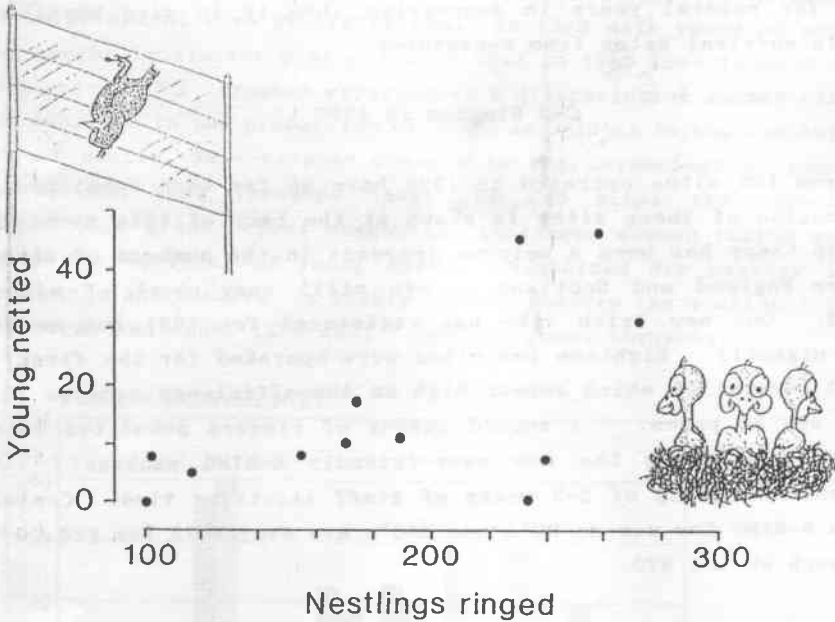
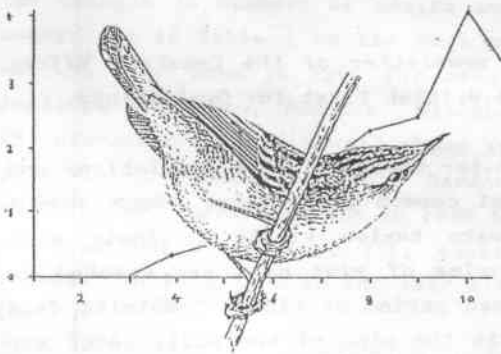


CES News

Number Five



Yearly summer (June-August) mist-net catches of juvenile Blue Tits in relation to the numbers of chicks ringed in nest boxes at Treswell Wood CES in Nottinghamshire. In most years the number of young trapped in nets tends to reflect the numbers fledging locally. Heavy post-fledging mortality might affect catches in some years.

This is the fifth edition of the newsletter of the Constant Effort Sites (CES) Scheme organised by the British Trust for Ornithology.

The aim of the CES Scheme is to monitor changes in the populations and breeding performance for a range of common passerines. Each summer voluntary ringers are asked to make twelve visits to their site between May and August where a series of mist nets are erected in standard positions for a standardised period of time. Combining data from more than 100 sites, changes in the size of the adult catch are used as a measure of population change and the proportion of young birds is used as an index of breeding productivity. If a site is worked for several years in succession then it is also possible to estimate survival rates from recaptures.

CES Ringing in 1990

Data from 109 sites operated in 1990 have so far been submitted. The distribution of these sites is shown at the back of this newsletter. Although there has been a welcome increase in the numbers of sites in Northern England and Scotland we are still very short of sites in Ireland. One new Irish site has registered for 1991 but more are needed urgently. Eighteen new sites were operated for the first time in 1990 several of which appear high on the efficiency ratings listed in the centre pages. A record number of ringers submitted data on computer disc using the new user-friendly B-RING package. This represents a saving of 2-3 weeks of staff inputting time. Copies of the new B-RING for use on PC's and BBC's are available for £20.00 from Will Peach at the BTO.

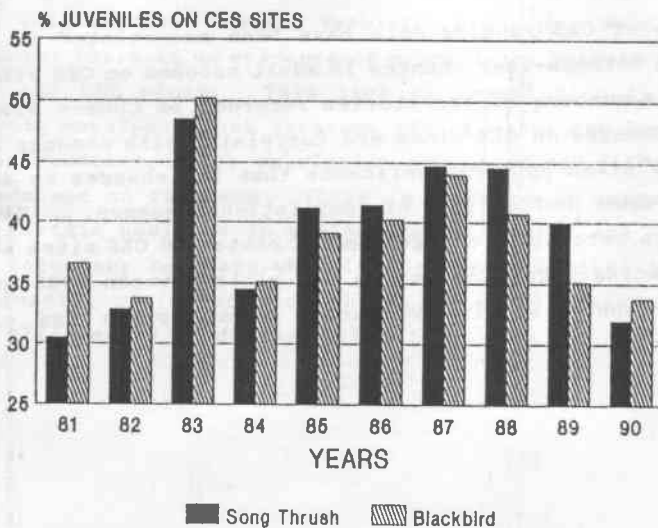
Of the 109 sites operated in 1990, 63 (58%) completed all 12 main visits and 87 (80%) completed at least 11 visits. These figures are similar to the coverage achieved in 1989. Of the 85 sites worked for at least 8 paired visits during both 1989 and 1990 and contributing to the comparisons summarised here, 44 were situated in reedbed or wetland habitats, 31 in dry scrub and 10 in woodland.

Population Changes in 1990

The changes in numbers of adults and juveniles caught in 1990 are summarised in Table 1 on the back page of this newsletter. Adult catches were down in 1990 for many species including significant declines for Wren, Dunnock, Blackbird, Sedge Warbler and Lesser Whitethroat. Catches of all these species had increased during the previous two summers. Only Garden Warbler and Chiffchaff were significantly more abundant in 1990 than in 1989. Along with Robin, Blackcap and Long-tailed Tit, adults of these species were more abundant in 1990 than in any year since the start of CES ringing in 1981.

Breeding Productivity

Changes in productivity (as measured by the proportion of young birds in the total catch) were generally small in 1990 with young of most species caught in similar proportion to that in 1989 (see Table 2 on the back page). The thrushes experienced a disappointing summer with further declines in the proportion of young as well as in the absolute numbers of adults. Year-to-year changes in the percentage of young Blackbirds and Song Thrushes caught on CES sites are closely correlated (see graph below) suggesting that some common factor may determine the survival of young birds. Sustained dry weather in recent springs and summers is likely to have reduced the availability of earthworms and other important foods for young thrushes.



The only significant change in productivity recorded in 1990 was a massive 12% fall in the proportion of young Garden Warblers. Adults returned in good numbers (up 25% on 1989) but young were relatively scarce (down 22% on 1989). A cool June and late-summer drought may have taken their toll of chicks and fledglings in 1990.

Treswell Wood CES

Encouraging news for the CES productivity index has just emerged from a comparison of the numbers of chicks ringed in nest boxes and the numbers of free-flying juveniles subsequently caught in mist-nets at Treswell Wood CES in Nottinghamshire. Analyses by Chris du Feu and John McMeeking have shown that the numbers of juvenile Great Tits and Blue Tits caught in nets during late summer (June-August) in each year since 1979, are related to the numbers of chicks ringed in boxes. The graph on the front cover of this newsletter shows this relationship for Blue Tits. These findings provide direct supporting evidence for the assumption of the constant effort methodology that the numbers of juveniles caught in nets reflects the abundance of young birds reared in the vicinity of the ringing site. It is particularly encouraging that such relationships have been found for tits, catches of which are subject to considerable variation as a consequence of flocking behaviour.

Ten Years of Constant Effort Ringing

Now that ten years of CES ringing data have been accumulated it is possible to compare between-year changes in adult catches on CES sites with changes in the numbers of territories recorded on Common Birds Census plots. If changes on CES sites are correlated with changes on CBC plots then this gives us more confidence that the changes we are measuring are a true reflection of population changes. Rank correlations between percentage changes on CBC plots and CES sites are presented on the facing page. Changes on CBC plots between 1989 and 1990 are based on approximately two-thirds of all plots and are therefore provisional.

Spearman Rank Correlation Coefficients between year % changes on Common Birds Census plots (farms and woods) and adult captures (visits 1-12) on Constant Effort Sites (1981/2 - 89/90).

MIGRANTS	Farms	Woods
Whitethroat	0.77*	0.88**
Lesser Whitethroat	-0.18	-
Garden Warbler	-0.27	-0.15
Blackcap	0.07	0.30
Sedge Warbler	0.75*	-
Willow Warbler	0.40	-0.08
Chiffchaff	0.62	0.38
RESIDENTS		
Wren	0.92***	0.80**
Robin	0.83**	0.85**
Dunnock	0.90***	0.87**
Blackbird	0.45	0.28
Song Thrush	0.93***	0.65(*)
Great Tit	0.31	0.10
Blue Tit	0.17	0.28
Chaffinch	0.67	0.10
Bullfinch	0.52	0.27
Reed Bunting	0.0	-
Treecreeper	-0.32	-0.04

(*) P<0.07 * P<0.05 ** P<0.01 *** P<0.001

For 6 of the 18 species listed above, year to year changes measured by the CBC and the CES Scheme are very similar. For three other species (Chiffchaff, Chaffinch and Bullfinch) the correlation coefficients between CES and farmland CBC approach significance. For Lesser Whitethroat, Garden Warbler, Blackcap, Reed Bunting and Treecreeper there is no evidence of concordance between annual changes on CES and CBC plots. This lack of correlation is difficult to interpret, however. Most constant effort sites are located in young scrub or reedbeds, where population processes may differ to those in woodlands and on farmland. There is evidence to suggest that birds occupy certain habitats in preference to others, and only begin to occupy secondary habitats when the preferred habitat begins to fill up. Clearly, preferences of this kind could cause populations to behave differently in different habitats.

SITE EFFICIENCY

Bowing to public pressure I repeat here the efficiency ratings for CES sites worked for at least 9 main visits during 1990. Sites are ranked according to catching efficiency (birds per unit net length) the most efficient sites at the top. Total catch size indicates the contribution of each site to the national trends.

Order	Site No.	No Visits	Total catch	Mean catch (x)	St.Net Length (y)	Catching Efficiency Index (=x/y)*1000	Habitat/Region (a)	
1	241	10	407	40.7	180	226	DS	NE
2	105	12	664	55.3	270	205	WS	NE
3	34	11	421	38.3	190	202	WS	SE
4	268	11	476	43.3	250	173	RB	SE
5	220	12	628	52.3	320	164	DS	CE
6	175	12	312	26.0	160	163	DS	SE
7	275	12	683	56.9	360	158	DS	CE
8	28	12	296	24.7	160	154	DS	NE
9	234	12	1084	90.3	600	150	DS	NE
10	256	12	387	32.3	220	146	RB	IR
11	232	12	572	47.7	340	140	RB	CE
12	267	12	418	34.8	250	139	WS	SE
13	177	12	297	24.8	180	137	DS	SE
14	271	12	355	29.6	220	134	WS	CE
15	20	12	338	28.2	210	134	WD	NE
16	123	12	611	50.9	400	127	WS	NE
17	115	12	405	33.7	270	125	WS	NE
18	272	12	223	18.6	150	123	DS	NE
19	124	12	352	29.3	240	122	DS	SE
20	274	12	463	38.5	320	120	DS	SE
21	226	12	606	50.5	420	120	WS	CE
22	148	12	215	17.9	150	119	WS	NE
23	236	12	437	36.4	310	117	RB	SC
24	150	12	671	55.9	480	116	RB	CE
25	215	12	318	26.5	240	110	DS	SC
26	270	11	776	70.5	640	110	DS	SC
27	253	9	330	36.7	340	107	WD	SC
28	135	12	386	32.2	300	107	RB	SE
29	154	12	575	47.9	450	106	RB	SE
30	227	11	280	25.5	240	106	RB	NE
31	153	12	392	32.7	310	105	DS	NE
32	235	12	397	33.1	320	103	DS	SC
33	155	11	261	23.7	230	103	DS	SE
34	110	9	333	37.0	360	102	WD	NE
35	243	12	435	36.3	360	100	DS	NE
36	266	11	376	34.2	340	100	WS	NE
37	221	11	440	40.0	400	100	WS	SE
38	122	12	454	37.8	380	99	RB	SE
39	244	11	262	23.8	240	99	DS	NE
40	262	12	248	20.7	210	98	WS	SE
41	40	12	425	35.4	360	98	DS	SE

42	269	10	295	29.5	300	98	DS	CE
43	136	9	375	41.7	426	97	DS	CE
44	141	11	310	28.2	290	97	RB	CE
45	103	11	400	36.4	380	95	WS	CE
46	17	12	241	20.1	210	95	WS	SE
47	158	10	325	32.5	340	95	DS	IR
48	98	10	444	44.4	470	94	WS	NE
49	242	12	190	15.8	170	93	RB	SC
50	4	12	668	55.7	600	92	WS	SE
51	144	12	531	44.3	480	92	WS	CE
52	137	12	326	27.2	310	88	WS	NE
53	239	10	418	41.8	480	87	WS	SE
54	223	12	449	37.4	430	87	DS	SE
55	228	11	188	17.1	200	85	DS	NE
56	129	12	245	20.4	240	85	DS	SE
57	255	12	334	27.8	330	84	DS	CE
58	247	12	242	20.2	240	84	DS	CE
59	229	12	515	42.9	530	81	DS	NE
60	182	11	314	28.5	360	79	WS	SE
61	143	12	507	42.3	540	78	RB	SE
62	10	12	343	28.6	366	78	DS	CE
63	263	12	411	34.3	450	76	WD	SE
64	163	9	129	14.3	192	74	DS	NE
65	118	11	310	28.2	380	74	WS	SE
66	131	11	236	21.5	290	74	RB	CE
67	265	12	265	22.1	300	73	RB	SE
68	25	11	415	37.7	520	72	WS	SE
69	63	12	361	30.1	420	72	WD	IR
70	95	12	154	12.8	180	71	DS	SE
71	251	12	564	47.0	660	71	RB	SE
72	160	12	687	57.3	820	70	WS	CE
73	116	11	284	25.8	370	70	DS	SE
74	261	11	214	19.5	280	69	WD	SE
75	133	12	248	20.7	300	68	WS	SE
76	149	11	227	20.6	300	68	RB	SE
77	224	12	303	25.3	380	66	DS	NE
78	252	12	230	19.2	300	64	WD	CE
79	152	11	556	50.5	798	63	WS	SE
80	54	12	288	24.0	390	61	DS	SE
81	254	11	236	21.5	350	61	WS	SE
82	70	12	343	28.6	480	59	DS	CE
83	111	12	348	29.0	560	52	WS	SE
84	86	12	324	27.0	550	49	RB	SE
85	258	10	127	12.7	260	48	DS	CE
86	132	12	104	8.7	180	48	WS	CE
87	117	12	196	16.3	340	48	RB	SE
88	186	12	344	28.7	598	48	RB	CE
89	42	12	189	15.8	330	47	DS	NE
90	92	12	178	14.8	360	41	DS	CE
91	156	11	159	14.5	360	40	DS	SE
92	64	12	130	10.8	270	40	WD	SE
93	84	11	388	35.3	900	39	WD	SE
94	13	12	259	21.6	600	36	WD	CE
95	100	11	130	11.8	330	35	DS	CE
96	67	12	145	12.1	390	30	WD	SE

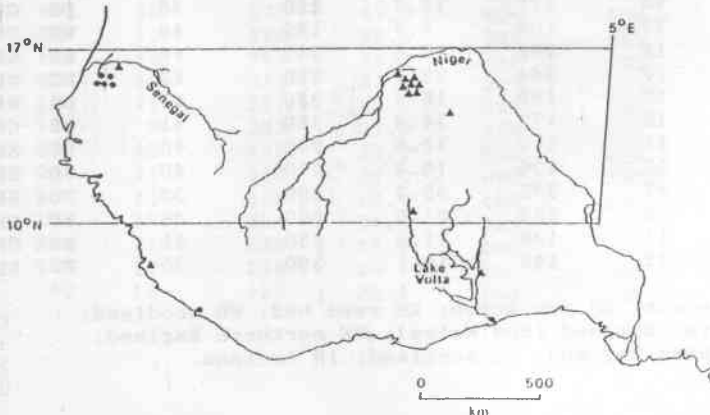
(a) WS wet scrub; DS dry scrub; RB reed bed; WD woodland;
 CE central England (and Wales); NE northern England;
 SE southern England; SC scotland; IR Ireland.

THE SEDGE WARBLER STORY

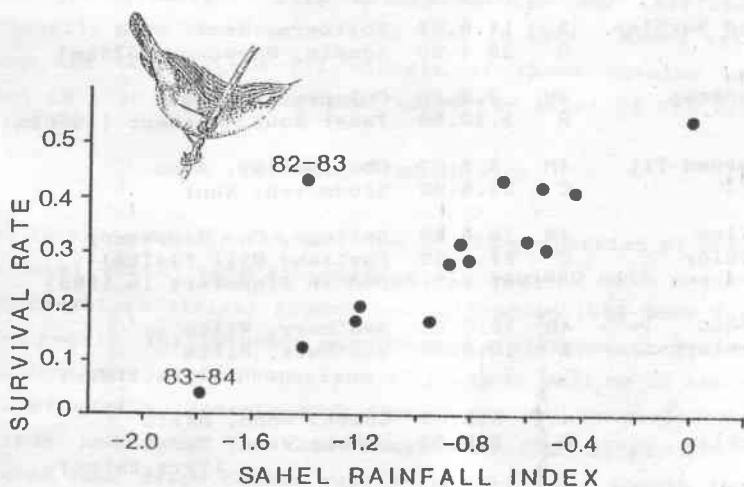
The Constant Effort Sites Scheme is one important cog in the populations research department at the BTO. The aim of the department's work is, firstly, to monitor changes in the population levels of common breeding birds in the UK, and secondly, to understand the causes of the population changes observed. Population levels are monitored primarily by territory mapping through the Common Birds Census and the Waterways Birds Survey. Breeding performance is monitored by the Nest Records Scheme. Productivity during the post-fledging stage is monitored by the CES Scheme and survival rates of fully-grown birds can be estimated either from recaptures of ringed birds (CES) or from recoveries of birds found dead (national ringing scheme).

An example of how long runs of mark-recapture data can be used to estimate survival rates is about to be published in the journal IBIS. Combining sixteen years of data (1969-84) from two ringing sites (Marsworth Reservoir operated by Bob and Alison Spencer, and Wicken Fen operated by the Wicken Fen group) we have been able to estimate annual survival rates for adult Reed and Sedge Warblers. For Reed Warblers survival rates have fluctuated around an average level of 55-60%. For Sedge Warblers survival has been much more variable with estimates as low as 3% for the year 1983-84.

It has often been suggested that, like Whitethroats, Sedge Warblers are affected by drought in the west African winter quarters. The map below shows all sub-Saharan recoveries of British-ringed Sedge Warblers up to the end of 1989 (triangles = found during September, March or April; circles = January and February).



The Climatic Research Unit (University of East Anglia) have kindly provided us with rainfall indices for the area between 10-17°N, and west of 5°E shown on the map. This index represents the average amount of rain falling in this zone during the wet season (May-October). When we plot our estimated survival rates for Sedge Warblers against the rainfall index a very strong relationship is revealed (below).



We think the mechanism behind this relationship is habitat availability. In years when there is plenty of rainfall, large flood plains develop around the Niger and Senegal rivers thus providing an abundance of wetland habitat. In years of drought relatively little flooding occurs and wetland habitat is scarce. It is notable that both of the other palearctic migrants for which survival has been shown to be related to African rainfall (White Stork and Purple Heron) are wetland species.

CBC and WBS population indices for Sedge Warbler are also strongly correlated with the African rainfall index, and there is no evidence from nest record data that population changes are related to changes in breeding success. We can therefore conclude that changes in the numbers of Sedge Warblers breeding in Britain over the past 20 years have been caused largely by variation in the survival rates of full-grown birds, which in turn are determined mainly by the amount of rainfall in western Africa.

RINGING HIGHLIGHTS IN 1990

Recoveries/Retraps

A few notable recoveries of CES ringed birds have been submitted.
C = control. R = retrap.

F101223	Sedge Warbler	3J	6.9.88	Westbere, Kent
		C	18.4.89	Agadir, Morocco (2522km)
		C	16.8.89	Icklesham, Sussex
E653685	Reed Warbler	3	14.8.87	Westbere, Kent
		C	26.4.90	Agadir, Morocco (2526km)
E485421	Blackcap	4M	3.6.90	Colchester, Essex
		R	3.10.90	Tahar Souk, Morocco (1950km)
E163726	Bearded Tit	4M	3.5.87	Chew Valley, Avon
		C	24.6.90	Stodmarsh, Kent
5K8441	Willow Warbler	4M	10.5.88	Ballagh, Co. Tipperary
		C	27.3.89	Portland Bill (447km)
		(Not retrapped in Tipperary in 1989)		
B550165	Garden Warbler	4M	30.5.83	Westbury, Wilts
		R	10.6.90	Westbury, Wilts (7yrs, 11dys)
B338864	Garden Warbler	4	8.5.83	Coombs Wood, Herts
		R	8.7.90	Coombs Wood, Herts (7yrs, 2mths)

Both retraps break the previous longevity record for Garden Warbler of 6 yrs, 11 months, 28 days. Will either of these Garden Warblers return in 1991? Watch this space. Please submit any interesting recoveries to Will Peach at the new BTO headquarters -

British Trust For Ornithology
The Nunnery
Nunnery Place
Thetford
Norfolk IP24 2PU

Rarities on CES sites

Two outstanding captures were made in 1990 :

Aquatic Warbler controlled in Avon. Young bird wearing a Polish ring. A second bird wearing the consecutive ring number was controlled on the same day in south-west England !

Great Reed Warbler in Surrey. Present on site for 3 weeks.

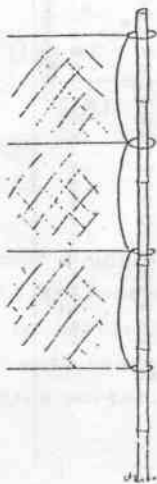
Other notable captures included Short-toed Treecreeper (Kent), Firecrest and Long-eared Owl (Merseyside), Wood Warbler (Essex & Dyfed), and Marsh Warbler (Kent).

DISTRIBUTION OF CONSTANT EFFORT SITES IN 1990



1.

Triangles show sites operated in the same way during 1989 and 1990 and contributing to the changes summarised in Tables 1 and 2 overleaf. Circles represent sites not used in the current analysis because fewer than eight paired visits were made during 1989 and 1990.



DAVE FRANCIS

TABLE 1. CHANGES IN TOTAL CAPTURES ON CES SITES FROM 1989 TO 1990

Species	n	Adults (visits 1-12)			Juveniles (visits 1-12)				
		Total 1989	Total 1990	% Change	Total 1989	Total 1990	% Change		
Wren	68	560	513	-8*	68	1220	1177	-4	6.0
Dunnock	67	535	487	-13*	67	776	635	-18*	5.7
Robin	66	308	344	+12	68	985	1067	+8	5.5
Blackbird	68	782	642	-18*	64	423	328	-22*	8.1
Song Thrush	65	260	249	-4	61	173	117	-32*	11.2
Sedge Warbler	51	811	687	-15*	47	1138	877	-23*	7.6
Reed Warbler	41	1195	1176	-2	44	1242	943	-24*	6.1
Lesser W.Throat	44	181	146	-19*	50	174	149	-14	13.2
Whitethroat +	50	296	280	-5	50	398	413	+4	9.8
Garden Warbler	55	220	274	+25*	57	221	172	-22	12.6
Blackcap	60	502	542	+8	61	630	682	+8	8.8
Chiffchaff	51	213	270	+27*	57	747	651	-10	8.7
Willow Warbler	66	1320	1202	-9	68	2189	2153	-2	6.4
Long-tailed Tit	58	289	303	+5	49	528	614	+16	20.7
Blue Tit	67	425	444	+4	68	1547	1414	-9	7.9
Great Tit	64	252	290	+11	67	528	708	+34*	14.0
Treecreeper	36	57	61	+7	54	120	169	+41*	16.8
Chaffinch	59	314	299	-5	44	255	262	+3	23.5
Greenfinch	38	167	166	-1	28	110	94	-15	32.1
Linnet	21	145	97	-33	16	45	33	-27	17.5
Redpoll	29	111	148	+33	13	62	72	+16	47.2
Bullfinch	63	408	429	+5	54	209	187	-11	14.9
Reed Bunting	49	313	280	-11	39	212	147	-31	16.9

n = number of paired sites Total = number of individuals captured at all paired sites
 * = significant change at 5% level
 SE = standard error of percentage change; smaller values indicate a more precise measure of change.
 (+ two Lincolnshire sites excluded after major habitat changes)

TABLE 2. CHANGES IN THE PERCENTAGE OF JUVENILES CAUGHT AT CES SITES FROM 1989 TO 1990.

Species	n	Paired sites 1989-1990				
		Total 1989	% Juv 1989	Total 1990	% Juv 1990	Diff in % Juv
Wren	68	1780	89	1690	70	+ 1
Dunnock	67	1311	59	1102	57	- 2
Robin	65	1293	76	1411	75	- 1
Blackbird	67	1205	35	970	34	- 1
Song Thrush	57	433	40	368	32	- 8
Sedge Warbler	46	1949	58	1564	56	- 2
Reed Warbler	41	2437	51	2119	45	- 6
Lesser Whitethroat	38	355	49	295	51	+ 2
Whitethroat	50	727	59	701	60	+ 1
Garden Warbler	51	441	50	446	38	-12*
Blackcap	58	1132	56	1224	56	0
Chiffchaff	52	960	78	921	71	- 7
Willow Warbler	66	3509	62	3355	64	+ 2
Long-tailed Tit	53	817	65	917	67	+ 2
Blue Tit	60	1972	78	1858	76	- 2
Great Tit	65	780	68	988	72	+ 4
Treecreeper	39	177	68	230	74	+ 6
Chaffinch	50	569	45	561	47	+ 2
Greenfinch	26	277	40	260	36	- 4
Linnet	16	190	24	130	25	+ 1
Redpoll	16	173	36	220	33	- 3
Bullfinch	56	617	34	616	30	- 4
Reed Bunting	40	525	40	427	34	- 6

n = number of paired sites Total = total number of adults plus juveniles captured
 % Juv = percentage of captures which were juveniles
 Diff in % Juv = % juveniles in 1990 minus % juveniles in 1989
 * = statistically significant change at 5% level