

A REVIEW OF 35 YEARS OF BIRD-RINGING AT SLAPTON LEY (1961–1995)

TOGETHER WITH A BRIEF HISTORICAL REVIEW OF ORNITHOLOGICAL OBSERVATIONS

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ABSTRACT

The Devon Bird Watching and Preservation Society has occupied a hut on a small plot of land in the corner of a field beside Slapton Bridge since 1960. Counts have been made of the wildfowl visiting the Lower Ley each winter (commencing with the 1961/62 winter) and records have been kept of the extensive ringing programme which has been in progress each summer from 1961. An annual warbler count has been made since 1978. Of particular interest has been the recent colonisation and increase of both great crested grebe and Cetti's warbler on the reserve. A checklist of all bird species recorded at Slapton Ley, and their status, is appended.

INTRODUCTION

Slapton Ley consists of the largest freshwater lake (Lower Ley) in Southwest England and the largest complex of reedbeds in Devon. The latter comprises Ireland Bay and Stokeley Bay in the Lower Ley and all of the Higher Ley, totalling some 28 ha (70 acres). Because of this and its situation on the south coast, this National Nature Reserve comprising 211 ha (521 acres) is of importance for migrant passerines, breeding *Acrocephalus* warblers and wintering wildfowl.

People have probably always had an interest in birds at Slapton Ley, from its most primitive form as a hunting ground for food, in particular winter wildfowl, until today's use of sophisticated optical equipment to identify and capture birds on film. In 1960, a year after the opening of Slapton Ley Field Centre, the Devon Bird Watching and Preservation Society (DBWPS) was allotted a small plot of land in the corner of the field adjacent to the Higher Ley north of Slapton Bridge. An ex-Devon County Council surveyor's site hut was erected as one of a chain of bird observatories around the British coastline. The following year, bird ringing with uniquely numbered metal leg-rings (a major tool for bird migration studies) commenced and, together with regular observations, operations have continued to this day.

GENERAL OBSERVATIONS

General observations of Slapton's birds have been cited in a number of publications, including Pidsley (1891), D'Urban & Mathew (1892), Moore (1969), Burton & Mercer (1978), Sitters (1974 & 1988) and particularly the annual Devon Bird Reports (1928–94), the journal of the DBWPS, and *Devon Birds* the Society's bi-annual magazine. In particular, Edmonds (1962) gives a brief but vivid account of the bird life of Slapton Ley, almost entirely relating to the period prior to the opening of the Field Centre.

Belringer (1985) compiled what remains an unpublished account of the Birds of Slapton Ley which brought together all past records up to and including 1985. This will be used as the basis for a comprehensive and updated volume for future publication and resale by FSC. Maurice Edmonds and Rod Belringer were stalwarts as regular observers for many years.

By their nature, general observations are random and scientifically undisciplined but, over time, they give a reasonably good picture of both the number of species and the abundance of each species using the Leys, either as a stop-over on migration, for breeding or for over-wintering. An annual warbler count has been made since 1978 but, because it is limited to just one day at the end of May and is dependant on weather conditions, it is no more than a snapshot and can neither represent absolute numbers nor the true potential productivity of the reserve for this group of species.

Of particular interest has been the recent colonisation and increase of both great crested grebe* and Cetti's warbler on the reserve.

Great crested grebe re-colonised in 1973 after a break of almost 30 years and has had varying fortunes since. From one breeding pair raising three young that year, numbers increased to five or so pairs during the late 1970s and early 1980s with seven or eight pairs in 1978, 1983 and 1984. Twelve pairs in 1982 may have been an over-estimate of the breeding population that year due to poor observer coverage, particularly as it is the only year when there is no record of the number of young.

Recent experience at Slapton Ley indicates that when there are high numbers of birds present during the breeding season a proportion are likely to be non-breeders, including apparently paired birds (Elphick, *in prep*). The numbers breeding are limited by the amount of available habitat. Cramp (1977) states that pair-formation can start in mid-winter, well before the selection or occupation of a territory, and that engagement (pair-bonding) is often a long process. When there are high numbers of birds during the breeding season some pairs become unstable, particularly if there is competition for nest sites. If there are suitable areas of open water, these unstable pairs may well stay throughout the breeding season as non-breeding "couples". First-year birds will pair and go through courtship display but do not necessarily breed until their second year. Two siblings from the first brood to hatch at Slapton Ley in 1995 were observed displaying within four months of hatching (Elphick *in prep*). Records of the number of young present during the period 1973–84 varies from 2 to 25 but there is considerable loss each year to both pike (*Esox lucius*) and mink (*Mustela vison*), particularly during the first few weeks after hatching. Satisfactory comparisons of breeding success can only be made if the number of young surviving to the end of the year of hatching is regularly recorded.

Numbers declined dramatically in 1985 to just one breeding pair with a slow recovery (up to five) in some subsequent years and there are few records of the number of young present during this period. The primary reason for this decline was a correspondingly dramatic fall in the stocks of small fish, the grebes' main food supply. (Cormorants and kingfishers were also affected.) It was also about this time that regular ornithological coverage declined. In 1995, regular censusing showed that nine or ten pairs were breeding with a number of non-breeders "hanging out" in the wider stretches

* The scientific names of the species of birds mentioned in the text are listed in the Appendix.

of water at Stokeley Bay and Ireland Bay. Most breeding pairs successfully hatched two young each with at least one pair hatching three. However, no count was made at the year-end to determine survival.

Cetti's warbler was first recorded at Slapton Ley in November 1974 but was not proved breeding until 1976 when there was one pair. Proof of breeding is difficult for this skulking, polygynous species and its colonisation has primarily been measured by the number of territorial males singing during spring. From 1976, numbers increased quite rapidly to 31 in 1981 and, after slight declines in 1982 and 1983, increased further to 37 in 1984 and 36 in 1985. In 1986, numbers had dropped to 20 and further still by 1988 to 15. By 1992, they had increased again to 33. Cetti's and Dartford warblers are the only two resident species of warbler in Britain and both are on the northern edge of their breeding range and subject to the vagaries of the British winters. The decline in the number of Cetti's warbler in 1986 and subsequently was almost entirely as a result of the two severe winters of 1984/85 and 1985/86, although a decline in regular observations at this time, as noted with great crested grebe, may also have had some effect. The population constituting the species' UK stronghold, in the Stour Valley of Kent, was decimated in the 1984/85 and 1985/86 winters. Since then, Slapton Ley, with its warmer climate, has become the largest concentration of breeding Cetti's warbler in the UK. Some 43 territorial males were recorded in spring 1995.

A checklist of all bird species recorded at Slapton Ley, and their status, is appended.

MONTHLY WILDFOWL COUNTS

Monthly wildfowl counts for the Wetlands Bird Survey (WeBS) organised jointly by the British Trust for Ornithology (BTO) and Wildfowl and Wetlands Trust (WWT) have been provided by the WWT for the winters 1961/62 to 1994/95 inclusive although data for the winters of 1993/94 and 1994/95 are unchecked and not yet published. In order to achieve maximum co-ordination of counts throughout the country, they are made monthly on the Sunday nearest the 15th of the month and generally for the months September to March inclusive. Some counts, particularly on estuaries, have to be made on different dates in order to coincide with suitable tides and some sites are counted throughout the year.

Fig. 1 shows the annual peak counts at Slapton Ley for each species during the months of September to March inclusive. Winters marked with an * indicate significantly incomplete coverage. Peak counts do not necessarily relate to the same month for each species, in any one year, nor do they necessarily fall in the same month for a particular species from one year to another. Species which occur infrequently, including geese other than Canada goose; northern pintail; greater scaup; common eider; long-tailed duck; smew; red-breasted merganser and goosander are excluded. Little and great crested grebe, cormorant and coot are relatively recent additions to the official count species. Numbers of most wildfowl species have increased over the last 50 years, as a result of protecting wetlands throughout Europe (Owen *et al.*, 1986), and the spread of Canada goose, gadwall and ruddy duck to Slapton are notable. Numbers of other species fluctuate from year to year and may reflect severe weather conditions further east and north whilst others, such as wigeon and brent goose, may just reflect disturbance on the Kingsbridge Estuary (10 km W) and South Huish wet meadows (15 km W).

Table 1. *continued*

Winter	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Species	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
											*	*
Little grebe												
Great crested grebe									1	35	11	5
Great cormorant												
Mute swan	12	15	11	49	42	75	31	32	27	13	18	16
Canada goose		1		2	2	1	2	1	8	4		
Common shelduck				1		3		2	6			4
Eurasian wigeon		30	66	31	112	200	200	32	242	360	55	220
Gadwall			2	2	16	20	3	2	75	5		19
Common teal	12		4	294		35	16	6	90	44	21	9
Mallard	70	74	112	297	104	160	100	120	185	200	75	195
Northern shoveler			11			5	2	13	15	8	10	61
Common pochard	400	198	162	226	95	500	120	220	115	150	44	190
Tufted duck	70	28	40	97	152	120	99	180	183	87	90	87
Common goldeneye	12	15	9	11	15	30	62	64	27	15	16	13
Ruddy duck						7	2	2	79	8		5
Coot							1			277	82	137
Winter			1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Species			1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
				*	*							
Little grebe						1	1	2				
Great crested grebe			7	2	4	4	6	11	34	46	58	55
Great cormorant					14	14	14	26	14	22	24	16
Mute swan			31	4	20	78	51	16	27	44	44	68
Canada goose					11	17	11	18	80	216	224	140
Common shelduck				5								
Eurasian wigeon			42	400	40	55	325	55	50	56	65	250
Gadwall			3	26		34	22	12	42	67	53	68
Common teal			11	2	14	30	32	4	15	32	24	24
Mallard			39	48	60	268	210	98	241	610	340	210
Northern shoveler			15	10	6	20	20	5	5	44	48	45
Common pochard			355	93	370	384	175	80	128	144	175	221
Tufted duck			248	315	279	358	225	53	58	200	196	122
Common goldeneye			32	46	5	2		2	2	3	4	4
Ruddy duck			9	2			1	2		2	2	
Coot			629	143	1500	972	1620	227	214	760	680	830

Table 1 shows peak annual monthly counts, giving overall trends for all wildfowl at Slapton Ley for the 34-year period 1961/62 to 1994/95. Winters marked with an * received significantly incomplete coverage. The month with the highest counts in any one winter was not necessarily the same from year to year although it was usually within the period of November to March, inclusive. Explanations for the considerable fluctuations from year to year are not obvious but the upward trend in overall numbers since the mid 1970s is self-evident.

RINGING

The primary ornithological research programme has been the ringing operation. 1996 saw the start of the 36th year. The catching and ringing of birds in the UK is controlled by the BTO, on behalf of the Government, through the Joint Nature Conservation Council (JNCC) via a training and permit system. The aims of the ringing programme are to:

- monitor the number of birds on passage through the area;
- "retrap" birds ringed on site for investigation of individual life histories;
- catch birds ringed at other sites, both in the UK and abroad;
- receive details of Slapton-ringed birds caught elsewhere;
- provide input to biological databases upon which sound conservation policies may be based.

Permission to catch birds for ringing purposes has been granted by the Whitley Wildlife Conservation Trust (formerly the Herbert Whitley Trust), with a number of varying caveats, over the years and there has always been close co-operation with FSC. The pioneers of the ringing operations were primarily Peter Ellicott and the late Ray Smith. Many others have passed through, but Alan Searle was a supporter for many years and, more recently, Roger Swinfen and Keith Grant have been involved, particularly with running ringing courses for trainee ringers and those wishing to improve their skills.

The bulk of the ringing takes place by the Higher Ley during the late summer and autumn migration (1st July to the end of October or the middle of November) with more limited activity in spring. Mist-nets are used to catch the birds which are then taken back to the "cabin" for ringing and processing (ageing, sexing and recording biometrics—primarily wing length and body weight). Regular mist-net sites are situated down the bank and into the marsh from the first field north of Slapton Bridge and, occasionally, amongst the trees in the boggy area adjacent to the second field. The major habitats covered include regenerating reedbed, reed fringe, willow scrub and the bracken/bramble slopes of the banks. Unfortunately, no record of net length or the time for which nets were operated has been regularly kept to enable annual indices of coverage to be calculated. However, Table 4 does show the number of days (by month(s)) on which ringing took place for each five-year period—which gives a crude indication of coverage. During the period 1986–93, inclusive, six-day ringing courses were held during peak migration in mid-August. During these courses, nets were also placed across the causeway in the reed-bed at Little Marsh.

No ringing is permitted during the main part of the breeding season (May–June) although a Constant Effort Site (CES), a methodology devised by the BTO primarily for use during the breeding season, was carried out for one year across the causeway in the Ireland Bay reed-bed on the Lower Ley. However, the commitment to such a disciplined approach so far from base was difficult to maintain alongside the general monitoring from the "cabin". Some autumn mist-netting was also carried out in the reed fringe at Torcross during the late 1970s/early 1980s by Alan Searle and more random netting along the seaward side of both the Higher and Lower Leys during the 1960s and early 1970s. There are plans to monitor some of these areas again in the coming years. Ringing at the regular autumn reed-bed swallow roost, at one time at Strete Gate and, in recent years, at Torcross, has also been a feature.

TABLE 2. *Total of each species and overall totals of birds ringed by 5-year periods 1961–1995.*

Species	1961– 1965	1966– 1970	1971– 1975	1976– 1980	1981– 1985	1986– 1990	1991– 1995	Total
Mute swan				18	28	33	32	111
Mallard	5	2						7
Eurasian sparrowhawk	2	7	3	5	2	6	1	26
Common kestrel		1	1		1		1	4
Water rail	1	3				2		6
Spotted crane	3							3
Moorhen	6	2	2					10
Common coot	10							10
Dunlin	2							2
Jack snipe		2						2
Common snipe	6	1	3					10
Bar-tailed godwit	2							2
Common sandpiper	2					1		3
Herring gull	1	1						2
Wood pigeon		3	1					4
Tawny owl	2	1						3
Common swift	8	15	32					55
Common kingfisher	37	46	36	9	7	19	49	203
Eurasian wryneck	1		1					2
Green woodpecker	2					1		3
Great spotted woodpecker	1	2	1	2		3	5	14
Skylark	2							2
Sand martin	77	278	14	38	17	50	35	509
Barn swallow	1,360	691	270	262	271	2,446	1,354	6,654
House martin	9	17	6	1	1			34
Meadow pipit	27	9	1			3		40
Yellow wagtail	30	64	1		1	1		97
Grey wagtail	24	4	2			6		36
Pied wagtail	278	48	2	5	2	8	3	346
Winter wren	93	330	208	120	69	289	239	1,348
Hedge accenter or dunnoek	339	140	132	52	74	226	86	1,049
European robin	215	204	113	110	62	243	198	1,145
Common nightingale	2	1			1		1	5
Bluethroat	6	3	1	1				11
Redstart	29	16	5	5		8	2	65
Whinchat	15	18	5	2			1	41
Stonechat	38	20	14	4	1	1	14	92
Wheatear	9	3	1			3	4	20
Common blackbird	148	153	68	43	30	91	83	616
Song thrush	110	90	32	11	1	19	29	292
Redwing		2						2
Cetti's warbler				63	55	207	167	492
Common grasshopper warbler	31	66	21	10	3	21	11	163
Aquatic warbler	5	5	4	3		2		19
Sedge warbler	1,237	2,001	787	1,086	207	1,459	955	7,732
Reed warbler	1,141	1,042	726	1,649	362	2,975	2,016	9,911
Lesser whitethroat	6	15	7	23	11	17	14	93
Whitethroat	460	537	129	147	50	208	144	1,675
Garden warbler	143	170	73	59	37	134	112	728
Blackcap	416	465	379	293	259	335	392	2,539

TABLE 2. *continued.*

Species	1961– 1965	1966– 1970	1971– 1975	1976– 1980	1981– 1985	1986– 1990	1991– 1995	Total
Wood warbler		1	1		1		1	4
Common chiffchaff	639	1,272	643	501	212	1,135	738	5,140
Willow warbler	245	544	416	503	196	818	511	3,233
Goldcrest	10	106	182	49	22	85	147	601
Firecrest	2	2	6				5	15
Spotted flycatcher	55	60	17	5	1	13	8	159
Pied flycatcher	11	19	8	2	3	3	2	48
Bearded tit	2		2					4
Long-tailed tit	64	136	225	28		52	211	716
Marsh tit	10	19	12	11	7	1	2	62
Willow tit						4	2	6
Coal tit	4	3	11	2	1	5	7	33
Blue tit	336	350	307	102		136	139	1,370
Great tit	117	86	96	58		23	25	405
Common nuthatch	1	2				2	1	6
Eurasian treecreeper	9	19	10	18	8	34	21	119
Eurasian jay	2	1					1	4
Black-billed magpie			1			1	3	5
Starling	49	46	1				22	118
House sparrow	141	26	1	4		3	2	177
Chaffinch	78	49	36	35	11	141	40	390
Greenfinch	177	46	9	11	1	221	21	486
Goldfinch	33	28	5		3	9	12	90
Common linnet	172	28	1	1		50	1	253
Common bullfinch	82	65	34	31	16	66	49	343
Yellowhammer	19	9						28
Girl bunting	1			1				2
Reed bunting	204	86	73	101	53	129	101	747
Total	8,806	9,485	5,183	5,485	2,088	11,748	8,022	50,817

As indicated, coverage has not been constant in a formal scientific sense. This is largely because everybody involved was working in a 'spare-time' capacity and had to fit ringing into a normal working life. Consequently, coverage has usually been at weekends, although many early mornings mid-week were put in by Ray Smith at the cabin and by Alan Searle at Torcross. Others have spent complete weeks/fortnights on site to boost coverage and the ringing courses made a considerable contribution. Additionally, enthusiasm rises and falls, personnel come and go, and mist-netting is not possible in either strong wind or rain. However, the primary net sites have been maintained on a very regular basis, although the "island" site shifts depending on the strength of the water flow through the Ley during the winter months. In recent years, particularly at the swallow roost, continuous looped tapes, containing selected bird song, have been used to lure birds to the nets.

Table 2 shows the total number of each species and the overall totals of birds ringed, in five-year periods, for the 35 years of operation (1961–95). In addition, singles of knot, cuckoo, barn owl, nightjar, dipper, black redstart, melodious, icterine and barred

TABLE 3. *Numbers of warblers and of all summer migrants expressed as percentages of all the birds ringed at Slapton Ley NNR.*

Species	1961– 1965	1966– 1970	1971– 1975	1976– 1980	1981– 1985	1986– 1990	1991– 1995	Average
Warblers	49	65	61	78	65	61	61	62
All summer migrants	68	77	68	84	79	82	79	77

warblers, red-breasted flycatcher, carrion crow, tree sparrow, siskin, redpoll and red-backed shrike have also been ringed and are included in the totals for the relevant five-year periods. Table 2 also shows how important Slapton Ley is for passage migrants and breeding warblers, in particular. Similarly, Table 3 shows the percentage of warblers and all summer migrants, respectively, which have been ringed during each five-year period compared with the relevant annual total of all species ringed during those same periods. This dramatically highlights the importance of Slapton Ley for these groups. Ellicott (1982) gives a more-detailed analysis of the nine most common species of warbler trapped on autumn migration for the period 1961–80.

Both Tables 2 and 4 indicate a general decline in numbers over the years, although with a considerable upsurge during the period 1986–93 (see below). The decline probably reflects similar declines in most passerine species throughout the UK over the same period. A reduction in ringing activity on the “back slope” and shore after the early years of operation is reflected in the number of waders, waterfowl, wagtails, finches, sparrows and starlings ringed. Although the reduction in some of these species is

TABLE 4. *Totals of birds ringed and the corresponding number of days on which ringing took place arranged by month(s) in 5-year periods 1961–1995.*

Months (number of days)	1961– 1965	1966– 1970	1971– 1975	1976– 1980	1981– 1985	1986– 1990	1991– 1995	Total
January to March	37 (8)	57 (7)	28 (6)					122 (21)
April to June	360 (58)	71 (6)	27 (5)	4 (1)	1 (1)	49 (3)	138 (12)	650 (86)
July	2,043 (66)	2,112 (81)	1,129 (43)	1,324 (50)	716 (38)	2,507 (67)	2,174 (61)	12,005 (406)
August	2,405 (82)	2,990 (111)	1,911 (81)	3,375 (108)	1,140 (57)	6,115 (83)	4,319 (70)	22,255 (592)
September	3,385 (111)	3,915 (112)	1,726 (73)	763 (28)	227 (19)	2,993 (64)	893 (50)	13,902 (457)
October to December	576 (48)	340 (52)	362 (31)	19 (4)	4 (2)	84 (3)	498 (30)	1,883 (170)
Total	8,806	9,485	5,183	5,458	2,088	11,748	8,022	50,817

probably also due to reduced ringing activity during the winter months (October–March). Common whitethroat numbers dropped to about 10% of their previous level in 1969 following the failure of the food supplies in their winter quarters in the Sahel during the winter of 1968/69. This was as a result of the relentless southward extension of the southern Sahara in that region. Cetti's warbler first appears in the ringing totals during 1976 when it colonised the reserve.

Both Tables 2 and 4 also show a marked reduction in activity during the period 1981–85 which signifies a very low point in ringing coverage. The ringing of blue, great and long-tailed tits stopped in 1978 but, with the introduction of ringing courses during the period 1986–93, these species were ringed again. Additionally, with the desire to

TABLE 5. *Summary of recoveries/controls of selected species ringed at Slapton Ley (all summer migrants) by geographical entity.*

Locality	Swallow	Sedge warbler	Reed warbler	Lesser whitethroat	Common whitethroat	Garden warbler	Blackcap	Chiffchaff	Willow warbler
Devon	7	3	11	1	2		1	2	2
Cornwall	2		3						
Dorset	3	3	7				3	1	3
Somerset	1	1	4				1		
Hampshire/ Isle of Wight		3	1				1		
West Sussex	1	1						1	
East Sussex			3				1		
London		1							
Gloucestershire	1								
Rutland								1	
Cambridgeshire		1							
Suffolk			1						
Dyfed			1						
Glamorgan			1						
Gwynedd		1							
Flint		1							
Cheshire		1							
Isle of Man		2						2	
Ayrshire		1							
Tayside		1							
Strathclyde		2							
S. Ireland		3							
N. Ireland	1	1							1
France	1	13	5				2	1	1
Spain	1				1	1	2	1	1
Portugal			7		1		1		
Morocco	1		2			2	1		
Algeria	2								
Senegal		2	1						
Guinea			1						
SW Africa			1						
Ghana									1
S Africa	5								

give course members as wide an experience as possible, the effort to catch swallows at Torcross and mute swans on the Lower Ley increased and a much greater footage of netting than usual was used. Consequently, there has been a considerable increase in the numbers of birds ringed from 1986.

SPECIES SUMMARIES

The terms *control*, *recovery*, *retap* and *local* relating to ringed birds have the following definitions:

- *Control*: a bird which has been caught again (re-caught) at a site other than the one where it was originally ringed and subsequently released back into the wild.
- *Recovery*: a bird which has been found dead or dying, whether at the site of ringing or elsewhere.
- *Retap*: a bird which is re-caught at the site at which it was ringed and subsequently released.
- *Local*: within 50 km of Slapton Ley.

Mute swan:

Typically, there is a high return on ringed mute swans because they are highly visible and of interest to the general public. However, sick and injured birds often go unreported or are translocated by the carers. The former represents a loss of data and the latter a misrepresentation of movements. In particular, sick, injured or dead birds are sometimes taken to the RSPCA at Wellington (near Taunton, Somerset) and it is unlikely that ringed birds subsequently released in that area are notified to the BTO.

By far the majority of records are of sick, injured or dead birds. However, the use of uniquely numbered/lettered plastic colour rings, in addition to the smaller metal rings, makes this species very much easier to identify without the need for recapture. There are 14 recoveries of Slapton-ringed birds plus a further 3 sick/injured birds (for which the outcome is unknown) and 6 controls. All are within Southwest Britain. Birds reported dead from Wellington, Somerset, and Sampford Peverell just over the border in Devon were almost certainly translocated by the RSPCA. Birds representing truly wild movements have been reported from Weymouth, Dorset (3 found 91 km ENE) and at coastal or river sites in Devon and Cornwall, including the River Exe (4); Teignmouth (2); Paignton (1); the River Dart (6); Bigbury (1) and the River Tamar (2), all within 50 km of Slapton Ley. One bird was recorded at Slapton. One bird rescued from an oil spill incident at Teignmouth was translocated to Taunton for treatment and was ringed there before being released and subsequently controlled at Slapton. The oldest bird recorded was at least nine years old but this is no great age for a species in which individuals may live to 25 years or more.

Eurasian sparrowhawk:

The 8 recoveries or controls were all local, and all within three years of ringing with the exception of a female ringed in her first year and found dead at Chillington nine years later.

Common kestrel:

A bird ringed on 16th September 1968, found locally with a damaged wing on 3rd August 1969 and subsequently sick at Tavistock on 31st October 1969, almost certainly

highlights the problem of translocation by humans (RSPCA) rather than a freely wild movement.

Common snipe:

A bird ringed on 17th August 1965 was shot in Galway, Ireland on 6th January 1966, 560 km NW.

Black-headed gull:

A bird ringed at Colmenar Viejo (Madrid), Spain on 31st October 1992 and with a yellow wing tag was recorded on Slapton Beach 3rd October 1993 and again at Torcross 23rd July 1994 having returned to the Spanish ringing site for the intervening and subsequent winters.

Barn owl:

There is one local recovery, a road casualty within a month of being ringed on 23rd October 1968.

Tawny owl:

A bird ringed on 4th July 1964 was found dead on the road in Slapton on 14th July 1976, 12 years later.

Common swift:

An adult bird ringed on 1st July 1972 was found on a workshop floor at Brixham (15 km NNE) on 20th May 1975 and was subsequently released. Unbelievably, the same happened again on 14th May 1979, four years later. Overall, this bird, being an adult when ringed and presumably breeding annually in Brixham, made at least eight successful journeys to and from its winter quarters in Africa with the prospect of more to follow when last released.

Common kingfisher:

Good numbers of mainly juvenile birds are ringed during the late summer/early autumn period. Juvenile dispersal is common at this time and many of the birds caught are probably from the nearby Dart, Kingsbridge, Avon and Erme estuaries, although some are possibly from further afield. Birds have been recovered (with one control) the same autumn/winter as ringed in Totnes (15 km N), Kingsbridge (8 km W) and Plymouth (38 km W) in Devon and Truro (103 km W—in 21 days), and Constantine (110 km WSW) in Cornwall. A more unusual movement was of a bird controlled in Vlassenbroeck, Oudegem (East Flanders) in Belgium a year after being ringed. No birds were seen or caught in 1963 following the severest winter in the UK for 15 years. Kingfishers are typically decimated during such conditions and ringing totals for subsequent years imply their recovery was slow.

Sand martin:

Birds have been controlled in Le Parc National du Djoudj, Senegal (3,932 km SSW) over-wintering; Tipperary, Ireland (371 km NW) during the breeding season; Loire Atlantique, France, on passage and a bird from Lundy Island (120 km NW) was controlled at Slapton.

Barn swallow (see Table 5):

The late summer/autumn reedbed roost, currently at Torcross, may consist of tens of thousands on any one night. The total numbers passing through in any one autumn defy estimation.

There are seven “same year” movements between the roosts at Slapton and South Milton, Thurlestone (14 km W) generally within days of ringing, and one in a subsequent year. Two birds controlled at Chichester and Portland within 15 days of being ringed indicate some birds move east along the south coast on migration before crossing the Channel. Seven recoveries/controls within 50 km of Slapton the summer after being ringed there, and three controls of birds ringed as nestlings the same year within the same radius, are a measure of the roost’s importance for local breeding birds. Two to Cornwall but within 80 km suggest the roost serves a wider SW population. Three controls ringed in Somerset (110 km SSW), Dorset (118 km WSW) and Gloucester (191 km SSW) respectively indicate a movement from wider afield, whilst two birds subsequently controlled in Antrim (540 km NNW) and Cork (360 km WNW) during the summer/early autumn suggest an even wider catchment area in western Britain.

Foreign recoveries indicate birds on onward passage (France), over-wintering (South Africa) or on return passage the following spring (Spain, Algeria). Birds were found dead during the winter months in Morocco and Algeria.

Pied wagtail:

Apart from two local recoveries, a bird ringed on 31st August 1961 was controlled near Mira in Portugal on 5th October 1962, 14 months later.

White wagtail:

One bird was recovered in Iceland on 24th June 1972, some five years after being ringed at Slapton on 15th September 1967. Two birds ringed in western Iceland on 31st July 1964 and 18th June 1965 were controlled at Slapton on 26th September 1964 and 30th August 1965 respectively, i.e. two and two and a half months after being ringed.

European robin:

Apart from seven local recoveries (all within 3 years of ringing and most as a result of “death by cat”), one bird ringed at Catterick, Yorkshire (472 km NE) on 19th August 1987 was controlled at Slapton on 20th September 1987, a month later and another, ringed at Slapton on 16th September 1972, was controlled at Sandwich Bay, Kent (370 km ENE) on 29th September 1974, two years later. Both relate to eastern England and may have been continental birds over-wintering.

Bluethroat:

A male of the Scandinavian race (red-spotted form) of this species was ringed at Slapton as a 1st year bird on 21st September 1966 and subsequently retrapped there two years later on 14th September 1968. This is the most extraordinary of all Slapton records and is unique for Britain. Both dates relate to autumn passage. The odds against such an event occurring are huge.

Common redstart:

A bird was found dead at Shaugh Prior on the edge of Dartmoor north-east of Plymouth on 1st August 1990, three years after being ringed at Slapton on 16th August 1987; one controlled in Portugal (Beira Litoral) on 18th October 1965, 12 months after

being ringed on 9th September 1964, was on autumn passage on both occasions; and one controlled at Lundy lighthouse (120 km NW) six days after being ringed on 17th April 1963, was on return passage to its breeding area.

Common blackbird:

Apart from nine local recoveries/controls (one, six years after being ringed), a first year female ringed on 18th October 1969 was recovered at Wormsley, Stokenchurch, Buckinghamshire (248 km ENE) on 21st November 1970 and may have been a Scandinavian or continental bird over-wintering in Britain.

Song thrush:

One bird, ringed at Slapton on 16th September 1972 and controlled on 7th April 1973 at Widecombe-in-the-Moor (32 km NNW), had probably moved down from Dartmoor for the winter. However, a bird ringed on 3rd November 1962 and controlled near Woodhall Spa, Lincolnshire (320 km NE) on 7th July 1964 may have been moving ahead of the impending severe weather of the 1962–63 winter when ringed.

Cetti's warbler:

This species has colonised Slapton Ley since breeding was first proven in 1976 and the reserve now comprises the largest concentration in the UK.

Juvenile female dispersal has occurred to South Milton Ley (14 km W)—three controlled within 15 months of being ringed; Portland Bill, Dorset (89 km ENE)—one controlled 28th April 1988 after being ringed at Slapton on 18th September 1987, seven months earlier; Countess Wear Sewage Farm, Exeter (46 km NNE)—one controlled 27th October 1981 after being ringed at Slapton on 2nd August 1981, two months earlier. One juvenile male has also been controlled at South Milton. Whilst attempting some winter ringing for roosting reed buntings in Ireland Bay on 8th December 1995, six Cetti's warbler were caught at dusk; all together and in close proximity to one another, in one 60' long net. Two birds, an adult male and an adult female, were retraps, having been ringed at the regular "cabin" site on 2nd July 1995 and 2nd October 1994, respectively.

The implication is that these birds were going to roost together and may have comprised birds from the four territories in that part of Ireland Bay. This may be a feature of cold weather and it was notable that colder conditions had begun to prevail in early December. As far as can be ascertained, there are no references to such roosts in the literature although other fieldworkers have suspected that, as with winter wrens, such collective roosts do occur.

Sedge warbler (see Table 5):

Unlike the Eurasian reed warbler, very few pairs breed at Slapton Ley and by far the majority of birds seen, and hence caught, are on passage. This is the second most abundant species caught and ringed at Slapton Ley and an analysis of the species' movements through the site are complex. In some respects, such movements are probably similar to those of the Eurasian reed warbler (see below). There are 53 controls and 11 recoveries. Two of the latter are the only such local records received. Only two of the 64 birds involved were ringed as adults, all others being juveniles.

There are regular movements of birds between Slapton and South Milton Leys (14 km W). Six birds ringed at South Milton have been controlled at Slapton, five within 12

days and one a year later. Eight birds from Slapton have been controlled at South Milton, two within six days of being ringed, five in subsequent springs up to five years after being ringed and one during the autumn after being ringed.

Fourteen birds have been controlled from elsewhere comprising three from France, two from Cambridgeshire (330 km NE) and singles from Suffolk (430 km NE), Kent (350 km NE), Somerset (110 km NNE), Tayside (674 km N), Strathclyde (626 km N), Cornwall (133 km W), Dorset (93 km NE), Gwynedd (275 km N) and the Isle of Man (425 km NNW). The French birds were all controlled on passage in subsequent autumns, two having been ringed on autumn passage (two and four years earlier respectively) and one on spring passage the same year. Of the 11 British-ringed birds, eight were controlled within 12 days of being ringed the same autumn, one (Tayside) was ringed in July of the same year, probably in its breeding area, and one (IoM) was ringed in May of the preceding year, suggesting it may have bred there or further north. Only one (Kent) was controlled on autumn passage in a subsequent year.

Thirty-three Slapton-ringed birds have been recovered/controlled elsewhere. Only nine are recoveries. There are 17 foreign records including Djoudj, Senegal (3); France—Finistère (5), Loire Atlantique (5), Charente Maritime (1), Calvados (1) and Manche (1)—and Eire (1). There are 16 British records including Cornwall (2), Isles of Scilly (1), Bardsey Island (1), Isle of Man (1), Cheshire (2), Ayr (1), Strathclyde (1), Dorset (2), Hampshire (3), Sussex (1) and London (1).

The birds in Senegal were controlled during the period December to March of their second or subsequent winters after being ringed. Presumably, they over-wintered in the region. Two of the records from France were recoveries, one within 11 days (Loire Atlantique—344 km SSE) and the other during the return spring passage the year after being ringed (Calvados—285 km ESE). Of the 11 controls to France, 9 were within a period of 2 to 16 days and varied from 270 km to 390 km and broadly within an arc SSE to SSW. The other two records were of birds controlled on their passage south during their second and third autumn respectively after being ringed. A bird ringed on autumn passage was recovered the following May in Eire (130 km W) either on its breeding grounds or *en route* to breeding grounds further north.

A further six Slapton-ringed birds have been recovered elsewhere in the UK—Strathclyde 559 km NE during May after being ringed the previous autumn. Four British controls—two birds in Dorset (Poole Harbour—121 km ENE in 14 days; Radipole—90 km ENE in 11 days) and two in Hampshire (Christchurch) 140 km ENE in 15 and 3 days respectively—are perhaps evidence that some migrants travel east along the UK south coast before crossing the English Channel, presumably at a shorter crossing point than Devon offers.

Sitters (1972) gave a comprehensive analysis of the ringing data, particularly biometrics, for birds caught during the first 10 years of operation (1961–70). His assertion that most birds ringed are passage migrants originating from the western half of the British Isles is supported by the records above. However, whether his conclusions based on analysis of biometric data still hold true is not clear and requires further analysis on the 35-year data set now available. Ellicott (1979) used this species to show that a plot of the number of birds ringed each autumn at a regularly worked, good migration site (such as Slapton), closely matches fluctuations in the species' annual breeding success nationally.

Eurasian reed warbler (see Table 5):

This is the most abundant bird caught and ringed at Slapton Ley including both local breeding and local bred birds and birds from breeding sites elsewhere in the UK. This is truly a bird of the reed beds and can be found breeding throughout the NNR wherever there are strands of *Phragmites*. There are 128 recoveries/controls of which only nine (possibly 13—the details of four are uncertain) are recoveries. Four of these are the only local records received. Only ten of the 128 birds involved were ringed as adults, all the others being juveniles. Many of the general comments regarding this species and interpretation of known movements also apply to the sedge warbler, although the latter's habitat requirements relate more to the reedbed fringe and associated scrub.

As with sedge warbler, there are regular movements of birds between Slapton and South Milton Leys (14 km W). Fourteen birds ringed at South Milton have been controlled at Slapton, six within 10 to 33 days of ringing and 8 in subsequent years, either on passage or possibly breeding. Twenty eight birds ringed at Slapton have been controlled at South Milton, 12 within 3 to 20 days and 16 in subsequent years either on passage or possibly breeding.

Locally, there have also been movements between Slapton Ley and Hallsands (14–6 km S); Prawle Pt (3–10 km S); Bere Ferrers (1–40 km WNW); Countess Wear/Topsham/Ebford (6–46 km NNE); Kingsteignton/Coombe Cellars (4–29 km NNE); Totnes (1–15 km N); Budleigh Salterton (1–47 km NE).

Ten birds, representing all these sites, have been recorded within 8 to 21 days of being ringed—probably indicating juvenile dispersal rather than true passage. Fourteen birds ringed as juveniles at Slapton were controlled as adults during July in subsequent years at Hallsands (8); Coombe Cellars (2); Countess Wear/Topsham (3) and Budleigh Salterton (1) and may have been breeding there. Similarly, four juveniles ringed at Hallsands were controlled at Slapton in the July of subsequent years. Adults ringed at Slapton, Hallsands and South Milton, where they may have been breeding (although passage cannot be ruled out), were controlled in the July of subsequent years at South Milton and Slapton and may have changed breeding sites.

Eleven birds have been controlled at Slapton from elsewhere in the UK, including two each from Cornwall (133 km W—both within 30 days), Channel Islands (118 km and 157 km SE), Somerset (137 km and 95 km NE), and Sussex (280 km E and 314 km ENE) and singles from Glamorgan (137 km N in 16 days) and Dyfed (158 km NNW). Those with a specified number of days were on “same-autumn” passage when controlled. One of the Channel Island birds was ringed as an adult on 31st May 1987 prior to being controlled on 18th July 1987 and was almost certainly still on spring passage when ringed. The other CI bird, ringed in Guernsey as a juvenile on 26th August 1984, was controlled at Slapton on 13th July 1985 and may have bred there during its first year as an adult—this bird was subsequently controlled twice in Jersey on 16th May 1986 and 26th April 1987 when it may well have been breeding (although spring passage can't be ruled out) and was finally controlled back in Guernsey on 5th June 1988 when it was almost certainly breeding. One of the Somerset birds, ringed as an adult at Yeovil (95 km NE) on 27th June 1976 and controlled at Slapton on 2nd July 1977, may have changed breeding sites, although early autumn passage in 1977 is a possibility. The remaining four were controlled at Slapton in the July of subsequent years and may possibly have bred there although, again, passage is a possibility. A further complicating factor in the latter context is the possibility that birds may well use different exit/entry points along the UK south coast from one year to the next.

Twenty two birds ringed at Slapton have been controlled elsewhere in the UK including Cornwall (1); Somerset (2); Glamorgan (1); Dorset (7); Channel Isles (8); Isle of Wight (1); Sussex (1); Suffolk (1).

Eighteen birds ringed at Slapton have been recovered/controlled abroad including France (4); Portugal (8); Morocco (2); Spanish West Africa (1); Senegal (2) and Guinea Bissau (1) and two French-ringed birds have been controlled at Slapton. The bird to Spanish West Africa was killed there 42 days after being ringed; that to Guinea Bissau was controlled during its first winter on 1st February 1987 and three of the four to Morocco and Senegal were recovered or controlled in April and were almost certainly on return spring passage after wintering further south—the fourth, a Moroccan control, was found in late May, at an altitude of 1800m.

Of the 8 birds recorded in Portugal, only two are controls with three positive recoveries, one injured (outcome unknown) and two with unknown finding details. All were found during September or October and six were during the same autumn as ringed. The two controls were made in 32 and 39 days of ringing whilst the four recoveries were from 47 to 55 days after ringing, although whether this is significant or not is unclear. All six birds which were either ringed or controlled in France were on autumn passage except for one Slapton-ringed bird which was controlled in Loire Atlantique on spring passage in May.

Of all the birds controlled or recovered more than one year after being ringed, about 9% were at least 5 years old with the longest-lived being 7 years old; a good age for this species. This percentage increases to about 15% if four-year olds are included. This species is unique amongst all small migrant passerines for its longevity and Ellicott (1979) discusses this for birds ringed and subsequently retrapped at Slapton. The oldest bird during the period 1961–77 was at least 10 years old.

Lesser whitethroat:

One local record of a bird recovered 12 months after being ringed on 21st July 1979 was either of a local breeding bird or of a bird using the same route for autumn passage in two consecutive years.

Common whitethroat:

A bird recovered locally 12 months after being ringed on 16th July 1978 was probably a local breeding bird. Another, ringed on 9th September 1960 and recovered locally the following spring, was either a local breeding bird or using a similar route on both autumn and spring passage. Two foreign records are of birds recovered on 26th September 1962 in Spain and 26th October 1962 in Portugal after being ringed on 29th July 1962 and 28th July 1962 respectively (i.e. two & three months earlier).

Garden warbler (see Table 5):

The “same autumn” bird to Morocco (Fes—1742 km S) was reported on 5th October 1990, 33 days after being ringed on 2nd September 1990. The other bird to Morocco (Kasba Tadla) was recovered in September 1966 on autumn passage, three years after being ringed on passage at Slapton on 17th September 1963. The third foreign recovery is of a probable breeding bird ringed on 24th July 1965 and subsequently recovered in Alicante, Spain on 10th September 1965. All were ringed as 1st year birds.

Blackcap (see Table 5):

Analysis of recoveries and controls for this species is complicated by the fact that significant numbers overwinter in Britain, particularly in the southwest. Small numbers of continental birds migrating NNW have probably been the origin of birds seen in Britain during winters earlier this century. However, recent data have shown that increasing numbers winter in Britain, particularly birds from Germany where research currently being carried out by Peter Berthold (1995) of the Max-Planck-Institute for Behavioural Physiology, and his team, suggest that this behaviour has been encouraged by environmental and climatic change and is apparently genetically-determined. A small number of such birds may be caught towards the end of the ringing season at Slapton Ley. However, the vast majority caught there will be from British populations.

18 recoveries and controls are summarised. All but one relate to first year birds, 10 were sexed as males, 3 as females and 5 were unsexed. There are five local records of birds to or from Plymouth (W), Budleigh Salterton (NNE), Totnes (N), Hallsands (S) and South Milton (W). The first two show easterly coastal movements during the same autumn as being ringed, possibly supporting other evidence that some summer migrants move east along the south coast before crossing the Channel. Similarly, more distant controls to Oxfordshire (239 km NE in 71 days) and East Sussex (315 km ENE in 49 days) are evidence of "same autumn" easterly passage.

Three birds recorded in Dorset (125 km ENE) and one in Hampshire (208 km NE) during the summer or autumn after being ringed at Slapton during a preceding July-September, may be further evidence of such movements although these records may relate to birds from more northerly breeding sites using different entry/exit points to the UK in different years. One bird was recovered in Somerset (120 km NNE) during the spring after it was ringed in July and may have been close to or moving further north to its breeding area.

There are six foreign recoveries, two each to France and Spain and one each to Morocco and Portugal. Three birds were recovered during October, having been ringed the preceding August. Two were recovered during the winter after being ringed and another two winters after being ringed.

Common chiffchaff (see Table 5):

13 recoveries and controls are summarised. The two controls on the Isle of Man were both during the spring after being ringed at Slapton on 4th July 1993 and 23rd September 1989 respectively and were presumably returning to their breeding areas. The bird recorded in Senegal was controlled during the subsequent January and was undoubtedly over-wintering.

Willow warbler: (see Table 5):

Five recoveries and four controls are summarised. All were juveniles when ringed. There are two local recoveries, both during the spring after being ringed at Slapton the preceding autumn. This suggests they were returning to breeding sites elsewhere but broadly using the same migration route as in autumn. Indeed, it is quite probable that they passed through Slapton on their return.

There are two controls and one recovery to Dorset (the only other UK destination). A bird ringed at Slapton on 21st August 1966 was controlled on Portland (91 km ENE) 12 days later on 2nd September 1966. This again supports the view that some migrants move east along the south coast from Slapton before crossing The Channel. A bird

ringed on 17th August 1991, and which was recovered on Portland on 15th April 1993, might suggest Portland is important for birds leaving or entering the UK or that slightly different entry and exit points are used depending on where individuals breed and what weather conditions they encounter on passage. Similarly, a bird ringed at Slapton on 29th August 1976 and controlled at Purbeck (114 km ENE) on 24th September 1977 may well have come via Slapton during autumn passage in 1977 or may have taken a slightly different route.

There are four foreign recoveries or controls. A bird ringed on 17th August 1977 was controlled in Navarra, Spain on 29th October 1977, two months later; a second, ringed on 30th July 1969, was reported from Charente Maritime, France in February 1970; a third, ringed on 16th August 1965, was recovered in Dublin, Eire (376 km NNW) on 7th April 1966, undoubtedly returning to a breeding site in Ireland and the fourth, ringed on 5th August 1972, was controlled at Sampa, Ghana on 17th December 1977, 5 years and 4 months later—the finding details were “hit by catapult—still alive” and whether the finding date was when the catapult was fired or when the ring was found on the chief’s necklace (which has happened), we shall never know!

Goldcrest:

A bird ringed on 22nd September 1972 was controlled at Sheviok, Cornwall (45 km W) on 29th January 1973 over-wintering and was probably moving west from the continent when ringed.

Blue tit:

Three 1st year birds have been recovered or controlled locally. A fourth has been recovered near Andover, Hants (185 km NE) on 25th October 1975, two years after being ringed at Slapton on 2nd August 1973. This suggests that some locally-bred birds do occasionally move considerable distances.

Great tit:

There is one local recovery and one local control.

Eurasian treecreeper:

A juvenile ringed on 12th July 1989 was controlled at Hallsands on 17th November 1989.

Black-billed magpie:

One was recovered locally two years after being ringed.

Common starling:

Five birds recovered and one controlled were all within 50 km of Slapton and all but one were to the east. The Slapton reedbeds annually host large post-breeding and winter roosts. These records may well reflect areas from which birds are attracted to this roost which also almost certainly contains a percentage of continental birds during winter. One of the recoveries was almost four years old.

Chaffinch:

One local recovery.

European greenfinch:

Apart from three local recoveries and one local control, there are two long-distance controls from elsewhere. One ringed in Guernsey, CI, on 5th January 1990 and controlled at Slapton (119 km NE) on 15th July 1990 suggests a bird moving south for the winter. Another ringed on Portland, Dorset on 23rd April 1989 and controlled at Slapton (89 km SW) on 20th August 1989 suggests a bird moving west during post-breeding dispersal.

Common bullfinch:

One local recovery of a bird in its first year.

Yellowhammer:

One local recovery of an adult found dead within three months of ringing and a local control of a bird being released from fruit netting the June after being ringed as a juvenile on 23rd September 1964.

Reed bunting:

Of 26 local recoveries and controls, all but three involve controls to and from Slapton and a regular autumn/winter roost at South Milton Ley, Thurlestone (14 km WSW). All these movements were within the same year as being ringed apart from three. Two of the latter were controlled the following year and the third was controlled four times—twice the same year and twice the following year. Two birds were found dead within 2 km and a third was controlled at a Totnes (14 km N) reedbed 18 months after being ringed. The only long distance movement is of a nestling ringed on 2nd June 1989 at Newchurch, Isle of Wight (178 km NE) which was controlled at Slapton the following summer on 27th July 1990 having previously been controlled at Higher Metcombe in East Devon on 1st April 1990.

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REFERENCES

- BELRINGER, R. M., (1985). *Checklist of the Birds of Slapton Ley Nature Reserve (1801–1985)*. as yet Unpublished.
- BERTHOLD, P., (1995). Microevolution of migratory behaviour illustrated by the blackcap *Sylvia atricapilla*. *Bird Study*, **42**, 89–100.
- BRITISH ORNITHOLOGISTS' UNION, (1992). *Checklist of Birds of Britain and Ireland*, 6th Edition.
- BURTON, R. G. and MERCER, I. D., (1978). The Natural History of Slapton Ley Nature Reserve XII: Birds. *Field Studies*, **4**, 693–714.
- CRAMP, S. and SIMMONS, K. E. L., (eds.) (1977). *The Birds of the Western Palearctic* Vol. 1. Oxford.
- D'URBAN, W. S. M. and MATHEW, The Rev. M. A., (1892). *The Birds of Devon*. London .
- EDMONDS, M. R., (1962). The bird life of Slapton, *Devon Birds* , **15**, 22–26.
- ELLICOTT, P. W., (1979). Reed and sedge warblers at Slapton Ley. *Devon Birds* , **32**, 77–80.
- ELLICOTT, P. W., (1982). Autumn warbler migration at Slapton, Devon, 1961–80 *Devon Birds*, **35**, 64–68.
- INSKIPP, T. P. and SHARROCK, J. T. R., (1992). English names of West Palearctic birds. *British Birds*, **85**: 263–290.
- MOORE, R., (1969). *The Birds of Devon*. Newton Abbot .
- OWEN, M, AKINSON-WILLES, G. L. and SALMON, D. G., (1986). *Wildfowl of Great Britain* (2nd Edition), Cambridge.
- PIDSLEY, W. E. H., (1891). *The Birds of Devonshire*, London.
- SITTERS, H. P., (1972). An analysis of the ringing data for the sedge warbler at Slapton Ley Bird Observatory, *Devon Birds*, **25**, 2–20.
- SITTERS, H. P. (Ed.), (1974). *Atlas of Breeding Birds in Devon*. Devon Bird Watching & Preservation Society.
- SITTERS, H. P., (1988). *Tetrad Atlas of the Breeding Birds of Devon*. Devon Bird Watching & Preservation Society.

APPENDIX

CHECKLIST AND STATUS OF BIRDS RECORDED AT SLAPTON LEY NNR AND ITS IMMEDIATE ENVIRONS

The nomenclature and sequence of species in this checklist follow the current recommendations by the BOU (1992). Unless otherwise stated, all the species listed below originate from within the bio-geographic region known as the Western Palearctic (i.e. Europe west of the Urals and Caspian Sea; Scandinavia; Iceland; North Africa south to approximately latitude 20°N and that part of the Middle East north of latitude 28°N and including Turkey). A small number of species originate only from within the Eastern Palearctic (the former USSR east of the Urals and Caspian Sea) or only from the Nearctic (North America) regions. Some species, particularly those breeding in the circumpolar region around the Arctic, originate in two or more of these regions. These are not specifically identified. There is one Sub-Antarctic species.

As discussed by Burton & Mercer (1978), it makes sense that the recording area for birds listed should include the wider context of Start Bay (i.e. to have been seen on or over the Slapton Ley NNR, adjacent fields, the cliffs at Strete Gate, on the shore and on or over the sea—possibly as far out as the Skerries Buoy when visibility permits). However, I have not followed their lead by extending the recording area inland so far as to include Slapton Village or the associated farmsteads.

The status of each species is given in a concise form and, for some, more than one classification applies. Inevitably, this method involves some subjectivity and there is undoubtedly scope for a more accurate, although probably more complex, classification. It is hoped that the method used here gives a good general understanding of each species' status. Dates are given for those species only recorded during the 19th century and not since.

English Name	Scientific Name	Status ¹
Red-throated diver	<i>Gavia stellata</i>	winter visitor
Black-throated diver	<i>Gavia arctica</i>	occasional winter visitor
Great northern diver	<i>Gavia immer</i>	winter visitor
Little grebe	<i>Tachybaptus ruficollis</i>	winter visitor
Great crested grebe	<i>Podiceps cristatus</i>	resident and winter visitor
Red-necked grebe	<i>Podiceps grisegena</i>	occasional winter visitor
Slavonian grebe	<i>Podiceps auritus</i>	winter visitor
Black-necked grebe	<i>Podiceps nigricollis</i>	occasional winter visitor
Northern fulmar	<i>Fulmarus glacialis</i>	regular visitor
Sooty shearwater	<i>Puffinus griseus</i>	occasional passage migrant, Sub-Antarctic
Manx shearwater	<i>Puffinus puffinus puffinus</i>	passage migrant
Balearic shearwater	<i>Puffinus p. mauretanicus</i>	occasional passage migrant
European storm-petrel	<i>Hydrobates pelagicus</i>	occasional summer visitor

¹ resident—implies breeding

regular visitor—implies presence throughout the year but unable to classify more specifically

occasional visitor—once resident but now only occasionally recorded, if at all, due to declining populations

vagrant—scarce visitor

summer vagrant—overshooting by south European breeding species during spring migration

autumn vagrant—Scandinavian and other eastern species blown west off their normal migration routes

English Name	Scientific Name	Status
Leach's storm-petrel	<i>Oceanodroma leucorhoa</i>	occasional autumn passage migrant
Northern gannet	<i>Sula bassana</i>	winter visitor, summer visitor and passage migrant
Great cormorant	<i>Phalacrocorax carbo</i>	regular visitor
European shag	<i>Phalacrocorax aristotelis</i>	regular visitor
Bittern	<i>Botaurus stellaris</i>	winter visitor and passage migrant
Little bittern	<i>Ixobrychus minutus</i>	summer vagrant
Black-crowned night heron	<i>Nycticorax nycticorax</i>	summer vagrant
Squacco heron	<i>Ardeola ralloides</i>	summer vagrant
Little egret	<i>Egretta garzetta</i>	passage migrant, winter visitor and occasional summer visitor
Great egret	<i>Egretta alba</i>	summer vagrant
Grey heron	<i>Ardea cinerea</i>	regular visitor
Purple heron	<i>Ardea purpurea</i>	summer vagrant
White stork	<i>Ciconia ciconia</i>	ca 1825
Glossy ibis	<i>Plegadis falcinellus</i>	vagrant
Eurasian spoonbill	<i>Platalea leucorodia</i>	summer vagrant
Mute swan	<i>Cygnus olor</i>	resident and summer visitor
Tundra Bewick's swan	<i>Cygnus columbianus</i>	occasional winter visitor
Whooper swan	<i>Cygnus cygnus</i>	occasional winter visitor
Pink-footed goose	<i>Anser brachyrhynchus</i>	feral or an escape
Greater white-fronted goose	<i>Anser albifrons</i>	feral or an escape
Greylag goose	<i>Anser anser</i>	feral or an escape
Canada goose	<i>Branta canadensis</i>	resident
Barnacle goose	<i>Branta leucopsis</i>	feral or an escape
Brent goose	<i>Branta bernicla</i>	occasional winter visitor
Egyptian goose	<i>Alopochen aegyptiacus</i>	feral or an escape
Common shelduck	<i>Tadorna tadorna</i>	winter visitor
Eurasian wigeon	<i>Anas penelope</i>	winter visitor
Gadwall	<i>Anas strepera</i>	resident and winter visitor
Common teal	<i>Anas crecca</i>	winter visitor
Mallard	<i>Anas platyrhynchos</i>	resident
Northern pintail	<i>Anas acuta</i>	occasional winter visitor
Garganey	<i>Anas querquedula</i>	occasional passage migrant—has bred
Northern shoveler	<i>Anas clypeata</i>	winter visitor
Red-crested pochard	<i>Netta rufina</i>	vagrant
Common pochard	<i>Aythya ferina</i>	winter visitor
Ring-necked duck	<i>Aythya collaris</i>	vagrant, Nearctic
Ferruginous duck	<i>Aythya nyroca</i>	vagrant
Tufted duck	<i>Aythya fuligula</i>	winter visitor and summer resident although breeding not proven
Greater scaup	<i>Aythya marila</i>	occasional winter visitor
Common eider	<i>Somateria mollissima</i>	occasional winter visitor
Long-tailed duck	<i>Clangula hyemalis</i>	occasional winter visitor
Black (common) scoter	<i>Melanitta nigra</i>	passage migrant/winter visitor
Surf scoter	<i>Melanitta perspicillata</i>	vagrant
Velvet scoter	<i>Melanitta fusca</i>	winter visitor
Common goldeneye	<i>Bucephala clangula</i>	winter visitor
Smew	<i>Mergus albellus</i>	occasional winter visitor
Red-breasted merganser	<i>Mergus serrator</i>	winter visitor
Goosander	<i>Mergus merganser</i>	occasional winter visitor
Ruddy duck	<i>Oxyura jamaicensis</i>	winter visitor (Nearctic)
European honey-buzzard	<i>Pernis apivorus</i>	occasional passage migrant
White-tailed eagle	<i>Haliaeetus albicilla</i>	1899
Eurasian marsh harrier	<i>Circus aeruginosus</i>	passage migrant

English Name	Scientific Name	Status
Hen harrier	<i>Circus cyaneus</i>	occasional passage migrant
Montagu's harrier	<i>Circus pygargus</i>	occasional passage migrant
Northern goshawk	<i>Accipiter gentilis</i>	occasional passage migrant
Eurasian sparrowhawk	<i>Accipiter nisus</i>	resident
Common buzzard	<i>Buteo buteo</i>	resident
Rough-legged buzzard	<i>Buteo lagopus</i>	occasional passage migrant
Osprey	<i>Pandion haliaetus</i>	passage migrant
Common kestrel	<i>Falco tinnunculus</i>	resident
Red-footed falcon	<i>Falco vespertinus</i>	summer vagrant
Merlin	<i>Falco columbarius</i>	occasional winter visitor and occasional passage migrant
Eurasian hobby	<i>Falco subbuteo</i>	summer visitor and passage migrant
Peregrine falcon	<i>Falco peregrinus</i>	resident
Grey partridge	<i>Perdix perdix</i>	formerly bred
Common quail	<i>Coturnix coturnix</i>	occasional passage migrant and occasional summer visitor
Common pheasant	<i>Phasianus colchicus</i>	resident
Water rail	<i>Rallus aquaticus</i>	resident and winter visitor
Spotted crake	<i>Porzana porzana</i>	occasional passage migrant
Corn crane	<i>Crex crex</i>	occasional passage migrant
Common moorhen	<i>Gallinula chloropus</i>	resident
Common coot	<i>Fulica atra</i>	resident and winter visitor
Crane	<i>Grus grus</i>	vagrant
Eurasian oystercatcher	<i>Haematopus ostralegus</i>	regular visitor
Black-winged stilt	<i>Himantopus himantopus</i>	ca 1830
Pied avocet	<i>Recurvirostra avosetta</i>	occasional passage migrant
Stone-curlew	<i>Burhinus oedicnemus</i>	occasional spring passage migrant
Little plover	<i>Charadrius dubius</i>	passage migrant
Ringed plover	<i>Charadrius hiaticula</i>	winter visitor and passage migrant
Kentish plover	<i>Charadrius alexandrinus</i>	summer vagrant
European golden plover	<i>Pluvialis apricaria</i>	occasional winter visitor
Grey plover	<i>Pluvialis squatarola</i>	winter visitor and passage migrant
Northern lapwing	<i>Vanellus vanellus</i>	winter visitor
Red knot	<i>Calidris canutus</i>	winter visitor and passage migrant, Nearctic and Eastern Palearctic
Sanderling	<i>Calidris alba</i>	winter visitor and passage migrant
Little stint	<i>Calidris minuta</i>	passage migrant
Pectoral sandpiper	<i>Calidris melanotos</i>	autumn vagrant, Nearctic
Curlew sandpiper	<i>Calidris ferruginea</i>	autumn passage migrant, Eastern Palearctic
Purple sandpiper	<i>Calidris maritima</i>	occasional passage migrant and occasional winter visitor
Dunlin	<i>Calidris alpina</i>	winter visitor and passage migrant
Ruff	<i>Philomachus pugnax</i>	occasional passage migrant
Jack snipe	<i>Lymnocyptes minimus</i>	occasional winter visitor
Common snipe	<i>Gallinago gallinago</i>	winter visitor and passage migrant
Eurasian woodcock	<i>Scolopax rusticola</i>	occasional winter visitor
Black-tailed godwit	<i>Limosa limosa</i>	passage migrant
Bar-tailed godwit	<i>Limosa lapponica</i>	passage migrant
Whimbrel	<i>Numenius phaeopus</i>	passage migrant
Eurasian curlew	<i>Numenius arquata</i>	passage migrant
Spotted redshank	<i>Tringa erythropus</i>	passage migrant
Common redshank	<i>Tringa totanus</i>	regular visitor
Common greenshank	<i>Tringa nebularia</i>	passage migrant
Green sandpiper	<i>Tringa ochropus</i>	passage migrant

English Name	Scientific Name	Status
Wood sandpiper	<i>Tringa glareola</i>	passage migrant
Common sandpiper	<i>Actitis hypoleucos</i>	passage migrant
Ruddy turnstone	<i>Arenaria interpres</i>	winter visitor and passage migrant
Wilson's phalarope	<i>Phalaropus tricolor</i>	autumn vagrant, Nearctic
Red-necked phalarope	<i>Phalaropus lobatus</i>	autumn vagrant
Grey phalarope	<i>Phalaropus fulicarius</i>	occasional autumn passage migrant
Pomarine skua	<i>Stercorarius pomarinus</i>	occasional passage migrant
Arctic skua	<i>Stercorarius parasiticus</i>	passage migrant
Great skua	<i>Stercorarius skua</i>	occasional passage migrant
Mediterranean gull	<i>Larus melancephalus</i>	occasional passage migrant
Little gull	<i>Larus minutus</i>	passage migrant
Sabine's gull	<i>Larus sabini</i>	occasional passage migrant
Black-headed gull	<i>Larus ridibundus</i>	winter visitor and passage migrant
Ring-billed gull	<i>Larus delawarensis</i>	occasional winter visitor, Nearctic
Mew (common) gull	<i>Larus canus</i>	winter visitor
Lesser black-backed gull	<i>Larus fuscus</i>	regular visitor and passage migrant
Herring gull	<i>Larus argentatus</i>	regular visitor
Iceland gull	<i>Larus glaucoides</i>	occasional winter visitor
Glaucous gull	<i>Larus hyperboreus</i>	occasional winter visitor
Great black-backed gull	<i>Larus marinus</i>	regular visitor and passage migrant
Ross's gull	<i>Rhodostethia rosea</i>	vagrant, Eastern Palearctic; occasionally Nearctic
Black-legged kittiwake	<i>Rissa tridactyla</i>	passage migrant
Gull-billed tern	<i>Gelochelidon nilotica</i>	occasional passage migrant
Sandwich tern	<i>Sterna sandvicensis</i>	passage migrant
Roseate tern	<i>Sterna dougallii</i>	occasional passage migrant
Common tern	<i>Sterna hirundo</i>	passage migrant
Arctic tern	<i>Sterna paradisaea</i>	passage migrant
Little tern	<i>Sterna albifrons</i>	occasional passage migrant
Whiskered tern	<i>Childonias hybridus</i>	vagrant
Black tern	<i>Childonias nigra</i>	passage migrant
White-winged black tern	<i>Childonias leucopterus</i>	vagrant
Common guillemot	<i>Uria aalge</i>	regular visitor
Razorbill	<i>Alca torda</i>	regular visitor
Black guillemot	<i>Cephus grylle</i>	occasional winter visitor
Little auk	<i>Alle alle</i>	occasional winter visitor
Atlantic puffin	<i>Fratercula arctica</i>	winter visitor
Pallas' sandgrouse	<i>Syrrhaptes paradoxus</i>	1863
Stock pigeon dove	<i>Columba oenas</i>	resident
Common wood pigeon	<i>Columba palumbus</i>	resident
Eurasian collared dove	<i>Streptopelia decaocto</i>	regular visitor
European turtle dove	<i>Streptopelia turtur</i>	passage migrant
Common cuckoo	<i>Cuculus canorus</i>	summer resident and passage migrant
Barn owl	<i>Tyto alba</i>	occasional visitor
Scops owl	<i>Otus scops</i>	summer vagrant
Little owl	<i>Athene noctua</i>	occasional visitor
Tawny owl	<i>Strix aluco</i>	resident
Long-eared owl	<i>Asio otus</i>	occasional autumn passage migrant
Short-eared owl	<i>Asio flammeus</i>	occasional autumn passage migrant
European nightjar	<i>Caprimulgus europaeus</i>	occasional passage migrant
Common swift	<i>Apus apus</i>	summer resident and passage migrant
Alpine swift	<i>Apus melba</i>	vagrant
Little swift	<i>Apus affinis</i>	vagrant
Common kingfisher	<i>Alcedo atthis</i>	resident and passage migrant
Hoopoe	<i>Upupa epops</i>	occasional passage migrant

English Name	Scientific Name	Status
Eurasian wryneck	<i>Jynx torquilla</i>	occasional autumn passage migrant
Green woodpecker	<i>Picus viridis</i>	resident
Great spotted woodpecker	<i>Dendrocopos major</i>	resident
Lesser spotted woodpecker	<i>Dendrocopos minor</i>	resident
Crested lark	<i>Galerida cristata</i>	1852
Wood lark	<i>Lullula arborea</i>	occasional autumn passage migrant
Sky lark	<i>Alauda arvensis</i>	passage migrant and winter visitor
Sand martin	<i>Riparia riparia</i>	passage migrant
Barn swallow	<i>Hirundo rustica</i>	summer resident and passage migrant
House martin	<i>Delichon urbica</i>	summer resident and passage migrant
Richard's pipit	<i>Anthus novaeseelandiae</i>	vagrant
Tawny pipit	<i>Anthus campestris</i>	vagrant
Tree pipit	<i>Anthus trivialis</i>	passage migrant
Meadow pipit	<i>Anthus pratensis</i>	passage migrant and winter visitor
Rock pipit	<i>Anthus spinoletta</i>	regular visitor
Yellow wagtail	<i>Motacilla flava flavissima</i>	passage migrant
Grey-headed wagtail	<i>Motacilla flava thunbergi</i>	vagrant
Spanish wagtail	<i>Motacilla flava iberiae</i>	vagrant
Blue-headed wagtail	<i>Motacilla flava flava</i>	passage migrant
Grey wagtail	<i>Motacilla cinerea</i>	resident and passage migrant
Pied wagtail	<i>Motacilla alba yarrellii</i>	resident and winter visitor
White wagtail	<i>Motacilla alba alba</i>	passage migrant and winter visitor
White-throated dipper	<i>Cinclus cinclus</i>	occasional winter visitor
Winter wren	<i>Troglodytes troglodytes</i>	resident
Hedge accentor, or duncock	<i>Prunella modularis</i>	resident
Rufous-tailed scrub-robin	<i>Cercotrichas galactotes</i>	1876
European robin	<i>Erithacus rubecula</i>	resident, winter visitor and passage migrant
Common nightingale	<i>Luscinia megarhynchos</i>	occasional passage migrant
Bluethroat	<i>Luscinia svecica</i>	occasional passage migrant
Black redstart	<i>Phoenicurus ochruros</i>	passage migrant and winter visitor
Common redstart	<i>Phoenicurus phoenicurus</i>	passage migrant
Whinchat	<i>Saxicola rubetra</i>	passage migrant
Stonechat	<i>Saxicola torquata</i>	resident and passage migrant
Northern wheatear	<i>Oenanthe oenanthe</i>	passage migrant
Greenland wheatear	<i>Oenanthe oenanthe leucorrhoa</i>	occasional passage migrant
Ring ouzel	<i>Turdus torquatus</i>	occasional passage migrant
Common blackbird	<i>Turdus merula</i>	resident and winter visitor
Fieldfare	<i>Turdus pilaris</i>	winter visitor
Song thrush	<i>Turdus philomelos</i>	resident and winter visitor
Redwing	<i>Turdus iliacus</i>	winter visitor
Mistle thrush	<i>Turdus viscivorus</i>	resident and winter visitor
Cetti's warbler	<i>Cettia cetti</i>	resident
Common grasshopper warbler	<i>Locustella naevia</i>	passage migrant
Savi's warbler	<i>Locustella luscinioides</i>	occasional spring passage migrant
Aquatic warbler	<i>Acrocephalus paludicola</i>	occasional autumn passage migrant
Sedge warbler	<i>Acrocephalus schoenobaenus</i>	summer resident and passage migrant
Marsh warbler	<i>Acrocephalus palustris</i>	vagrant
Eurasian reed warbler	<i>Acrocephalus scirpaceus</i>	summer resident and passage migrant
Great reed warbler	<i>Acrocephalus arundinaceus</i>	vagrant
Icterine warbler	<i>Hippolais icterina</i>	vagrant
Melodious warbler	<i>Hippolais polyglotta</i>	vagrant
Dartford warbler	<i>Sylvia undata</i>	occasional winter visitor
Barred warbler	<i>Sylvia nisoria</i>	vagrant

English Name	Scientific Name	Status
Lesser whitethroat	<i>Sylvia curruca</i>	summer resident and passage migrant
Common whitethroat	<i>Sylvia communis</i>	summer resident and passage migrant
Garden warbler	<i>Sylvia borin</i>	summer resident and passage migrant
Blackcap	<i>Sylvia atricapilla</i>	summer resident, passage migrant and occasional winter visitor
Yellow-browed warbler	<i>Phylloscopus inornatus</i>	occasional autumn passage migrant
Wood warbler	<i>Phylloscopus sibilatrix</i>	occasional passage migrant
Common chiffchaff	<i>Phylloscopus collybita</i>	summer resident, passage migrant and occasional winter visitor
Willow warbler	<i>Phylloscopus trochilus</i>	summer resident and passage migrant
Goldcrest	<i>Regulus regulus</i>	resident, winter visitor and passage migrant
Firecrest	<i>Regulus ignicapillus</i>	passage migrant and occasional winter visitor
Spotted flycatcher	<i>Muscicapa striata</i>	passage migrant
Red-breasted flycatcher	<i>Ficedula parva</i>	autumn vagrant
Pied flycatcher	<i>Ficedula hypoleuca</i>	autumn passage migrant
Bearded tit	<i>Panurus biarmicus</i>	occasional winter visitor
Long-tailed tit	<i>Aegithalos caudatus</i>	resident
Marsh tit	<i>Parus palustris</i>	resident
Willow tit	<i>Parus montanus</i>	resident
Coal tit	<i>Parus ater</i>	resident
Blue tit	<i>Parus caeruleus</i>	resident
Great tit	<i>Parus major</i>	resident
Common nuthatch	<i>Sitta europaea</i>	resident
Eurasian treecreeper	<i>Certhia familiaris</i>	resident
Eurasian golden oriole	<i>Oriolus oriolus</i>	occasional spring passage migrant
Red-backed shrike	<i>Lanius collurio</i>	occasional autumn passage migrant
Great grey shrike	<i>Lanius excubitor</i>	occasional passage migrant
Woodchat shrike	<i>Lanius senator</i>	occasional passage migrant
Eurasian jay	<i>Garrulus garrulus</i>	resident
Black-billed magpie	<i>Pica pica</i>	resident
Eurasian jackdaw	<i>Corvus monedula</i>	resident
Rook	<i>Corvus frugilegus</i>	regular visitor
Carion crow	<i>Corvus corone corone</i>	resident
Common raven	<i>Corvus corax</i>	resident
Common starling	<i>Sturnus vulgaris</i>	resident and winter visitor
Rose-coloured starling	<i>Sturnus roseus</i>	vagrant
House sparrow	<i>Passer domesticus</i>	resident
Eurasian tree sparrow	<i>Passer montanus</i>	occasional visitor
Chaffinch	<i>Fringilla coelebs</i>	resident
Brambling	<i>Fringilla montifringilla</i>	winter visitor
European serin	<i>Serinus serinus</i>	occasional spring passage migrant
European greenfinch	<i>Carduelis chloris</i>	resident
European goldfinch	<i>Carduelis carduelis</i>	resident
Eurasian siskin	<i>Carduelis spinus</i>	occasional winter visitor
Common linnet	<i>Carduelis cannabina</i>	resident
Twite	<i>Carduelis flavirostris</i>	vagrant
Common redpoll	<i>Carduelis flammea</i>	autumn passage migrant
Common crossbill	<i>Loxia curvirostra</i>	occasional passage migrant
Common bullfinch	<i>Pyrrhula pyrrhula</i>	resident
Hawfinch	<i>Coccothraustes coccothraustes</i>	vagrant
Snow bunting	<i>Plectrophenax nivalis</i>	occasional winter visitor
Yellowhammer	<i>Emberiza citrinella</i>	resident
Cirl bunting	<i>Emberiza cirlus</i>	resident
Little bunting	<i>Emberiza pusilla</i>	vagrant

English Name	Scientific Name	Status
Reed bunting	<i>Emberiza schoeniclus</i>	resident
Corn bunting	<i>Miliaria calandra</i>	formerly, an occasional visitor