment with a talk on the Buzzards in his study area near Bristol.

At the AGM in December John Tully talked about 'Bristol City's Pigeons'. This followed the business part of the meeting at which Nick Ayers (Chairman) and John Tully (Treasurer) retired from office. Margaret Searle took over as Chairman and Peter Capsey as Treasurer. Jean Lay continued as Secretary. Anne Blatchford and Clive Leyman retired from the General Committee, but Judy Copeland (Membership Secretary) and Jane Cumming were elected for a further term. Tony Crittenden, Julian Garrigan and Andrew Payne joined as new members. Other members of the Committee were Mike Glover, Michael Johnson, Robin Prytherch and Gordon Youdale. Nick Ayers and John Tully agreed to be co-opted for the year ahead. Trevor Silcocks agreed to continue as Honorary Auditor to the Club. The Stanley Crick Award was presented in 1997, to David Toombs, in acknowledgement of his organisation and leadership of the mid-week walks.

During 1997 the Club made donations to the the Wildlife Trust ('Avon') and to the Kenfig National Nature Reserve in acknowledgement of the assistance given to the Club during its visit by the Warden, David Carrington. The Club would also like to acknowledge the support of several sponsors: Magnox Electric plc, Bristol Water plc, ICI Fertilizers and *BBC Wildlife*.

1998

The 1998 field trips started, as usual, with a New Year Day visit to Slimbridge, followed by thirty-one other field meetings. These were to Gwent, Tealham/Tadham Moors, the Exe Estuary (by coach with Red-throated Diver, Scaup and Avocet as highlights), Midford (for beginners), Forest of Dean (Goshawk and Lesser Spotted Woodpecker), St. Catherine's Valley, Snuff Mills, Lower Kilcott, Barrow Hill, Arne (including Wareham Forest and Lodmoor; 63 species including Little Egret and Whimbrel), the Gordano Valley, Frampton Pools (evening), Exmoor (by coach), Blaise/Leigh Woods, Nagshead/Forest of Dean, Mendip (evening for Hobby and Nightjar), Highnam Woods, Capel-y-Ffin, Somerset Levels (Little Egret, Marsh Harrier and Hobby), South Cotswolds (evening with two Quail heard *and* seen), Summer

Social at Screech House/Forest of Dean (which could not compete with poor weather and the Football World Cup Final), Titchfield Haven, Chew Valley Lake, Severn Beach, Portland (by coach), Brean Down, Cheddar Res./Westhay, Oldbury-on Severn, Compton Dando, Steart and Berrow. An extra meeting was arranged to Slimbridge in January when twenty members went to watch birds being fed by floodlight.

Weekend trips were organised to Tregaron, Norfolk (127 species) and South Devon (Dartford Warblers and Cirl Bunting). The 1998 Club holiday was to the Spanish Pyrenees in May, superbly led by Ken and Lys Hall, with excellent birds and flowers.

The 1998 indoor meetings again provided a variety of fascinating and informative evenings starting in January when John Wyatt told us about the birds and places to see them in the Netherlands followed in February with the Members' Evening which was an interesting collection of topics from Peter Basterfield, Richard Bland, John Chamberlin, Jeff Holmes and Clive Leyman. Then in March, Keith Vinicombe gave us the benefit of his considerable knowledge of the birds of Chew Valley Lake. In September Mark Avery, of the RSPB, was unable to present his talk on Hen Harriers, but we were fortunate in that Ken Hall was able to step in at short notice to give an interesting talk on birdwatching in France and Spain. Malcolm Sainsbury entertained us in October with his well informed talk on his birding adventures in Central and South America and in November Steve Holliday, of the RSPB, gave us a most informative talk on the Red Kite re-introduction programme in England.

At the AGM Mike Salisbury and Peter Bassett gave members a fascinating glimpse into the making of the BBC tv series *The Life of Birds*. This followed the business part of the meeting at which Margaret Searle and Jean Lay continued, respectively, in the offices of Chairman and Secretary and Keith Slade took over as Treasurer. Mike Glover retired from the General Committee and David Turner joined to replace him. Other members of the committee are listed on page 2. Nick Ayers would continue as a co-opted member. Trevor Silcocks agreed to continue as Honorary Auditor to the Club. At the meeting the Stanley Crick Award was presented to Mark Hucker in recognition of his keen and growing interest in ornithology, and in particular raptors, and his ready willingness to help at the Peregrine watches.

The Club is grateful for the continued support from several sponsors: Magnox Electric plc, Bristol Water plc, Rhodia Ltd and *BBC Wildlife*.

1997 and 1998

In both years joint meetings were held with the Bristol Naturalists' Society on a reciprocal basis. The Club Committee again took responsibility for arranging protection for the Peregrines which nest in the Avon Gorge. In 1997 four young fledged. The nest was on the Clifton Downs side of the gorge and although this is a comparatively safe site, it did not provide the excellent

viewing as in previous years. In 1998 one young fledged from a new site well to the north, but again on the Clifton Downs side below the Sea Walls viewing area. The watches were well organised by Mike and Ruth Glover. Mike Glover was able to call on a large number of volunteers for the watches and many members gave of their time to take part in the BTO Breeding Bird Survey and Common Bird Census and also the Over-wintering Warbler Survey. The Club appreciated the time and effort given by so many people.

In both years the mid-week birding walks went from strength-to-strength and are now fully established as part of the Club's activities. Much effort has been put into the organisation of these walks by David Tombs and Steve Kirk, and many other people have gradually become involved in planning and leading meetings. Analyses of the walks have appeared regularly in *Bird News*.

The Committee continued to invite Club members to sit in on Committee meetings and appreciated the input from all of those who attended. The Club was represented in both years at the Wildlife Trust Fairs at Brandon Hill and the North Somerset Agricultural Society Shows, with the Club's display boards and members available to answer questions.

Indoor Meetings

- | | | | |
|-----|-----|----|---|
| 16. | 1. | 97 | David Cottridge - Strangers in our Land |
| 20. | 2. | 97 | Members' Evening |
| 6. | 3. | 97 | Beginners' Meeting |
| 20. | 3. | 97 | Rod Leslie - Birds and Forestry |
| 18. | 9. | 97 | Mike Wilkes - Birds of Lesbos |
| 16. | 10. | 97 | Mike Lord - Westenders: A Cornish Saga |
| 20. | 11. | 97 | Robin Prytherch (standing in for David Harper) - Buzzards in North Somerset |
| 18. | 12. | 97 | 31st Annual General Meeting |
| | | | |
| 15. | 1. | 98 | John Wyatt - Going Dutch |
| 19. | 2. | 98 | Members' Evening |
| 5. | 3. | 98 | Beginners' Meeting |
| 19. | 3. | 98 | Keith Vinicombe - Birds of Chew Valley Lake |
| 17. | 9. | 98 | Ken Hall (standing in for Mark Avery) - Birding Around the Pyrenees |
| 15. | 10. | 98 | Malcolm Sainsbury - Bird Adventures in Central and South America |
| 19. | 11. | 98 | Steve Holliday (RSPB) - The Red Kite Re-introduction Programme in England |
| 17. | 12. | 98 | 32nd Annual General Meeting |

Jean Lay *Honorary Secretary*

