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SCOTTISH ORNITHOLOGISTS' CLUB

Vol. 13 No. 1



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THE JOURNAL OF THE SCOTTISH ORNITHOLOGISTS' CLUB



Volume 13 No. 1

Spring 1984

Edited by V. M. Thom, assisted by R. W. Furness and I. R. Taylor

Editorial

We apologise for the late appearance of *SB* 12:8. This was largely due to delays caused by the installation of new equipment by the printer; the consequent late delivery meant that mailing coincided with the Christmas rush.

New names Since the first working day of 1984 John Davies has been in post as the club's Secretary and Treasurer. We hope that he will find his new job both interesting and rewarding, and that he and his family will enjoy living at 21 Regent Terrace. John's arrival was closely followed by Maureen's wedding, so we have two "new" names to remember. We wish Maureen—now Williams—and her husband Ben every happiness in the future.

Letter from Major and Mrs A. D. Peirse-Duncombe

Dear Members,

Daphne and I find it hard to thank you all sufficiently for the wonderful present you gave us when I retired. It was sad that, following my illness last October, we could not be present for the whole conference weekend, but we were delighted to have been able to attend the AGM and receive your presents. The tray, engraved with the Crested Tit and my dates as Secretary, will always remind us of our time with the Club. The very handsome cheque which accompanied it has enabled us to buy some items for our new house which we would otherwise not have purchased. In addition we have put some aside for our trip to Canada where we plan to visit our son in May. We are overwhelmed by your generosity.

We came to the Club in 1969 knowing hardly any members, but it very soon became apparent that we had come to a most friendly organisation with a wealth of goodwill shown to us at all the branches, and by those with whom I corresponded. As I said briefly at the AGM, the warm welcome extended to us in those early days has continued to the end. We will never forget the kindness of members at meetings, conferences and other club functions.

I received many messages and letters at the time of my illness and then my retirement, and I am sure those who wrote will forgive me for not replying personally, and accept this letter of thanks instead. With my departure brought forward by my illness before my successor arrived, an extra burden was put on Maureen Doran (now Mrs Williams) which she could not have foreseen, and I would like to take this opportunity to thank her and all members of our staff for their work at that difficult time of transition, and also all the staff who have served the Club so loyally during my time as Secretary.

Finally, as many of you will know, Daphne and I are now living in the Borders near Melrose. We hope to attend branch meetings and conferences in the future, and see many of you in the coming years. Thank you all most sincerely for making our time with the Club so enjoyable, and for giving us such a memorable and handsome parting present.

DAAPHNE and ALASTAIR PEIRSE-DUNCOMBE

Breeding Lowland Waders in East Sutherland

J. & C. F. BARRETT

This study extends the coverage of breeding wader habitat types to include largely unimproved marginal land near the coast. Repeat surveys in successive years suggest the possible effects of the severe winter of 1981-82 on local breeding populations.

Sutherland is largely an area of blanket bog and mountain, with farmland confined to coastal strips and river valleys. Some of the breeding waders characteristic of the moorland areas have been studied in depth, for example the Greenshank (Nethersole-Thompson & Nethersole-Thompson 1979), but little information is available on those of agricultural land, which is known to be important for breeding waders in central Scotland (Galbraith & Furness 1983) and the Uists (Fuller 1978, 1981). The aim of the present study was to investigate the species and densities of waders breeding in lowland east Sutherland and to identify their habitat preferences.

Study area and methods

The study area covered a 23 km section of the Brora Valley (from Brora to Dalreavoch Bridge, largely unfenced, unimproved grassland) and two areas of semi-improved marginal land (totalling 5.07 km²), one on the coastal strip between Golspie and Brora and the other inland between Rogart, East

Langwell and Rhilochan. These sites were selected as representative of the inland low ground area and the coastal plain, since all the major habitats typical of these areas were included within them. At the end of the breeding season the habitats in the study area were mapped, using the following classification based on vegetation characteristics:

- (1) dry grassland—short unimproved pasture, sheep grazed and dominated by *Agrostis* and *Festuca* grasses
- (2) dry grassland with bracken—similar to (1) but with extensive growth of bracken
- (3) dry grassland with rushes—similar to (1) but with patches of *Juncus*
- (4) wet grassland with rushes—similar to (3) but with extensive wet patches, sometimes with standing water in hollows
- (5) *Calluna/Eriophorum* with grasses—a degraded blanket bog type, resulting from heavy grazing and burning pressure
- (6) hay meadows—areas of sown grasses, ungrazed until cut for hay or silage during the summer
- (7) *Calluna*/dry grassland—a mixture of heather and grasses on better drained ground, usually grazed by sheep or cattle.

A network of small roads dissecting the study area allowed all counts to be made from a car, thus minimising disturbance and permitting a high proportion of the nests or broods of the total number of breeding pairs (estimated from territories) to be identified. The other criteria used in determining the presence of a breeding pair were those discussed in Galbraith & Furness (1981). Difficulties in estimating the abundance of waders have been discussed by several authors (Hale 1956 (Redshank), Fuller 1978 (Ringed Plover), and Smith 1981 (Snipe)). Recording from a vehicle was considered to be an efficient technique for all lowland breeding waders except Snipe, but it can of course only be applied to a limited number of areas, where roads and terrain permit, and even in such a situation is likely to result in some under-estimation of the total population. In 1981 nine visits were made between mid-April and early July, and in 1982 four visits between late April and early June.

Although Galbraith & Furness (1981) showed that the majority of breeding pairs could be identified on a single visit during the optimum period, the fact that different numbers of visits were made in the two years will inevitably affect the validity of comparisons between them to some extent.

Results and discussion

The seven habitat types represented as percentages of the total area were: dry grassland 41.6%, dry grassland with bracken 5.1%, dry grassland with rushes 27.0%, wet grassland

with rushes 9.1%, *Calluna/Eriophorum*/grasses 12.0%, hay meadows 2.2%, and *Calluna*/dry grassland 3.0%. There was no change in habitat composition between the years.

Table 1. Numbers of pairs of waders recorded breeding in the study area in 1981 and 1982

	1981	1982	% reduction	% increase
Oystercatcher	38	16	57.9	
Ringed Plover	3	1	66.0	
Lapwing	129	72	44.2	
Snipe	5	4	20.0	
Curlew	21	11	47.6	
Redshank	16	5	68.8	
Common Sandpiper	10	12		20.0
Total	222	121	45.5	

In 1981 212 pairs of six species (excluding Common Sandpiper) were counted and in 1982 109 pairs (Table 1). Species were non-randomly distributed over the study area (Table 2), with Oystercatcher, Lapwing, Curlew and Redshank favouring certain habitats. In the case of Ringed Plover and Snipe the sample size was too small to give comparable information. The total number of wader territories (all species) was significantly higher on some habitats than on others. The 11.1 km of loch and river surveyed produced Common Sandpiper densities of 0.9 pairs/km in 1981 and 1.3 pairs/km in 1982; Galbraith & Furness (1983) found very similar densities on two rivers in their study area

Dry grassland was used by all species but held the lowest densities of breeding pairs; this finding agrees closely with that of Galbraith & Furness (1983). Surprisingly, the largest overall density of waders, nearly 158 pairs/km², occurred in dry grassland with bracken. This habitat was used for both nesting and feeding, as ringing of chicks showed that the young remained there until fledging. A total of 53 chicks from the 23 broods located in this habitat were ringed and 33 were subsequently recaptured; all those recaptured were in the grassland with bracken habitat. It is possible that the cover of bracken affords the chicks a greater degree of protection from predators than does a more open habitat. Oystercatcher, Lapwing and Redshank all had their highest densities in this habitat and Snipe was the only species not found breeding there. In the remaining habitats all-species densities ranged from 32.5-55.7 pairs/km², but densities of individual species varied more widely (Table 2).

As stressed by Galbraith & Furness (1983), habitat composition is an important aspect to consider when assessing

densities of breeding waders. In this study 40% of the area, mostly in the dry grassland category, was totally unused by breeding or feeding waders. This absence of waders from large areas of apparently suitable habitat has been noted elsewhere (Lister 1964, Fuller 1978 and Jackson & Jackson 1980). In this study, habitats other than dry grassland, though of smaller area, were of greater importance to breeding waders.

Table 2. Densities of breeding waders in relation to habitat 1981, (pairs/km²) and the available area of each habitat, in ha.

	Oyster-catcher	Ringed Plover	Lapwing	Snipe	Curlew	Redshank	Total
Dry Grassland (ha. 211)	4.7	0.5	15.6	0.5	1.9	0.95	24.2
Dry Grassland with Bracken (ha. 26)	38.5	7.7	84.6	—	11.5	15.4	157.7
Dry Grassland with Rushes (ha. 137)	8.0	—	21.9	—	3.6	3.6	32.2
Wet Grassland with Rushes (ha. 46)	2.2	—	41.3	2.2	—	4.3	50.0
<i>Calluna/Eriophorum</i> and Grasses (ha. 61)	6.6	—	29.5	4.9	9.8	4.9	55.7
Hay Meadows (ha. 11)	18.2	—	18.2	—	9.1	—	45.5
<i>Calluna</i> and Dry Grassland (ha. 15)	—	—	33.3	—	13.3	—	46.6
Total area (ha. 507)							
Av. density	7.5	0.6	25.4	1.0	4.1	3.2	41.8
χ^2	39.98		50.08		16.58	17.12	104.28
6							
	P<0.001		P<0.001		P<0.025	P<0.01	P<0.001

The reduction in breeding numbers (excluding Common Sandpiper) between 1981 and 1982 was quite marked (Table 1), with an overall drop of over 45%. Furness (1982) recorded similar reductions in the Yarrow Valley and suggested that they were largely attributable to high mortality during the cold winter of 1981-82, a situation most likely to occur in species which winter locally. In our study area the reduction in breeding numbers was most marked in the coastal plain (74.4%), whilst in inland areas it was only 33.6%. Losses were particularly marked in Oystercatcher and Lapwing, which decreased by 68.7% and 79.2% respectively in coastal areas but only 50.0% and 23.5% inland. Such differences between coastal and inland

losses might be partly due, at least in the case of the Oystercatcher, to the use of different wintering quarters. Swann (1983), using ringing recoveries, has shown that a significant number of Highland coastal breeding Oystercatchers winter locally (in the Moray Firth), whereas inland breeding birds tend to move to the south-west coast and Ireland. Winter mortality in 1981-82 (especially among Oystercatcher and Redshank) was most severe on the east coast of Scotland, particularly on the Moray Firth and Montrose Basin, whilst south and west coast estuaries were relatively unaffected by the severe weather (Clark 1982). It seems likely, therefore, that differential winter mortality may account for the variation between Oystercatchers breeding in coastal and inland sections of the study area.

Table 3. Comparison of breeding densities in East Sutherland (1981) with other studies in Scotland

	Average density in pairs/km ²						
	Oyster-catcher	Ringed Plover	Lapwing	Snipe	Curlew	Redshank	All spp.
East Sutherland	7.5	0.6	25.4	1.0	4.1	3.2	41.8
Glen Fruin (Galbraith and Furness 1983)	4.0		43.0	8.0	3.0	11.0	
Yarrow Valley (Galbraith and Furness 1983)	3.6		17.0	3.2	1.8	2.7	
North Uist Machair (Fuller 1981)	13.0	6.0	32.0	3.0		5.0	64.0
Sutherland Blanket Bog (NCC unpublished)					0.1-0.8		

It is difficult to assess the relative importance of this study area for breeding lowland waders as there are few comparable published data for northern Scotland. And the extent to which breeding wader populations may fluctuate from year to year, as demonstrated in this study and elsewhere (eg Nethersole-Thompson 1979, Furness 1982), makes comparisons between different areas in different seasons of doubtful value. The figures presented in Table 3, while giving some indication of how the situation in east Sutherland compares with certain other parts of Scotland, should consequently be treated with considerable caution. They do suggest, however, that the coastal and valley lowlands of northern Scotland may support quite substantial numbers of breeding waders. Such areas are likely to become increasingly important as agricultural improvement

reduces the availability of suitable habitat elsewhere in Scotland, with consequent reduction in breeding wader populations there (Green 1980).

Acknowledgments

Our thanks to Dr D. R. Langslow and Dr T. M. Reed for helpful comments on earlier drafts of this paper and for supplying unpublished information on Curlew densities. Thanks also to the staff of the Zoology Department, National Museum of Wales, for providing work space and for typing services. We are obliged to Hector Galbraith and Dr R. W. Furness for providing data from their studies and to Bob Swann for his analysis of Highland Oystercatchers.

Summary

A study of breeding lowland waders was made in east Sutherland in 1981 and 1982. Each of the 7 species recorded showed strong preferences for particular habitat types and some habitats held significantly larger total breeding numbers than did others. The highest density occurred in dry grassland with bracken, while the study area as a whole supported densities comparable to those recorded in other predominantly agricultural areas in Scotland. The total breeding population in 1982 was c.45% lower than in 1981; the possible effects of the severe winter of 1981/82 as a contributory factor are discussed.

Postscript In 1983 the study area was re-surveyed and 196 pairs of breeding waders were found, representing approx. 88% of the 1981 total and indicating a good recovery from the low level of 1982. The number of pairs of each species recorded was : Oystercatcher 34, Ringed Plover 2, Lapwing 110, Snipe 7, Curlew 20, Redshank 12 and Common Sandpiper 11.

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The status of the Mute Swan in the Lothians

A. W. BROWN and L. M. BROWN

This paper reports on the numbers and breeding performance of Mute Swans in the Lothians in 1977-82 and compares the current population with estimates made in 1955 and 1961. The total population in 1982 was 55% below the 1961 level, with non-breeding birds showing the greatest decrease.

An apparent decrease since the early 1960's in the number of Mute Swans breeding in the Lothians prompted a census there in 1977 (Vick, unpub.). The following year a national census of the Mute Swan in Britain was organised by the British Trust for Ornithology in conjunction with the Wildfowl Trust (Ogilvie 1981); this was based on a random sample of 10 km squares but in the Lothians full coverage was achieved. Annual censuses have continued in the Lothians and since 1982 have contributed to a wider study of the Mute Swan in East Scotland.

Earlier surveys had taken place in the Lothians in 1953, 1954, 1955 and 1956 (Rawcliffe 1954, 1955 & 1958) and in 1961 (Eltringham 1963), the last three as part of national censuses. In addition, breeding numbers in Edinburgh were surveyed in 1957 and 1958 (Macmillan 1958) and in East Lothian in 1961 (Roy & Skene, unpub.). Although there have been several recent studies of Mute Swans in England (eg Bacon 1980, Coleman & Minton 1980, Hardman & Cooper 1980, Perrins & Ogilvie 1981), the only recent Scottish data are from the Uists (Spray 1981).

Study area and methods

The study area is based on the old county boundaries for West, Mid and East Lothian, enabling comparison with previous work. All known former breeding sites were visited, as were all the main rivers, the Union Canal, lochs, ponds and reservoirs. Observers were asked to locate breeding or territorial pairs during April and to follow their success by noting the number of small cygnets produced, the number of large cygnets in August, and the number reaching the fledging stage in September. It was not possible to collect data on clutch size, hatching dates or number of cygnets hatched, since this would have required too great a commitment from

observers. Counts of non-breeding birds were recorded on dates in early and late April, except in 1977. It is possible that in 1977 the information for West Lothian was incomplete; a search of the available records suggests, however, that only one or two pairs may have been overlooked and that since 1978 coverage has been complete. Although not a direct outcome of this study, information on moulting and wintering flocks has been included for the sake of completeness.

Results

Territorial and breeding birds Table 1 summarises the numbers of breeding pairs and their success in 1955, 1961 and during the study period. (A detailed site list has been deposited in the Waterston Library). Although pairs on enclosed waters tended to remain at their breeding site at least until their cygnets fledged, some pairs on the River Tyne moved down-river within a few weeks of hatching, while others disappeared with their young from a breeding territory only to re-appear at a later date. This highlighted the need for regular visits by observers throughout the breeding season.

Table 1. Summary of Mute Swan breeding data for the Lothians, 1955, 1961 and 1977-82

	1955	1961	1977	1978	1979	1980	1981	1982
No. of territorial pairs		59	20	20	24	26	28	30
No. of breeding pairs	35	52	20	15	20	23	26	26
No. of pairs producing young	23	43	8	8	16	18	17	19
No. of small cygnets	107	176	42	37	76	92	84	102
No. of large cygnets		168	42	34	71	81	76	75
No. of large cygnets/breeding pair			2.1	2.27	3.55	3.52	2.92	2.88
No. of fledged cygnets							72	75
No. of fledged cygnets/breeding pair							2.77	2.88

Notes

1. Figures for 1955 and 1961 are extracted from Rawcliffe (1958) and his unpublished data; some discrepancies were found between the raw data for 1961 and the figures published by Eltringham (1963).
2. No. of breeding pairs refers to pairs that built nests.
3. No. of small cygnets is a minimum figure as hatching success was not determined. In a few instances, especially in 1977, the small cygnets figure was not available, and has been based in the table on large cygnets; it will again reflect a minimum figure.
4. No. of large cygnets is based on mid-August data.

The re-occupation of sites in East Lothian accounted for most of the steady increase in the number of territorial and breeding pairs from 1977 to 1982. The proportion of breeding pairs failing to hatch young ranged from 20-60%, and averaged 34%; failure at this early stage in the breeding cycle appears to be of more significance than the loss of young after hatching. Production, as measured by the number of large cygnets per breeding pair, fluctuated around a mean of 2.87. In 1981 and 1982 an average of 2.82 cygnets fledged per breeding pair, indicating that losses were small in the month prior to fledging.

Table 2. Breeding habitats of Mute Swans in the Lothians, 1955, 1961 and 1977-82

	1955	1961	1977	1978	1979	1980	1981	1982
Canal	11	12	1	1	1	1	1	1
Coastal	0	0	0	0	0	0	1	1
Ponds, lochs and reservoirs	19	21	9	10	15	18	19	21
Rivers	5	26	10	9	8	7	7	7

Notes

1. The information for 1961 was extracted from the original raw data and shows a discrepancy in the number of breeding pairs compared to the figure published by Eltringham (1963).
2. Examination of the raw data for 1955 suggests that the river habitat, in particular the River Tyne, was not thoroughly surveyed.

The numbers of territorial pairs on different types of habitat (Table 2) show a decreasing use of rivers but a steady increase in the occupation of ponds, lochs and reservoirs.

Non-territorial birds Table 3 shows that non-territorial birds comprise up to 46% of the current total of about 115 Mute Swans in the Lothians. The bulk of the non-breeding population is found on the Tyne estuary (Table 4); smaller flocks

Table 3. Mute Swan population in the Lothians, 1955, 1961 and 1978-82

	1955	1961	1978	1979	1980	1981	1982
Non-breeding population	145	132	76-78	47-54	65-70	65-67	51-53
Territorial population	70	117	40	48	50	56	60
Total population	215	249	116-118	95-102	115-120	121-123	111-113

Notes

1. Non-breeding counts refer to April except for 1955 when the data were collected in May/June.
2. The 1961 figures were extracted from the original raw data and show some discrepancy from the published data (Eltringham 1963).
3. The 1955 figure for territorial population refers to breeding pairs only.

Table 4. Early (e) and late (l) April counts of the main non-breeding flocks of Mute Swans in the Lothians 1978-82

	1978		1979		1980		1981		1982	
	e	l	e	l	e	l	e	l	e	l
Musselburgh	3	8	0	0	8	0	0	9	15	21
Tyne Estuary	59	54	45	44	59	63	57	46	19	17
Water of Leith, Leith	9	7	2	5	7	0	0	1	6	4

occur on the River Esk at Musselburgh and on the Water of Leith at Leith or in Leith Docks; and the remainder are widely distributed at sites not used on a regular basis. The Musselburgh flock tends to increase in May and in 1974 held 57 birds; however, since 1978 it has not exceeded 25. Following the severe winter of 1981-82 the non-breeding flock normally present at the Tyne estuary was much reduced. It is impossible to say whether this was due to dispersal to other (unrecorded) sites within the Lothians, to emigration from the Lothians altogether, or to a real drop in numbers. There was no evidence, however, of increased mortality. The slight decrease in the total population in 1979 probably reflected the poor breeding success of the two preceding years (Table 1) and the effects of the cold winter of 1978-79.

Moulting flocks During July and August non-breeding and failed breeding Mute Swans tend to flock when undertaking their annual moult. Sites in East Scotland with large moulting flocks include Loch Leven (c.200 birds), Montrose Basin (c.350), and the Loch of Strathbeg (c.350), with Berwick Harbour (up to 650) holding an honorary Scottish position (C. J. Spray pers. comm.). There are no such sites in the Lothians at present although some failed breeders moult in their territory and a few birds remain at the Tyne Estuary and Linlithgow Loch. From at least 1953 until 1973 the Water of Leith at Leith held a moult flock which peaked at 145 birds in 1957 and 1958 (A. T. Macmillan, C. P. Rawcliffe and G. L. Sandeman, unpub. data). This flock rapidly decreased after 1969 when the lock gate within the docks was closed and the river was no longer tidal. Little is known about the origins of the birds forming the moulting flocks but there have been recoveries in the Lothians of birds ringed during the moult period at Loch Leven (Allison, Newton & Campbell 1974, Edinburgh Ringing Group 1978 and M. A. Ogilvie, pers. comm.) and Montrose Basin (A. J. Clunas, pers. comm.). During August 1980, 253 birds were caught and ringed at Montrose Basin (C. J. Spray, pers. comm.) and 7 of these were subsequently found breeding in the Lothians in 1982. One of the aims of the East Scotland Mute Swan Study is

to obtain further information on the moulting movements of swans and the dispersal of cygnets; extensive colour ringing to facilitate such studies was begun in 1982.

Wintering flocks Many of the breeding birds and their young remain within their territory throughout the winter, departing only when severe weather restricts feeding. Wintering flocks comprise immatures, non-breeding adults, failed breeders, and pairs with young which have vacated breeding sites. The main areas for such flocks in the Lothians have been the Water of Leith at Leith, the River Esk at Musselburgh, and the Tyne Estuary; the last site is currently the most important, holding c.50 birds most winters and a maximum of 108 in December 1963 (R. W. J. Smith, pers. comm.). The Water of Leith held a substantial flock when the river was tidal (eg 177 in January 1958 and January 1963) but the peak figure had dropped to 65 in 1969 and to less than 20 by the winter of 1979-80. Examination of unpublished data (A. T. Macmillan, C. P. Rawcliffe, G. L. Sandeman & R. W. J. Smith) shows no evidence of movement of the Water of Leith flock to Musselburgh or the Tyne Estuary and it must be presumed that the birds now winter outside the Lothians. Since 1973-74 a small flock, rarely exceeding 15 birds, has been recorded at Musselburgh.

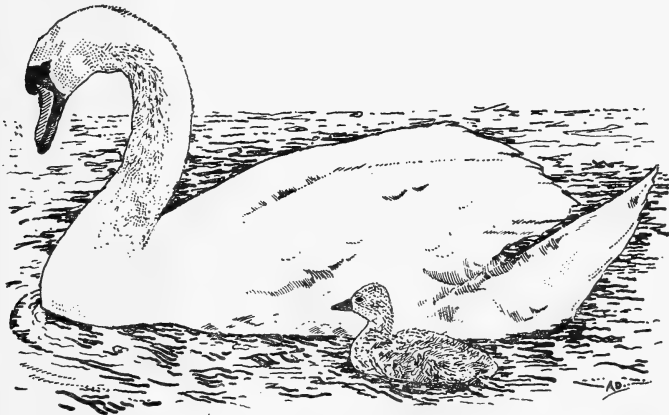
Discussion

In the 1955 census the data on breeding sites and non-breeding birds were collected mainly during May, June and July and are therefore not directly comparable with those obtained in the present study. The Lothians population was then estimated as 215 birds, with pairs holding territory but not breeding apparently included with the non-breeders (Rawcliffe 1958). In 1961, 248 birds were recorded, comprising 51 breeding pairs, 9 territorial birds (4 pairs and 1 single) and 137 non-breeders (Eltringham 1963). These figures suggest a fairly stable or perhaps slightly increasing population at that time. Since the 1960's, however, there has been a very marked decline (Tables 1 & 3), with the total population in 1982 about 55% below the 1961 level. The number of breeding pairs has declined by c.50%, a substantially greater decrease than the 8-15% suggested by Ogilvie (1981) for the British population as a whole since 1955-56. The loss of the non-breeding flock at the Water of Leith, which peaked at 128 birds in April 1958 (A. T. Macmillan, C. P. Rawcliffe & G. L. Sandeman, unpub. data) has also contributed to the overall decline in the population.

It is difficult to determine the reasons for the decline in the Lothians breeding population. Previous surveys indicated

that most pairs nested on or in the vicinity of waterways, namely the Union Canal, Water of Leith and River Tyne (Table 2). The numbers using these waterways have decreased substantially; the Union Canal and Water of Leith, which held up to 15 pairs from the mid-1950's to 1961, now hold only one, and numbers on the River Tyne have dropped from 18 pairs to six. The Water of Leith was severely polluted until recently yet it held far more Mute Swans 20-25 years ago than it does today; the Union Canal now suffers from severe eutrophication and this may have contributed to the decline there. It is known that mink occur extensively on most waterways in the area but their impact, if any, on breeding swans is not known.

Lead poisoning is a cause for concern in some areas of Britain (Nature Conservancy Council 1981) but there is no evidence to indicate that this is a problem in the Lothians. Of 17 dead swans found at the Tyne Estuary from April 1979 to February 1982 and submitted for analysis only 2 had probably lethal lead levels (A. J. Clunas, pers. comm.); 48 blood samples taken from 11 breeding adults and 37 cygnets in the Lothians in 1982 also indicated blood lead levels were low compared to those found on the River Thames (C. J. Spray, pers. comm.).



MUTE SWAN
A. Dowell

The results of the present study suggest that the Mute Swan breeding population in the Lothians may have been significantly affected by recent increases in disturbance and deliberate vandalism, especially along the waterways where public access is encouraged. The majority of successful pairs today are found on ponds in private estates where public access is restricted. Breeding success, as measured by the number of cygnets fledged per breeding pair, is high in the

Lothians: 2.82 young per pair compared with 2.24 in the Oxford area, the highest figure of 4 study areas in England (Bacon 1980) and 1.48 for the isoated Scottish population in the Uists (Spray 1981).

The distribution of the Mute Swan in the Lothians is uneven, with the majority of birds being found in East Lothian throughout the year. Although the number of territorial pairs increased during the study this species must be regarded as an uncommon breeding bird in the Region. While many former breeding sites remain apparently suitable, it seems unlikely, in view of increasing human disturbance, that the population will recover to the level of the late 1950's or early 1960's in the foreseeable future.

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Summary

A census of Mute Swans in the Lothians from 1977-82 has shown a decline of c.50% in the population since 1961 from a total of 249 birds to c.115, including a reduction in territorial pairs from 59 to 30. The main wintering and non-breeding flocks occur at the River Tyne Estuary and since the ending of tidal conditions at Leith there is now no moulting flock in the Lothians. The number of territorial pairs has increased from 20 to 30 in the period 1977-82. The main breeding sites are on freshwater ponds, lochs and reservoirs in areas of restricted public access, while the river and canal nest sites have declined in importance. It seems likely that the bird will remain an uncommon breeding species in the area.

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Birdwatching in Inverness

ROY DENNIS

Twenty-three years ago on a beautiful spring morning I first visited Inverness; my friend Bill Sinclair took me to the top of the Leachkin to view the town nestling round the mouth of the River Ness. To my right the Great Glen fault ran away to Loch Ness, south were moorlands stretching to Strathspey, half left the inner Moray Firth guarded in the distance by Fort George and Chanonry Ness while to the east was the Black Isle reached by the Kessock ferry at the narrows of the Beaully Firth. The town has grown, the ferry-boat has gone and a new bridge spans the narrows but the birding is still as good as on that first day when I watched the Dippers in the river below the Castle.

Inverness is a great place for birdwatching and I mean within the town boundary rather than just as a base for exploring the Highlands. Starting in the town centre, bird life is rather slummy—Herring Gulls raid refuse bags in the early morning streets and roosting Starlings upset the townsfolk with their droppings in winter. There are many small birds in the green spaces and Swifts overhead in summer, but a birdwatcher really feels first at home on the banks of the Ness. In winter and spring Goldeneye and Goosanders swim upriver and the

latter can be seen to perfection, even under water, below the Greig Street pedestrian bridge. Following the river downstream to the Black Bridge, we come to a favourite haunt of Iceland Gull, at least one usually winters among the local gulls and Mallards.

Inverness harbour can hold small numbers of Tufted Duck, Goldeneye and Scaup; Goosanders are frequent and gulls are plentiful. In times of plenty the fishing boats off-load their catches of sprats and Kessock herring in the outer harbour, surrounded by Common, Great Black-backed, Herring and Black-headed Gulls. Iceland and Glaucous Gulls have been seen there and for many winters an Iceland Gull frequented the sewage-pipe outfall. At Thornbush the river meets the small Inverness estuary; in mid-river the channel markers often sport roosting Cormorants. A small shingle spit sticks out at the mouth of the river and it is possible to walk to the end, where another outfall attracts a regular and easily watched flock of Goldeneye; occasionally we've seen a Smew at this point. The spit shelters a small bay used by roosting Tufted Ducks, possibly up to 400, and sometimes Scaup and Pochard and in severe weather, Coot. A short distance west is Kessock ferry slipway, once a regular birdwatching place for me as I sat in the queue waiting my turn on the car ferry.

The ferry carpark is good for birdwatching; to the west is the Beaully Firth with its flocks of wildfowl and waders. In winter, especially if it's a good year for fish, the firth is home to large numbers of fish-eating birds; Goosanders may reach a peak of 1500, looking their best cruising amongst the iceflows in really severe winters. Red-breasted Mergansers are common and have numbered over 2000; most of them fly out through the narrows in the evening and back after dawn. Cormorants are a common sight, flying into the firth in squadrons and reaching totals of 500 or more. Wigeon, Mallard, Teal and Shelduck are all common and one winter a drake Black Duck from North America commuted between North and South Kessock, thus putting itself in both the Ross-shire and Inverness-shire bird lists!

The tidal current at the Kessock Narrows creates a massive upwelling which is a favoured feeding place for gulls, at times the air is white while each evening many more flight into the firth to roost. Some winters large numbers of Guillemots fish in the firth and their growling calls are easily heard from the shore. In spring, terns fly in and even an occasional fishing Osprey may pass by. I've often watched Sparrowhawks crossing to the Black Isle after grabbing a passerine in Inverness, chased all the way back by Herring Gulls.



PLATE 1. Oystercatcher at nest with chick and chipping eggs. First in the 1983 Photographic Competition.

P. J. Newman

PLATE 2. Grey Herons at the nest. Second in the 1983 Photographic Competition.

A. D. Johnson



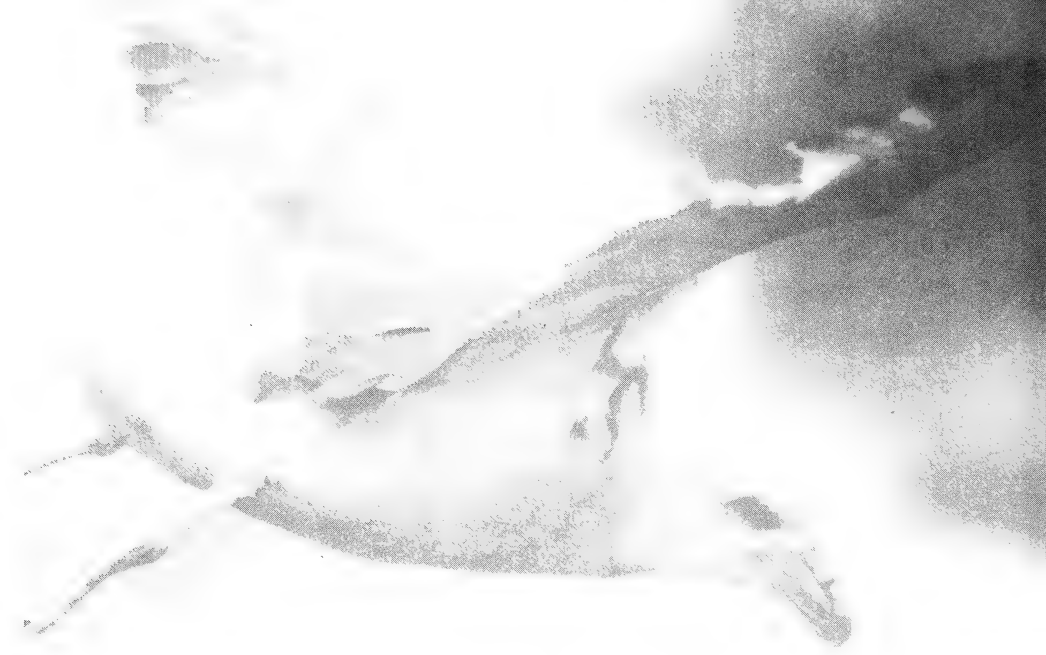


PLATE 3. Fulmar in Flight. Third in the 1983 Photographic Competition.

Fiona Burton

PLATE 4. Lapwing uncovering brood patches prior to incubating.
(Plates 4-7 were also competition entries).

P. J. Newman





PLATE 5. Arctic Tern (a) in flight.
(b) at the nest.

P. J. Newman





PLATE 6. Female Wheatear at nest entrance.

P. J. Newman

PLATE 7. Incubating Black-headed Gull.

A. D. Johnson



Rooks, Jackdaws and crows regularly fly across the narrows and soaring Buzzards can be seen over Ord Hill. In summer, the firth is relatively quiet, though a flock of Canada Geese from Yorkshire may pass to moult in the Beaully Firth. But soon the waders start to return—Oystercatcher, Redshank, Lapwing, Turnstone and Bar-tailed Godwit are frequent on the flats, with a small roost just below the car park. Sandwich Terns, with their young, from the East Coast fish the narrows in late summer.

Strong north-east winds with poor visibility and rain is a good combination for birdwatching at Kessock. In these conditions sea birds find themselves at the apex of the Moray Firth; its arms stretching to Peterhead in the east and Wick in the north shepherding them inland. Kittiwakes come flashing by in tight flocks, only to find themselves five miles further on at the end of the Beaully Firth; after whirling in circles they attempt to fly back out at sea level. In these conditions skuas sometimes occur in outstanding numbers; my best day was on 27th September, 1979, when 186 Pomarine, 1 Long-tailed, 13 Arctic and 5 Great Skuas passed by in 2 hours—a truly memorable sight. Gannets, Fulmars, auks, shearwaters and divers are caught in the same way and one never quite knows what will fly by next.

Leaving the ferry it is possible to follow the sea-wall south to the Caledonian Canal and so back to town a different route; the sea-wall is thronged with bramble and rosehips and so a good place for finches and buntings, and also local specialities like Goldfinch and Waxwing. Two pools inside the canal sometimes hold a few waders, including Green Sandpiper and Ruff, and on one SOC outing a Citrine Wagtail!

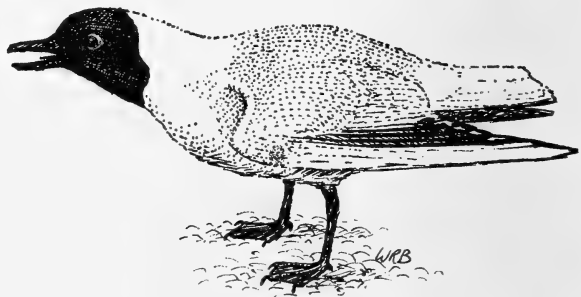
From the harbour you can also bear right and follow the east bank past the old clock tower and through the oil storage tanks to the mouth of the river. Unfortunately, the original ring road has become rather scruffy but it's still worth a visit. There's an obvious place to park and with the new bridge above you, it's possible to get fine views of wildfowl and waders. This is, at present, the best outfall for ducks and from October to April there's a regular flock of Goldeneye, usually several hundred plus, and also Tufted Ducks in similar numbers. Well worth a scan with the 'scope from the car as the duck flocks may contain Scaup, Pochard and Smew. Teal, Wigeon and Mallard frequent this bay and at low tide feed on the exposed mud flats. Mute Swans moult here along with one or two summering Whoopers. This is a good place for waders, Redshank, Oystercatcher, Lapwing, Bar-tailed Godwit, Curlew and Dunlin; the odd Black-tailed Godwit turns up—not to mention a Buff-breasted Sandpiper in 1975. Black-headed Gulls

gather here in considerable numbers; I haven't yet found my much searched for Mediterranean Gull (a real gap in my life-list) but the odd Little Gull has been recorded.

In the past, the ring road led to the Longman but now the car has to be taken into the Longman estate and then out on to the main road south. A pedestrian can walk up to the bridge; straight across for Longman Bay but why not walk over to the Black Isle? The inland side gives superb views up the firth to the mountains while the east pathway looks down the Black Isle coast towards Fort George. Keep an eye on the waters below as Bottle-nosed Dolphins and Porpoises are not infrequent.

Alas, the Longman has lost much of its former glory below the refuse of man's present day society—tin-cans, tyres and waste paper rot below top soil where once Shelduck and sea trout searched for food. It's still worth a look from the embankment of the new road—a massive feeding flock of large gulls with crows, Starlings and Sparrows rising each time the refuse carts disgorge their loads. Glaucous and Iceland Gulls are occasionally seen but our old white Herring Gull which foxed many a birdwatcher has gone after about 19 years of residence. Those areas of the dump which have grassed over and grown trees harbour a variety of birds—Linnet, Partridge, Sedge Warbler and Short-eared Owl; in fact, one might find anything. Longman Point has a moulting flock of Goosanders in summer but I'll always remember the more dramatic sight of over a thousand Gannets there, plunging for herring in the great fishery of 1966.

The bay itself still holds up to a thousand Wigeon, with reasonable numbers of Teal, Mallard and Shelduck, but the Pintail flock has dwindled to small numbers. Rare ducks have included American Wigeon and Green-winged Teal; it's also a great place to see Peregrine Falcon hunting. Redshank, Lapwing, Oystercatcher and Curlew still feed here and roost on



BLACK-HEADED GULL
W. R. Brackenridge

the last remnants of saltings which were once a great attraction to birds and birdwatchers.

Turning back into town, it's worth a walk up river past the Castle to the Ness Islands where Dippers nest and warblers sing. Hirundines and Swifts flick over the river in summer and occasional Kingfisher and Smew have been seen in winter. On the way back Common Gulls and wagtails run across the grass of the playing fields and if one has never seen a Waxwing then a car drive through the older parts of the town with their cotoneaster hedges is worthwhile in winter. So give Inverness a try, you may find it very rewarding and there are always the SOC evenings on the second Tuesday of the month, September to April.

*Roy Dennis, Landberg, North Kessock,
Inverness, IV1 1XD*

Numbers and spacing of summering Snow Buntings and snow cover in the Cairngorms

T. P. MILSOM and A. WATSON

Introduction

The Snow Buntings that summer in the Cairngorms are of special interest because they are rare and at the edge of the species' breeding range. Their numbers are unstable and little is known about the causes of the fluctuations (Nethersole-Thompson 1966). One popular suggestion is that snow on the hills in late spring attracts migrating Snow Buntings to settle, so that the greatest numbers are likely to occur in years with most snow cover. Accordingly, we tested for a positive correlation between the number of cock Snow Buntings and the extent of snow cover at the beginning of June over the years 1971-1977. Counts of hens over the same period are also reported, and changes in the spacing behaviour of cocks in relation to their density are described.

Study area and methods

The birds were studied on one main area which covered one of the principal breeding grounds in the Cairngorms, and on an adjacent area where breeding birds had been recorded only irregularly. Cocks were counted each year during visits between mid May when the birds settled, and mid July when

they usually stopped singing. They were generally found by hearing their songs, and their positions were then plotted on 1:10,000 scale maps, together with the routes of their song flights. Differences in their plumage were sketched to facilitate individual recognition. This was necessary to avoid over-estimating numbers, because a given cock sometimes used rocks several hundred metres apart as song posts. Hens were found by searching near the cocks, especially when the adults were feeding young at the nest.

Snow cover on the main area was recorded at the beginning of June each year, by estimating visually the proportion of ground covered by deep snow.

The Spearman rank test was used for calculating the correlation coefficients, which were corrected for ties.

Results

Cocks were present on the main area every year, their numbers varying considerably between years (Table 1). They occurred on the irregular area only when numbers were high on the main area, as in 1973 and 1974, or when deep snow on the main area was very extensive, as in 1977. Those cocks present on the irregular area in 1974 and 1977 were recorded on single dates only.

Table 1. Numbers of adult Snow Buntings in late spring, and snow cover

Year	Main area, 250 ha		Irregular area, 700 ha		% of main area covered by snow at beginning of June
	♂	♀	♂	♀	
1971	4	2	0	0	20
1972	7 ^a	5	0	0	75
1973	8	4	1	1	55
1974	9	3	1 ^b	0	35
1975	3	3	0	0	80
1976	2	1	0	0	30
1977	3	2	2 ^b	0	98

^a—one of these cocks invaded another's nest area, but did not appear to hold a territory in the main area

^b—recorded on one day only

The number of hens seen also varied much between years. Hens may have been overlooked occasionally because of their less conspicuous behaviour, so the figures must be regarded as minima. The increase of the cock population between 1971 and 1974 was not accompanied by a similar rise in the number of hens seen, so that a high proportion of the cocks apparently had no mate, notably in 1973 and 1974. However, this effect was partially offset in 1971 and 1972, in each of

which an unmated cock paired with a previously mated hen for a second brood. Despite the apparent shortage of hens, one instance of bigamy was noted in 1972.

There is a suggestion of a negative relationship between the number of cocks and snow cover on the main site, but the two years with least snow had relatively few birds, so the correlation overall was very poor ($r_s = -0.116$, not significant). However, the main conclusion from this comparison is that the idea of a positive correlation between the number of cocks and snow cover in late spring can be rejected.

Cocks patrolled areas of hill ground, usually singing from prominent rocks or groups of rocks. Song fighting was observed infrequently. Some cocks flew up to 500m to engage in song duels close to neighbouring cocks. Such forays made it difficult to determine the extent of cocks' defended areas or territories, so we use the term 'song range' instead.

The smallest song range during the study covered 3 ha and the biggest about 40 ha. However, there were not enough data to study differences in average range size between years.

Cocks used some areas of rocks much more frequently than others. Out of a total of 201 songs registered during the whole study, the numbers on the ten preferred areas were as follows: A(39), B(17), C(20), D(11), E(12), F(26), G(10), H(27), I(17), J(7).

Data on the cocks' usage of these preferred areas showed changes in their spacing between years. Cocks were seen singing on areas A, B and C in all seven years, on F, G and I in six, on D, E and H in five, and on J in one year only. Each area held no more than one cock in any year, but some cocks used more than one area during the same breeding season. Of the nine areas used regularly (A to I), at least seven were occupied in each year, except in 1976 when numbers were very low. In that year, the cocks' usage of the song areas was very different, five of the regular areas were left vacant, and one cock selected area J which was not used in any other year of the study. In 1974, when numbers were highest, nine areas of rocks held a different cock each, whereas in 1975, 1976 and 1977, when numbers were lowest, a high proportion of the cocks used more than one of these preferred areas. We do not give a map of the spacing, for the sake of security for this rare British breeder, but Table 2 shows the distribution of usage of the areas in different years. The median number of areas occupied per cock was inversely related to the number of cocks; thus the fewer the cocks, the more areas occupied per cock ($r_s = -0.878$, one-tailed $P < 0.05$).

Table 2. Usage of preferred areas of rocks in the main area by singing cock Snow Buntings

Year	Number of areas occupied by individual cocks				Total number of areas used per year	Median number of areas per cock
	1	2	3	4		
1971	2	0	2	0	8	2.0
1972	4	2	0	0	8	1.0
1973	7	1	0	0	9	1.0
1974	9	0	0	0	9	1.0
1975	1	0	0	2	9	4.0
1976	1	0	0	1	5	2.5
1977	0	2	1	0	7	2.0

This was confirmed by observations on cocks that were individually recognisable from detailed drawings of their distinctive plumage (the distinctive characters remained in different years), and three cocks so identified were seen in the main study area for more than one breeding season. Their song ranges varied considerably in size between years. One sang from areas B, C and I in 1971 and displayed over more than 30 ha, whereas in the following year it ranged to sing over less than 10 ha around A. Another cock occupied C and E in 1972 and patrolled at least 20 ha, but in 1973 it remained in 6 ha around C, where it was also seen in 1974. A third cock sang from F, G and H in 1971, but only on area F in 1972, where it stayed for three breeding seasons.

Discussion

There were three possible distributions in years of low numbers: (a) all preferred areas occupied, (b) only a small proportion occupied, the number of areas being equal to the number of cocks, (c) an intermediate situation. Possibility (c) applied here, and given that certain areas of rocks were favoured more than others, one can explore the distribution further. In years with low numbers, each cock tended to use one of the most favoured areas, but also to use other areas each of which held a cock in years of high numbers. This raises the question whether areas not used in years of low numbers are in some way inadequate, and whether this partly explains the low numbers. Alternatively, the numbers may be determined by something else, and if so, cocks in years of low numbers may use more areas of rock because of the lack of competition, but there may be no need for them to use all of the areas.

Acknowledgments

We thank C. D. Owen and A. Watson senior for assistance in the field, and J. Richardson, A. Tewnton and A. Watson senior for supplying unpublished observations. We are also grateful to D. Morris and D. Holland of the Nature Conservancy Council for their co-operation.

Summary

Snow Buntings summering in an area in the Cairngorms were counted over seven years from 1971 to 1977. Numbers of both sexes varied considerably between years although cocks were generally more numerous than hens. The idea of a positive correlation between the number of cocks and snow cover in late spring was tested and rejected. Cocks sang from some areas of rocks much more frequently than others. Their usage of these preferred areas varied between years, in that the median number of areas occupied per cock was inversely correlated with the number of cocks.

References

NETHERSOLE-THOMPSON, D. 1966. *The Snow Bunting*. Edinburgh and London.

T. P. Milsom, 5 Witton Hill, off Jacklyn's Lane,
Alresford, Hampshire, SO24 9PT
Dr Adam Watson, Institute of Terrestrial Ecology,
Banchory, Kincardineshire, AB3 4BY

Short Notes

Greenland White-fronted Goose census

The Greenland race of White-fronted Goose breeds exclusively in west Greenland, and winters in Ireland, Scotland and at one site in Wales. Because of its scattered and remote winter distribution, no complete census has ever been undertaken throughout the winter range. Numbers have fallen since the 1950's, and as part of a larger project supported by the SOC, WWF and other conservation bodies, a complete British census was undertaken during winter 1982/83. Simultaneous counts were undertaken in Ireland but have not yet been published.

The British total in 1982/83 was 7,200-7,300 birds. This is in line with the estimate for the mid-1970's British population of 6,630-7,590. However, whilst there appears to have been no major decline in the British population during the last decade, it is known that numbers in Ireland have fallen dramatically, with many traditional haunts now deserted. It thus seems likely that the world population may still be falling.

One of the most worrying aspects of the census was the very low number of young found. On the basis of the autumn figures, there were only 971 young in 329 families in Britain. When it is considered that this may be the reproductive output of up to half the world population of this race, these figures must give cause for concern. Although the Greenland White-front is now protected throughout Scotland, and for the next two winters in Ireland, there is need to consider further conservation measures on the wintering grounds and protection of key sites on the breeding grounds in Greenland.

The census will be continued on an annual basis to monitor the Scottish population and The Greenland White-fronted Goose Study (at School of Biological Sciences, University College of Wales, Aberystwyth, Dyfed) would welcome help from anyone in a position to count specific White-front sites.

DAVID A. STROUD

Work on Golden Eagle and Peregrine in north-east Scotland in 1983

This is the third annual summary by the North-East Scotland Raptor Study Group, and covers the same area as described in the 1982 summary (*Scottish Birds* 12, p. 159). For each species all known sites were visited and likely areas searched, and it is thought that all except one, at most two, breeding pairs of each species were located.

Note that the 1982 summary requires amending. Eagle: one young bird was raised in a range given as having only one adult present. Peregrine: "eggs probably robbed" was given for one pair which in fact reared 3 young at a new site.

Golden Eagle

A travelling grant provided by the SOC enabled one member of the Group to visit, during February and March, four ranges about which some doubt still remained at the end of the 1982 season. In two of these ranges, breeding behaviour was confirmed which was satisfying. In the other two ranges, pairs thought to have been present in 1982 were not located. However, a new pair was found in Angus, using a tree eyrie, the first time such a site has been recorded in that county. Unfortunately this pair failed after a muir burn came to within 25 m of the nest. In addition there was a strong possibility of a second new pair.

In all at least 26 pairs were located, of which 10, probably 12, pairs nested successfully, a poorer result than average. Bad weather was thought to be the main reason for the failures, rather than disturbance or interference. The autumn of 1982 was very wet, and then the cold, late wet spring proved the last straw in many cases. In spite of this, the number of young raised was about average, thanks to two young being raised by several pairs. Of interest is the pair with the highest-altitude range in the area. Not only did they raise two chicks, but these young were among the first to fly. In another traditional range a young bird was raised for the first time in 17 years.

1983 will be remembered as the year of excessive nest building, and for the high number of apparently non-breeding pairs. In many ranges, one or two really well built up nests were found in addition to the nest used. (By contrast, in 1982 it was rare to find a range with more than one built up nest). In 6 ranges it seemed that breeding just did not occur; 3 of these had well built up and lined but empty nests, while in the other 3 nests were at most only slightly touched up. Did these 6 pairs really not breed or was our checking inadequate? The question of non-breeding pairs is a vexed one.

In each of two old traditional ranges a pair of immatures was again present. In one of the ranges two new but very rudimentary eyries were found, and it is hoped that this pair at least will be breeding soon. The other pair still has a lot to learn. On one occasion the female was seen being chased by a roe deer, while on another, the immature King of Birds had his tail tweaked by a crow!

No eaglets were taken under licence for falconry purposes, and there

was no evidence that any eaglets had been removed illegally. Six young in 4 nests were ringed. For the first time in Britain, eaglets in two nests were wing tagged as part of a long term study of eagles being carried out by the Nature Conservancy Council. If you should see or hear of an eagle with coloured discs on its wings please contact Dr Jeff Watson, NCC, 12 Hope Terrace, Edinburgh EH9 2AS, and pass on as full details as possible.

Table Breeding in 1983

All rows except the last give no. of ranges/sites, not of eggs or young

	Golden Eagle	Peregrine
Home ranges/sites with bird(s) present	41*	70
Adult pairs	26-27	64
Eggs laid (probably laid)	20†(0/)	46(6)
Eggs failed to hatch (eggs or small young disappeared naturally)	8†(0)	17(6)
Fledged young seen (large young seen but fledging not proved)	10(2)	20(3)
No. of young fledged (probably fledged)	14(3)	39-41 at least x(2)

*Birds were seen in another 4 ranges but were considered or known to have come from an adjacent range. The smaller no. of ranges with birds present in 1983 than in 1982 is a reflection of the less intensive coverage than in the 1982 all-Scotland survey.

†One pair re-laid: their first clutch is not included in these totals.

/See text.

xExcluding one removed under licence for falconry.

As usual Red Grouse and mountain hares were the prey items most often recorded, with Ptarmigan and rabbits being taken by a few pairs as well. Bits of red deer calf were found at two eyries, and a water vole at another. Pellets were again collected and sent to the NCC.

Peregrine

1983 proved to be a very bad year, largely because of the cold, wet, late spring. Many pairs failed. Results were markedly worse in Grampian (only 23 out of 31 pairs laid or probably laid, and only 6 pairs reared young) than in east Tayside (24 out of 28 pairs laid, and 14 pairs reared young). Even the coastal pairs did badly. Two out of three pairs on the Grampian coast probably laid, and one inaccessible nest on the Angus coast was occupied, but all failed.

Although bad weather accounted for most failures, there were some cases of interference. In Tayside, there were signs of one bird having been shot near the nest, and another failure was at a site where rocks were dropped into the nest. A group of four closely-adjacent pairs in Tayside failed probably because of robbing, and two more in the study area were in this category. At one northern site which had large young over two weeks old, the young were killed and eaten, probably by a wild cat. One young bird was removed under licence, for falconry.

The usual food items of Red Grouse and domestic pigeons were commonly found. One glen site in Tayside had a Purple Sandpiper, a Turnstone, and a Red Grouse chick less than a week old. A surprising prey item at a Grampian nest was a hen Merlin, and a Crow was also recorded as prey in that area. Lower-altitude sites in Tayside had two Swifts, two Redshanks, a Great Spotted Woodpecker, and a Greenfinch.

The number of pairs is continuing to increase slowly, with four new pairs being found and an adult female occupying a new lowland site.

This note is presented by two of us on behalf of the Group.

SANDY PAYNE, ADAM WATSON

Storm Petrel attacking Great Skua

The practice of a group of small birds "mobbing" a predatory bird is well known, but it was not until August 1983 that I had heard of a Storm Petrel attacking a Great Skua. During a journey from Sule Skerry to Scrabster, in very rough weather, Storm Petrels were much more numerous than is normal for that time of year. It was with some surprise that I noticed a solitary Storm Petrel making a very determined attack on a Great Skua, which was sitting on the sea. Several other Storm Petrels flew past, making no attempt to become involved, but the one petrel was so persistent that the Great Skua was eventually forced to take off. I pointed this behaviour out to one of the fishermen present and he told me that he had seen this happen many times in rough seas.

A. C. BLACKBURN

Melanic Black Guillemot in Shetland

A Black Guillemot (Tystie) in summer plumage but lacking any white on the wings, regularly fed in Lerwick harbour, Shetland, during spring 1982. The plumage lacked the metallic sheen of typical summer adults, being a matt chocolate-brown colour. Upper and under wing coverts were dark brown, with the only paler area being the greyish-brown shade to the under-side of the remiges. The legs and gape were bright red, suggesting that this individual was an adult rather than a first-year bird.

Following encounters with other Tysties on the feeding areas, the melanic bird was usually driven-off or directly attacked. The white wing patches of Tysties probably have an important signalling function during communal displays, pairing, and in determination of social status (Asbirk 1979). It is likely that the absence of these patches rendered this bird a subordinate individual, and may well have precluded it from any breeding activities, as extensive surveys failed to locate it at any breeding site.

There appear to be only two previous records of melanic Tysties in Britain: an all-dark bird with dark-greivish head (moulting?) seen near Fetlar, Shetland on 20th August 1975 (R. J. Tulloch, *pers. comm.*), and a sighting in the Sound of Harris, Outer Hebrides in summer 1894 (in Salomonsen 1944). Salomonsen (1941, 1944) gives details of 28 records of melanics known to him, the bulk, 17 individuals, coming from West Greenland.

The studies of Tysties in Shetland are commissioned and funded by the Shetland Oil Terminal Environmental Advisory Group.

References

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P. J. EWINS

Reviews

Representations have been received from Dr P. O'Donald about the review of his book "The Arctic Skua" which we published at SB 12: 230. We have discussed these with the reviewer, Dr R. W. Furness, and jointly with him we make the following statement :

It has been represented that the final sentence of the review, and in particular the words "the author's habit of cloaking errors by deriving statistics to five or six significant figures", might be read as suggesting that the statistical results had been deliberately presented in a manner designed to mislead the reader as to their reliability, and consequently as casting doubts upon the author's integrity as a statistician and as a scientist. The reviewer wishes to make it clear that this was in no sense his intention, and we associate ourselves with the reviewer in expressing to the author our regret that any such adverse impression could have been created by the words used in this part of the review.

Eds.

Darwin's Finches by David Lack, with introduction and notes by Laurene M. Ratcliffe and Peter T. Boag; Cambridge University Press, Cambridge, 1983; 208 + Liii pp; 4 colour plates, 4 monochrome plates, and 27 text figures; £19.50 (boards), £7.95 (softback).

Darwin's Finches are closely related but ecologically diverse birds living in the Galapagos Islands. The major part of this book is a facsimile of the original text of 1947. At that time it was not widely accepted that the differences between related species were the result of natural selection or that competition between species was important in determining their evolution and co-existence. Lack's book not only promoted these views but established evolutionary ecology as an important biological discipline. Because it inspired so much more work, the 1947 text is now seriously out-of-date. The notes and list of recent references in this re-issue present modern knowledge clearly but they are so brief that the interested reader will wish to use them merely as a guide to modern ideas and literature. It is a pity that the opportunity was not taken to discuss modern ideas more fully, which would have made the book more useful to the general reader. Nonetheless, this is a useful publication. Unfortunately the price is such as to ensure poor sales in Britain.

J. J. D. GREENWOOD

The Return of the Sea Eagle by John A. Love; Cambridge University Press, Cambridge 1983; 227 pp.; 26 half-tones; 69 line drgs; 14 tables; £15.00.

John Love has written a book of high scholarship and no little charm. 'The Return of the Sea Eagle' is both exceptionally readable and intimately researched. Chapters 1-4 provide background information on the species throughout its range, and on its close relatives. Food habits are dealt with in Chapter 5, along with a detailed assessment of possible depredations by Sea Eagles on livestock. Such allegations seem to be largely unfounded. Nevertheless there is clear evidence that extermination of Sea Eagles in Britain can be attributed to human persecution. The historical perspective throughout the book and particularly in Chapter 6 is almost frightening in its thoroughness. It is a lesson to many who would dismiss as irrelevant all writings on birds pre-1900. The final chapters 7-10 give a detailed account of the background to, and instigation

of, the reintroduction project undertaken by NCC on Rhum since 1975. In 20 or 30 years time, when a thriving population of Sea Eagles may again grace the West Highland shores, this book will serve as a fitting reminder of the early stages of this pioneer project.

A few of the black and white photographs have been reproduced poorly. The line drawings by the author are delightful. Cambridge University Press are to be complimented on a belatedly more sensible pricing policy.

JEFF WATSON

Weather and Bird Behaviour by Norman Elkins; T. & A. D. Poyser, 1983; 239 pp; line illustrations by Crispin Fisher; £12.60.

The past ten or more years have brought home to most of us the effects of weather on birds, having experienced periods of record cold, wet, wind and drought. In the same period censusing and atlassing of bird populations have become better refined. Meteorological and ornithological data have now been combined by the author to produce this fascinating book. Basic information on weather patterns and their effects are described generally and in detail, as are aspects of flight, feeding and breeding. Migration and vagrancy are discussed and explained in relation to varying weather conditions, and there are chapters on extreme weather and sea-birds.

Errors are very few and not obvious. The Holarctic Pectoral Sandpiper is regarded as purely Nearctic and recent work on the flight energetics of Canadian passerines is not mentioned. Some chapters are better argued than others. Students of migration will find the chapter on migrational drift and displacement particularly interesting. That on seabirds is somewhat lacking, probably due to the fact that the feeding ecology of many seabirds is imperfectly known outside of the breeding season, as is the effect of gastro-intestinal parasites which are probably the underlying reason for "wrecks" in individuals of species subject to that phenomenon.

The book has a high Scottish content and must be regarded as the best work now available on what is a highly complex subject.

BERNARD ZONFRILLO

PAPERS OF SCOTTISH INTEREST Articles and reports on birds in Scotland, mainly on status and distribution, are listed here. Some biological studies, e.g. behavioural, are excluded, as are references from the widely available journals **British Birds**, **Bird Study**, **Ringing and Migration**, and **Ibis**. Most items listed are available for reference in the Waterston Library. The librarian welcomes copies of work on any aspect of ornithology.

Perthshire Bird Report for 1982. (14 pp). E. D. Cameron (ed) 1983. £1.00 post free from Perth Museum and Art Gallery, George St, Perth PH1 5LB.

Problems of censusing Long-tailed Tits by the Mapping Method. T. W. Dougall & P. W. North 1983. *The Ring* 10: 88-97. A study in north-east Fife.

Moulting Elders in eastern Scotland. L. H. Campbell & H. Milne 1983. *Wildfowl* 34: 105-107.

Numbers, age and sex of Greylag and Pink-footed Geese shot at Loch Leven National Nature Reserve, 1966-1981. G. Wright & H. Boyd. *Wildfowl* 34: 163-167.

Satellite view of bird migration between Iceland and Scotland. W. R. P. Bourne 1983. *Sea Swallow* 32: 80-82.

The association of breeding Wrens and areas of timber brushings. T. Dougall 1983. *Quarterly J. Forestry* 77: 41-43.

Dispersal of Sparrowhawks between birthplace and breeding place. I. Newton & M. Marquiss 1983. *J. Anim. Ecol.* 52: 463-477.

Age structure and survival in a Sparrowhawk population. I. Newton, M. Marquiss & P. Rothery 1983. *J. Anim. Ecol.* 52: 635-645.

The role of nest-site availability and territorial behaviour in limiting the breeding density of Kestrels. A. Village 1983. *J. Anim. Ecol.* 52: 635-645.

The last three papers are all studies in Scotland.

Shetland Bird Report for 1982. (64 pp). £1.95 post free from SOC Bird Bookshop. Includes articles on bird ringing in Shetland, on Arctic Terns breeding in 1982, and on the Kittiwake in Shetland in 1981.

Borders Bird Report for 1982. (36 pp). £1.10 post free from SOC Bird Bookshop.

Arran Bird Report for 1982. (10 pp). This is the third annual report in this series.

Dungavel Area Bird Report for 1981/82. (19 pp). R. Morton & I. English. A species list for an inland area of Lanarkshire.

W. HARPER

Notices

Great Skuas in the Western Isles Information is sought on sightings of the Great Skua (or "Bonxie") in the Western Isles; both past and present distribution is wanted and as the survey is intended to run for a few years regular reports for the same area would be particularly helpful. Any information on locality, numbers, whether nesting or not, and (if possible) approx. date noted will be welcome. It would also be useful to note whether the birds are nesting in the vicinity of a gull colony etc. or if there is any **direct evidence** of them attacking lambs in the same area. Information should be sent **Dr Frank Rennie, 25 South Galson, Isle of Lewis.**

1984 Goosander Survey In association with the Nature Conservancy Council and the Zoology Department of the University of Durham, a survey of the Goosander on selected Scottish river systems is being organised. Additional water courses may be included subject to observer availability. Surveys will be undertaken during the periods 17th to 31st March and 8th to 22nd July, the first being to provide an estimate of the number of breeding pairs, and the second to estimate the number and size of broods present. Further information and details from: **Steven Carter, Zoology Dept., University of Durham, South Road, Durham DH1 3LE.**

Night Herons In August 1936 Edinburgh Zoo received six Night Herons from Canada; these first bred in 1938 and their descendants have done so ever since. In 1950 and 1951 some birds from the colony escaped and others were released. Although the activities of those continuing to breed within the Zoo have been regularly recorded, little is known of the movements and fate of those leaving the grounds. To help obtain such information a programme of colour ringing has been begun; Zoo birds have one red ring on the right leg and three different coloured rings on the left. Anyone seeing a ringed Night Heron is asked to send full details to **Dr M. F. Stevenson (Night Herons), Edinburgh Zoo, Murrayfield, Edinburgh EH12 6TS.** Any other records of observations in the region, past and present, are also requested.

The Sutherland Wildlife Research Fund was established in 1983 with the royalties from the sale of *Sutherland Birds*, with the aim of promoting wildlife research in Sutherland District. Applications for financial assistance for suitable projects should be submitted to **Stewart Angus, Proncy Farm Cottage, Dornoch, Sutherland IV25 3NA.**

Colour-ringed Rock Pipits Since 1982 Rock Pipits have been individually colour-ringed on the Isle of May, to help investigate movements and survival; up to 3 colour + BTO rings are used. Reports of sightings away from the isle will be welcome. Please send details of ring combination, locality and date to **M. W. Fraser, The Manse, Dirleton, East Lothian EH39 5EL.**

The Scottish Ornithologists' Club

SUMMER EXCURSIONS

Details of summer excursions arranged by branches are published on a separate sheet enclosed with this journal.

LOCAL RECORDER

WEST LOTHIAN, FORTH ISLANDS (except May) MIDLOTHIAN. Please note the following change of address: A. W. & L. M. Brown have moved to 232 Rullion Road, Penicuik, Midlothian, EH26 9JL.

BRANCH SECRETARY

Please note that the Thurso Branch Secretary is now: E. W. E. Maughan, Burnside, Harbour Road, Reay, Thurso, Caithness.

WILDFOWL COUNT REGIONAL ORGANISERS

A revised list is given following page 32; please note that it includes several changes.

SOC ANNUAL CONFERENCE - 1984

The next conference and AGM will be held in the Marine Hotel, North Berwick, East Lothian, from 2-4 November 1984. Details will be published in *Scottish Birds*; bookings can only be accepted on the official booking form which will be sent to all members with the autumn journal.

1983 RAFFLE

The draw for the annual raffle took place after dinner at the conference on 5 November 1983. This year the net profit was £771, just £31 less than last year. With the arrangement, started last year, of sending a book to every club member we have to print 30,000 tickets. The printing bill was however slightly smaller than last year and we are again greatly indebted to a benefactor for helping to reduce its actual cost. A total of £1101 worth of tickets were sold but costs, including printing and the £50 first prize, amounted to £330. We are very grateful to all who bought and sold tickets and especially to those who kindly donated the prizes. The latter included two firms, three branches and several individual members. This is a fine result and a great help to club funds.

ANNUAL CONFERENCE

The Thirty Sixth Annual Conference Friday 4th November 1983 saw a goodly number of SOC members, of all ages, converging on North Berwick in remarkably pleasant weather. On arrival at the Marine Hotel there was the usual pleasure of meeting with old friends, but it was not long before we discovered that sadly, owing to illness, Alastair Peirse-Duncombe was absent from his accustomed place at the helm. It was obvious, however, that all his earlier hard work had ensured that the Conference would run as smoothly as usual, with the Assistant Secretary and Bookshop Manager, Miss Maureen Doran, taking his place most efficiently. John Davies, who succeeds Alastair as Secretary in January 1984, was over from Ireland for the weekend and was able to give Maureen a helping hand too. It was good to have an opportunity to meet and greet him and we wish him and his wife and family every happiness in their new home.

What a nice surprise it was to see Ruby Smillie (who is of course retired now), together with her husband Jimmy, helping out in the Conference Office beside her successor as Membership Secretary, Miss Pat Webster.

The Friday night slide show was more orderly than last year, as it was made clear to the contributors by Don Smith that they must keep to their allotted time. The varied programme, which included the prize-winning slides in the photographic competition, was much enjoyed.

On Saturday morning, after President Ivan Draper had officially opened the Conference, we were entertained and educated by a Wetlands programme: from the Tropics with James Hancock, via Leighton Moss with John Wilson, to Scotland with Malcolm Ogilvie.

During the whole weekend there was as usual much "going on" in the lounges and corridors of the hotel. The SOC bookshop presented a wonderful feast of a different kind to the excellent hotel catering. Then there were binoculars and telescopes to look through—and even buy, research exhibits and artwork to see, and of course lots to talk about to lots of old and new friends. Saturday afternoon was still fine and dry though colder, and many of us ventured along the shore for a brisk walk and a quiet bird-watch. Back in the hotel at the AGM we were heartened to find that Daphne had driven Alastair down from Edinburgh so that he could receive his retirement presentation in person—but we missed them at the Annual Dinner later in the evening.

Every year some of us declare that we are really "too old for dancing" but then when the dinner is cleared away and the music starts up we eventually succumb to the general jollity and join in for a dance or two. Despite all this late evening activity the Sunday morning talks were well received. Before coffee we heard about current ornithological research being carried out in Scotland from Bob Swann, Brian Etheridge and Roy Dennis. And the final lecture of the weekend, by Nick Riddiford, Warden of Fair Isle Bird Observatory, put the finishing touches to a really excellent Conference.

NORAH ARMSTRONG

FOOTNOTE

Reminders: SBR 1982 and index for Vol. 12 should be available shortly—order now! Entries for the 1984 Photographic Competition should be submitted by 30 September (details in SB 12: 173 or from 21 Regent Terrace).

Recent Reports

These notes include unchecked reports and are not intended as a permanent record, nor will they be indexed. Please send reports to Pete Ellis, Houss, East Burra, Shetland, via local recorders, at the end of March, June, September and December. The period October to December is covered here.

Before fizzling out completely, what passed for autumn migration did produce two outstanding rarities, a **Black-eared Wheatear** and a **Pallas's Grasshopper Warbler**—both on Out Skerries in the first week of October. The weather was exceptionally mild—and exceptionally uninteresting in most areas as far as unusual birds were concerned.

October/November brought assorted wildfowl reports: **Bewick's Swans** in East Lothian and Orkney; both blue and white phase **Snow Goose** and a **Canada Goose** of one of the small races on Islay; at Dunbar a party of 800 **Barnacles** en route from Spitzbergen to the Solway; and **Brent Geese** on Islay (36 pale- and 12 dark-bellied) and in East Lothian. Other noteworthy records were an **American Wigeon** on Loch Ryan from 13 Nov-31 Dec, single **Garganey** at Paisley and Edinburgh, and a **Blue-winged Teal** on North Ronaldsay. The Loch Insh **Ring-necked Duck** reappeared, as did **King Eiders** at Port Glasgow and Golspie, where there were also 2 male **Surf Scoters**; a female **King Eider** in Yell and a **Surf Scoter** off Musselburgh in November were more unusual.

Two **White-tailed Eagles** appeared in Shetland in December, one without a wing tag so possibly not originating from Rhum. A **Red Kite** at Huntly on 9 October was the only other unusual raptor record. The long-staying **Crane** finally left Orkney in October, when there was a **White-rumped Sandpiper** there and a **Long-billed Dowitcher** on Fair Isle. Scotland's third **Killdeer** was on South Uist in December. Peterhead had 43 **Pomarine Skuas** in October and 13 in November, and there was a **Mediterranean Gull** at Aberdeen, a 1st winter **Ring-billed Gull** at Aberlady, and a **Ross's Gull** at Thurso. Dead **Cory's Shearwater** and **Brünnich's Guillemot** were found on the same Shetland beach.

Many of the more interesting passerine reports were from Orkney: an estimated 50,000 birds, mostly **Redwings**, at North Ronaldsay light on 9/10 November; an adult male **Red-breasted Flycatcher** in full plumage on 1 October; a wandering **Long-tailed Tit** in November; and a **Parrot Crossbill** trapped on 2 October. The only **Pallas's Warbler** of 1983 (53 in 1982!) was caught on the Isle of May on 11 October.

STOP PRESS. Birders hoping to see a **Killdeer** in Ayrshire on 22 January found a **Little Bunting** instead. Is that good or bad?

PETE ELLIS

RECENT RSPB STAFF CHANGES

Recent changes among RSPB staff Pete Ellis moved to Shetland in January to help with the increasing workload there, and has been replaced at Scottish HQ by David Dick. Roger Broad became Strathclyde Officer in the autumn, and Roy's assistant in the Highlands is now Colin Crook. And Ian Bainbridge has been appointed Conservation Planning Officer (Forestry), based in Edinburgh but with responsibility for the whole of the UK. We wish all five every success in their new posts.

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The counts in Scotland are organised through the SOC, formerly by a succession of dedicated individual members (Miss Rintoul and Miss Baxter, Miss Garden and Miss Valerie Thom) and latterly by a network of Regional Organisers, who deal direct with the Wildfowl Trust. These are appointed by the SOC, who maintain a copy of all Scottish counts in the Club's Reference Library in Edinburgh.

A current list of Regional Organisers is given below, and anyone who is interested in helping with the counts is asked to write to the Organiser for their area.

Shetland D. P. P. Eva, 6 Westerloch Brae, Lerwick.

Orkney P. Reynolds, Berrybank, Evie, Orkney.

Wester Ross and Skye A. Currie, Glaiseilean, Broadford, Isle of Skye, IV49 9AQ.

Outer Hebrides N. Buxton, 4 Sand Street, Coulregrein, Stornoway, Isle of Lewis, Western Isles.

Caithness S. Laybourne, Old Schoolhouse, Harpsdale, Halkirk, Caithness, KW12 6UN.

Inverness-shire, Easter Ross, Sutherland (East) C. G. Headlam, Dallachie, Fearn, Ross-shire IV20 1TN.

Banffshire, Morayshire, Nairnshire J. Edelsten, 12 Durn Avenue, Portsoy, Banffshire.

Aberdeenshire, Kincardineshire A. Duncan, 12 Cairncry Avenue, Aberdeen, AB2 5DS.

Angus B. Pounder, 64 Forfar Road, Dundee, Angus.

Perthshire (East) E. D. Cameron, Strathclyde, 14 Union Road, Scone, Perth, PH2 6RZ.

Argyllshire and Inner Hebrides (South) S. Newton, Fell Cottage, 12 Compston Street, Ambleside, Cumbria, LA22 9DP.

Fife, Kinross-shire Mrs J. A. R. Grant, Brackmont, Crail, Fife.

Central Region D. Thorogood, 4 Archers Avenue, Stirling, FK7 7RJ.

Bute J. B. Simpson, Estate Office, Rothesay, Bute.

Dunbartonshire and Renfrewshire A. Young, 76 Liddel Road, Ravenswood, Cumbernauld, G67 1JE.

Strathclyde South East A. Wood, 47 Kilberry Road, South Carbrain, Cumbernauld.

Lothians Miss J. Wilcox, 18 Howdenhall Gardens, Edinburgh, EH16 6UN.

Ayrshire A. G. Stewart, 31 St Andrews Avenue, Prestwick, Ayrshire, KA9 2DY.

Borders A. Bramhall, 28 Blakehope Court, Tweedbank, Galashiels, Selkirkshire, TD1 3RB.

Dumfriesshire, Kirkcudbright, Wigtownshire P. Shimmings, 1 Jeanville, Lochmaben, Dumfriesshire, DG11 1PA.

THE SCOTTISH ORNITHOLOGISTS' CLUB

THE Scottish Ornithologists' Club was formed in 1936 and membership is open to all interested in Scottish Ornithology. Meetings are held during the winter months in Aberdeen, Ayr, the Borders, Dumfries, Dundee, Edinburgh, Glasgow, Inverness, New Galloway, St Andrews, Stirling, Thurso and the Wigtown District at which lectures by prominent ornithologists are given and films exhibited. Expeditions are organised in the summer to places of ornithological interest.

The aims of the Club are to (a) encourage the study of Scottish ornithology and to promote an interest in wild birds; (b) co-ordinate the activities of Scottish ornithologists; (c) encourage ornithological work in Scotland; (d) encourage conservation of Scottish birds and protection of threatened and rare species; (e) hold meetings for discussion and to arrange ornithological field meetings, and (f) appoint local recorders and publish material relating to Scottish ornithology, including *Scottish Birds*, the club journal.

There are no entry fees for Membership. The Annual subscription is £7.50, or £3 in the case of Members under twenty one years of age or Students under 25 who satisfy the Council of their status as such at the times at which their subscriptions fall due. The Life subscription is £150. Family Membership is available to married couples and their nominated children under 18 at an Annual subscription of £11, or a Life subscription of £225. *Scottish Birds* is issued free to Members but Family Members will receive one copy between them. Subscriptions are payable on 1st October annually.

Scottish Birds, which is published quarterly, includes papers, articles and short notes on all aspects of ornithology in Scotland. The club also publishes the annual Scottish Bird Report.

Application for Membership form, copy of the Club Constitution, and other literature are obtainable from the Club Secretary, John C. Davies, Scottish Centre for Ornithology and Bird Protection, 21 Regent Terrace, Edinburgh, EH7 5BT (tel. 031-556 6042).

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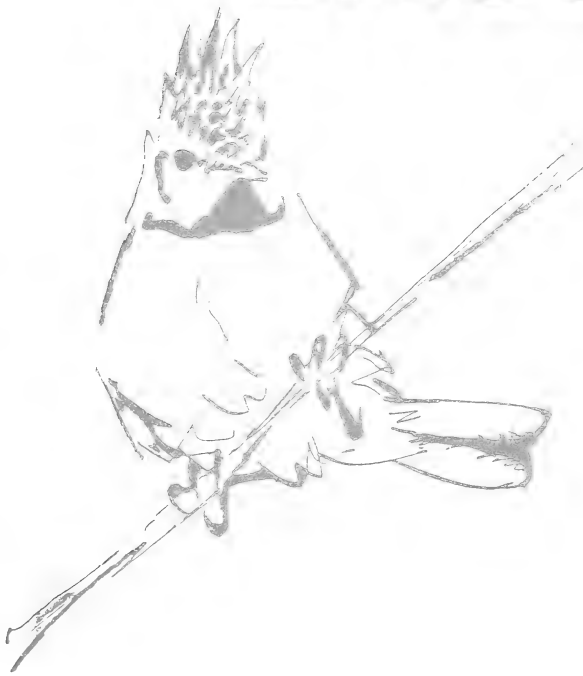
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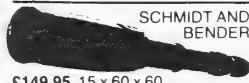


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and I. R. Taylor

Editorial

In this number we celebrate the Golden Jubilee of the Isle of May Observatory, with an article by one of its founder-members—Ian (J. H. B.) Munro. The initiative shown by the enthusiastic band of young Edinburgh birdwatchers who raised the money necessary to get the place going has been amply rewarded over the last 50 years, not only by the valuable ornithological work carried out there, but also by the way in which succeeding generations have continued to use and enjoy the island and its modest accommodation.

One wonders what it might cost today for even such basic living and working facilities as those provided in 1934—and to what extent progress would today be dependent upon grant-aid? In 1934 those involved simply buckled to and succeeded in raising £83—and it cost them just £31 to furnish the Observatory (then in the old Lookout, not the Low Light), £21 to construct a trap and “catching garden”, and £10 to equip the ringing hut and library. Times have indeed changed!

It is worth remembering that we owe a considerable debt of gratitude to the relatively small number of birdwatchers active in the 1930's. They were responsible for establishing not only the first observatories, but also the BTO—founded in 1933, and of course the SOC, which celebrates its Golden Jubilee in 1986. But for their foresight and enthusiasm the science—or should it be art?—of birdwatching would almost certainly be much less advanced than it is today.

Thank you, Roy! On page 63 there is a brief note reporting that Roy Dennis is handing on his responsibilities as compiled/editor of the SBR. Roy has carried out this time-consuming—and often thankless—task for some 14 years, during which it has grown enormously. We thank him most sincerely for all the time and effort he has put into this work, and record our pleasure that he is maintaining his involvement, though on a more limited scale.

The Isle of May Bird Observatory and Field Station 1934 to 1984 : some personal reflections

J. H. B. MUNRO

Ian Munro has been associated with the observatory since the very beginning and still visits it regularly. He acted as Hon. Treasurer for 40 years, retiring from that onerous post only in 1974.

When W. J. Eggeling published his comprehensive book "The Isle of May" in 1960 he included a fascinating description of the start of the Bird Observatory and its history up to some 25 years ago. Frank Elder, who wrote this, was the first Hon. Secretary and piloted the Observatory through many exciting years, much encouraged by the indefatigable George Waterston and other committee members. What I plan to do here is to jot down some reminiscences, and then to bring the history up to the end of the first 50 years.

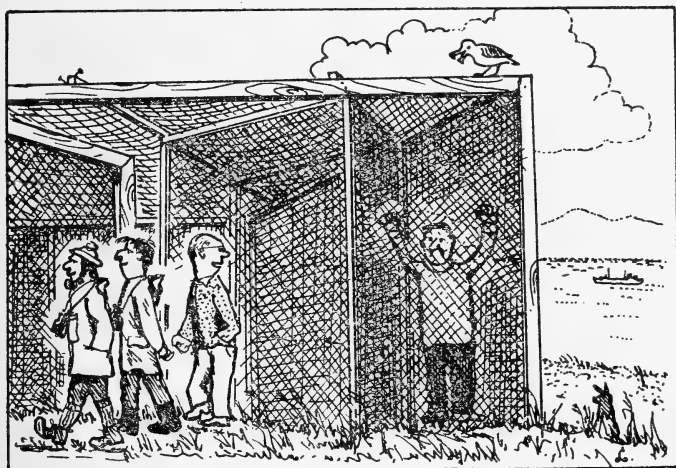
The original home of the Observatory, the Lookout (now, alas, a pile of unsightly rubble), was ideal for us in the early days. It commanded an extensive view of the island, and when birds were at the light we got great views of them looking like snowflakes as they flew up the beam, sometimes with predators circling round. On special occasions the Principal Lightkeeper allowed us to visit the lighthouse balcony, and I well remember a fluttering bird being picked off the glass by hand and finding, when it was examined in the Lookout, that it was a Yellow-browed Warbler.

The Lookout had one double-tiered and one single bunkroom, and a kitchen range which burned coal—and driftwood when available; paraffin stoves were also used for some of the cooking. Our personal washing was done in tin basins using cold water from the tank outside the Beacon. We were rather crowded but comfortable, as the rule was (and still is) that no more than 6 observers were allowed on the island at one time.

In those days the Lightkeepers kept goats and hens, so on occasion we were able to get milk and eggs. There was also Paddy the horse, who could never be found when the Lighthouse coal boat arrived, but once caught and harnessed to the cart would pull willingly enough. He was a crafty beast and even learned to open doors and gates. We were told by Lachie McInnes (the Principal Keeper and a great "character") that

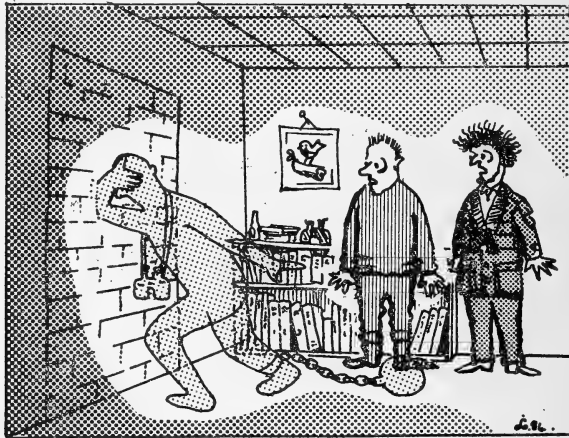
on one occasion the horse opened the back door of the Principal's house in Fluke Street and walked into the kitchen. Paddy refused to turn round, so Lachie had to remove most of the furniture to get him out.

When the "Mars" came ashore in 1936, and became a total wreck, the ship's bell was rescued and mounted on a stanchion at the Lookout, where its tolling was very useful in alerting observers scattered about the island. Sadly, the bell has been missing for many years now. The following year, when the "Island" also crashed on the rocks, it is reputed that, in the best "Whisky Galore" tradition, several cases of liquor were "salvaged" and stored in the Loch until any hue and cry had subsided—but when the rope tethering them to the pier was eventually hauled in it broke. Tradition maintains that the cases may still be in the loch but I, for one, doubt it.



Unfortunately the march of progress has decreed that the May is now a rock station (since 1972) with no wives and children any more. For a time there was a deserted child's swing in the top trapping garden—a sad sight. There are now no domestic animals or hens. Sheep were introduced in 1955 and increased to 100 ewes and lambs in 1959, reducing the grass growth to something approaching the close-cropped sward of earlier pre-myxomatosis years; they were finally removed in 1960. Much tidying up of the island has taken place recently; the wooden railway sleepers in the thistle field and the Crow Trap have been removed, as have the sheep "fanks" round the cover of the Low Trap.

An impressive list of projects has built up since biological research started in 1966, when Durham University instituted a 3-year study of Herring and Lesser Black-backed Gulls. This was carried out by Jasper Parsons, who was resident on the May for several months each year. In addition to being a great help with Observatory work, he found time to experience the Low Light phantom. One night about midnight he heard footsteps coming round past the livingroom windows but no visible body was seen in the rays of the lighthouse beam. The footsteps entered through the closed front door, passed through the bedroom and continued through the wall where the outline of the original door can be seen. They were then heard climbing the stair to the old light chamber.



Since then there have been research projects on Shags, on the island's house mouse (by Graham and Della Trigg—working under the direction of Dr Sam Berry—who occupied the "Mouse House", a comfortable wooden building erected south of the Low Trap), on the behaviour of rabbits and gulls, and of course Mike Harris's study of the Puffins, which have increased so spectacularly in recent years. The much-publicised culling of gulls started in 1972 following heavy erosion of the vegetation; the numbers destroyed give some indication of the size of the problem: 1972—16,000; 1973—10,500; 1974—9,000. Since then culling has been repeated from time to time on a minor scale. Unlike other Bird Observatories, the May has never had a resident warden, but in 1975 the Nature Conservancy Council introduced a summer warden to control the increasing flow of trippers. In 1978 grey seals began to come ashore in numbers, appropriately enough on Rona; some 150

pups were born that year and by 1982 the number had risen to 615. This increase was probably associated with disturbance on the Farne Islands.

Going back in time to other events in the history of the May: a memorable visit by eminent ornithologists from the BOU and SOC, among them James Fisher, Frank Darling, David Lack and W. B. Tucker, took place on 22 June 1947. In 1956 the island became a National Nature Reserve by virtue of a 99-year lease between the owners (the Commissioners of Northern Lighthouses) and the Nature Conservancy; the rights of the Bird Observatory are fully safeguarded. In 1958 St Adrian's Chapel and the Beacon were scheduled as ancient monuments, and in 1960 a party from St Augustine Abbey, Ramsgate, celebrated mass in the chapel for the first time since the Reformation 400 years ago. On a beautiful day in 1974 a small party of old friends carried out M. F. M. Meiklejohn's last wish and scattered his ashes on the island he loved so much. But surely the most surprising event ever was the arrival in July 1982 of an American, John Douglas Dowie, who turned out to be a direct descendant of Lucy Anderson, the only one of the Anderson family saved when they were overcome by fumes from the Beacon in 1701. It seems that a young lad, Hugh Dowie found the child and later married her; the pair emigrated to America and John Douglas Dowie was their great-great-great-great-grandson!

Turning again to the Observatory and its activities, there are now four Heligoland-type traps in operation. The original "Low" trap erected in 1934 continues to function well and is a wonderful testimonial to Frank Elder's design and the materials used. The "Top" trap has been redesigned several times, while the 1948-49 "Bain" trap was replaced in 1983 by a new "fruit cage" of plastic netting which can be dismantled and stored away for the winter. The erection in 1975 of the "Arnott" in 5 days by a team of four was a triumph of discipline as the island was filled with exciting birds. There were Robins flitting all over the place, Pied Flycatchers, Wrynecks, Redstarts, Ortolan and Rustic Buntings and even two Pallas's Sand Grouse seen flying over the ringing hut. But the phenomenal migrant fall of October 1982, described in *Scottish Birds* 12(8), was probably the biggest ever recorded on the Isle of May.

The financial situation of the Bird Observatory has been remarkably resilient over the years, with contributions from the Universities and the NCC and sums charged to observers generally proving adequate to cover the observatory's work and normal maintenance to traps and buildings. When exceptional costs have had to be met, very welcome grants have been re-

ceived from: Helena Howden Trust (£227 in 1960), SOC Cruise (£100 in 1967), NCC (£148 in 1975) and George Waterston Trust (£525 in 1982). In 1964, when over £800 had to be spent on repairs, friends of the May gave interest-free loans amounting to £230. Inflation and recession have recently hit the Universities, however, and the consequent reduction in funding from this source has led to an increase in charges to observers. These are currently £2/night (25p in 1960) and £7/return boat trip (75p in 1960).

The Observatory could not have operated without the devoted service of the fishermen from the Fife ports who make the "island run". They are a wonderful breed of men and good friends. It is perhaps invidious to mention names, but several stand out in the memory. Geordie Mackay, of viking appearance and temperament, who seemed to enjoy icy spray on his face. Andrew Blackery who once landed a party at the Altar-stanes at midnight, when lack of water made it impossible to land them below the iron stairs, and on another occasion took a party ashore in dense fog. Later there was the Hughes clan, Jimmy, his father and Willie—all great value. Now in 1984 we have the faithful and highly efficient Jim Smith; it is a real pleasure to watch his handling of the "Breadwinner".



The Lighthouse staff too have been extremely kind and helpful over the years, and again one remembers some more vividly than others. There was Lachie McInnes who, in the early days, entered into our ploys as far as his duties allowed and gave us much excellent advice and practical help. He also

stocked the loch with trout and kept the 3-hole golf course (listed at one time in the Golfer's Handbook as the smallest course in the world) in good order. One remembers too, with gratitude, Andrew Mathewson, Bert Leslie and, more recently, Willie Watt and his wife who were always so welcoming and helpful. And we will certainly not forget John Bain, who unaided and under extreme weather conditions built the trap which bears his name.

Observers visiting the May have always carried on the day to day maintenance and development work, and several stand out for exceptional performance. A. D. Watson and M. K. Hamilton were tireless in the early days. H. Dacker specialised in movable bird traps and shrub protection fences; the spruces which form part of the Top Trap cover were planted by him. A. G. S. Bryson was involved in most of the early trap-building; his "Bryson baffles", which prevent birds breaking back from the trap funnels continue to allay alarm and despondency. More recently Ian Balfour Paul has done an immense amount of work, as has Bernard Zonfrillo. Others have been involved on the administrative side, and of these G. L. Sandeman, Alastair Macdonald, Bill Alexander, Lynne Arnott and now Rosemary and Charles Cowper have done outstanding work.

Finally, what has been achieved over the last 50 years has been largely due to the enthusiastic labours of the Hon. Secretaries, each of whom has impressed his or her personality on the growth of the Observatory. Their names are: H. F. D. Elder, W. J. Eggeling, Nancy Gordon, J. M. S. Arnott and now the indefatigable Bernard Zonfrillo (who surprised even his sponsors and raised £150 for Observatory funds when he ran in the Glasgow Marathon Race in 1983). We should remember them all.

Since the war many improvements have been carried out at the Low Light. The roof has been replaced, the livingroom gutted and re-lined, and the whole building redecorated. Glass fibre water tanks have been installed by NCC. And recently added amenities include new floor coverings, a wood burning stove and comfortable furniture. The Isle of May Bird Observatory and Field Station continues in good heart, and so—on to the next 50 years.

*J. H. B. Munro, 9 Capelaw Road,
Edinburgh 13*

Long-term seabird monitoring on the Isle of Canna

R. L. SWANN and A. D. K. RAMSAY

In many seabird monitoring projects it is only feasible to check sample areas. On Canna, however, the area and numbers involved make it practicable to count the entire breeding population of most species.

Canna, one of the Small Isles group south of Skye, does not have the largest seabird populations in northwest Scotland but the relative accessibility of its colonies make them ideal for the long term study of seabird numbers. Many seabird species have shown large changes in numbers over the last twenty years; this paper documents the changes that have taken place on Canna.

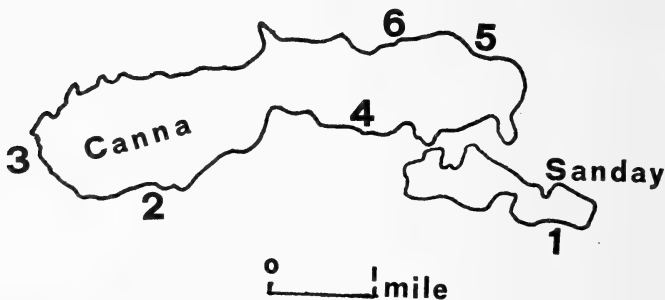


Fig. 1 Main seabird colonies on Canna

- 1 Eusabrig, Sanday 2 The Nunnery 3 Boro'osgor 4 Tarbert Road
5 Laumasgor 6 Geugasgor

Methods

Counts were made in late June or early July from 1969 to 1983 and a few earlier counts are also available (table 1a). In 1969 and 1970 all counts were land-based; subsequent counts have been made from both land and sea. Normally only one count of the island is made each year and complete counts have been made for all species except Guillemot and Razorbill since 1974. For Guillemot and Razorbill a series of sample areas are counted.

The units for, and methods of, counting were as follows :

Fulmar: apparently occupied suitable site.

Larus gulls: pair holding territory.

Kittiwake: nest.

Black Guillemot: individual bird.

The above species were counted by both authors and there was normally good agreement (usually to within 5%) between counts. Where there was a bigger discrepancy a recount by both observers took place and the mean of the counts was taken.

Shag: nest.

Guillemot: egg or young, including addled eggs and dead young.

Razorbill: egg, young or site (obvious due to broken shells or concentration of droppings below a boulder or on a small ledge.)

These three species were counted by three or more observers moving slowly and carefully through clearly defined areas and recording all 'nests'.

The breeding success of Manx Shearwaters and Shags was also assessed, by checking marked nests in April, May, July and August to determine eggs laid, number hatched and number of young fledged or likely to fledge.

Rates of increase have been calculated from linear regressions of counts against year, using all available counts (n) over the stated period; r is the correlation coefficient (the closer to 1.0 the better the data fit the line). The term significant is used when there are differences significant at the 5% level.

A total of 33,182 birds were ringed on Canna between 1969 and 1983, the main species being Guillemot (11359), Shag (6107), Manx Shearwater (5550), Herring Gull (4787) and Razorbill (2718). This ringing programme has provided information on dispersal from the island, rates and causes of mortality, age of return to the island and age of first breeding.

Results

The counts of each species are given in tables 1a and b.

Fulmar Became established first on Sanday in 1930; birds prospected the north cliffs of Canna in 1935, and sites were occupied in 1936. The total population reached a peak of 669 sites in 1977. Between 1963 and 1983 the Sanday colony increased significantly at an average rate of 4.7% pa (n 14, r 0.83). On Canna the colony also increased significantly, at an average

Table 1a. Early seabird counts on Canna.

	1933	39	46	61	62	63	69	70	71	73
Fulmar										
Sanday			21			40	62	60	54	79
*Canna		150				85+			337	358
Great Black-backed Gull	10			17		18	58	60	56	61
Lesser Black-backed Gull						12		40	51	54
Herring Gull				225+	290+	335+	1149	887	874	859
Kittiwake										
Sanday					120		157	167	146	151
*Canna					400				430	448

Table 1b. Canna seabird counts 1974-1983.

	1974	75	76	77	78	79	80	81	82	83	
Fulmar											
Sanday		78	92	122	96	70	110	112	95	110	92
*Canna		493	494	495	573	552	428	556	299	438	388
Shag		856	912	548	886	975	883	1168	1139	1507	1498
Great Black-backed Gull		59	69	60	63	60	41	56	55	61	65
Lesser Black-backed Gull		54	69	63	62	61	39	36	38	43	46
Herring Gull		1033	1166	1140	971	814	829	886	1000	1212	1151
Kittiwake											
Sanday		176	187	217	205	237	241	299	341	316	308
*Canna		565	635	640	685	635		660	640	675	674
Razorbill		194	287	388	440	475	518			510	534
Black Guillemot		36	60	51	85	76	78	111	144	114	115

Note: Counting units are indicated in the text. Counts marked thus * have been made from the sea and are therefore likely to be slightly less accurate than land based counts.

rate of 9% pa. ($n\ 6, r\ 0.93$) from 1971-77, to reach a peak of 573 sites. Since 1977 there has been no significant increase, indeed numbers have decreased and several previously occupied sites at Geugasgor are now abandoned (table 2). Our Canna results fit in with the national trend in Fulmar numbers; a 7% pa. increase in the 1960's (Cramp et. al. 1974), which may have dropped to 4% pa. in the 1970's (Stowe 1982). The decrease on Geugasgor is most noticeable below the roosting/loafing sites of introduced immature Sea Eagles from neighbouring Rhum.

Manx Shearwater The main colony is along the south crags by the road to Tarbert, where the birds have been recorded in 'hundreds, possibly thousands' since at least 1933. In 1973 and 1974 we counted apparently occupied burrows and

Table 2. Fulmar numbers at the three main sub-colonies on Canna since 1977.

	1977	1978	1979	1980	1981	1982	1983
Sanday	96	70	110	112	95	110	92
E. of Laumasgor	104	102	87	118	65	100	123
Geugasgor	412	410	319	413	185	248	223

put the island population at 1000-1500 pairs (Swann and Ramsay 1976). In 1887 and the 1930's colonies were also reported from the east half of the north cliffs and in 1948 from the west half; both these areas have long since been deserted.

Sixty-six observation burrows scattered throughout the Tarbert Road colony are checked annually for breeding success and occupancy rate. The number of occupied burrows in the study plots remained constant from year to year, indicating a fairly stable population (table 3). Breeding success was more variable, with success being low in 1973 and 1974, both years of high rat predation on small chicks in certain parts of the colony. In 1975 warfarin was placed by burrows in infested areas and this appeared to bring the problem under control. There was another poor season in 1981, when the presence of dead young and a few dead adults suggested food shortage or disease. It was possibly the remains of these birds that attracted the rats which devastated the colony in 1982. Warfarin was again used in 1983 to bring the rats under control.

Table 3. Manx Shearwater burrow occupancy and breeding success on Canna 1973-1983.

	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
No. of Study burrows	(32)	(41)	(29)	50	63	66	59	54	58	58	46
Percentage occupied				73%	72%	75%	78%	77%	65%	73%	82%
Chicks fledged per egg laid	0.51	0.57	0.75	0.51	0.83	0.73	0.61	0.76	0.25	0.02	0.68

Note: Figure in brackets represent the number of burrows actually laid in 1973-1975.

Ringling recoveries have shown that birds disperse quickly from Canna in September and have arrived in their South American winter grounds off Brazil and Uruguay by the end of October. Young birds return to west coast waters in their third year and many are breeding by their fifth year. Breeding adults appear to feed locally in the Minch (for fuller details see Swann and Ramsay 1976).

Shag Several large colonies have existed since at least the 1900's. The first complete island counts were not made until 1974. Between 1969 and 1973 rough counts are available for only two colonies (table 4) and these show wide fluctuations with notable decreases in 1970 and 1973. Since 1974 the island

population has increased significantly, at a mean annual rate of 8.3% (n 10, r 0.77). This is similar to what is happening in several east coast colonies (Harris and Galbraith 1983).

Table 4. Counts at two Canna Shag colonies 1969-1974.

	1969	1970	1971	1973	1974
Nunnery	250	50	260	100	143
Boro'osgor	500	70	450	124	258

Since 1977 60 marked nests in the colony at Boro'osgor have been used to measure breeding success (table 5). Average clutch size has ranged between 2.4 and 2.8, lower than the mean of 3.01 ± 0.04 on the Farnes (Potts et. al. 1980). Breeding success, in contrast, was better, with even the poorest years on Canna producing more young per pair than the 0.9 - 1.15 on the Farnes. Most Farnes birds, however, nest on open sub-optimal ledges (Potts et. al. 1980), whereas only 4% on Canna do, the rest being in sheltered boulder sites on the raised wave-cut platform 15 - 45 m. above sea level. With such sites available Canna birds are less likely to fail completely than are the Farnes birds, hence their higher success rate.

Table 5. Shag breeding success Canna 1976-83.

	1976	1977	1978	1979	1980	1981	1982	1983
No. of Study nests occupied	43	42	39	43	49	43	46	50
Average clutch size	2.7	2.5	2.6	2.5	2.6	2.4	2.8	2.8
Average no. of young fledged per pair	1.4	1.6	2.1	1.4	1.8	1.8	2.1	1.8

Young birds disperse from Canna in late summer. The mean annual dispersal distance is in the order of 55 - 60 kms. with 63% of recoveries coming from the Outer Hebrides (mainly Barra and the Uists), 19% from Skye and the adjacent mainland of northwest Scotland, and the remaining 18% from further south in Argyllshire, mainly around Coll and Tiree. Young birds return to the island in their second year. In recent years a few two year olds have been recorded breeding but most do not nest until their third year or later. Adult dispersal is similar to that of first year birds (for fuller details see Swann and Ramsay 1979).

Lesser Black-backed Gull Twelve pairs in 1963 increased to an average of 57 pairs (S.E. 3.4) between 1970 and 1978, but numbers have since dropped to a mean of 40 pairs (S.E. 1.8). The few ringing recoveries show a dispersal south via France and Portugal to wintering areas in North Africa, with one recovery in Morocco.

Great Black-backed Gull Increased from 10 pairs in 1930's to 65 pairs in 1983. Since 1969 numbers have remained fairly stable, at an average 59 pairs (S.E. 1.7), but the overall increase between 1962 and 1983 was significant, averaging 3.5% pa. (n 15, r 0.59). Two recoveries, one of an adult and the other of a first year bird, were both in the Irish Sea.

Herring Gull Increased from 225+ pairs in 1961 to 800+ pairs by 1969. Since 1969 numbers have fluctuated greatly (814 - 1449 pairs) with no significant increase. Although many east coast gull colonies were increasing at a fairly rapid rate into the 1970's (Duncan 1981) numbers there also appear to have stabilised in recent years (R. W. J. Smith pers. comm.). Numbers have also been stable at more northerly colonies (Furness 1981, Mudge 1981) and at other west coast colonies (P. Monaghan pers. comm.). Young Herring Gulls disperse from the island in late summer with most moving south to wintering areas in Central Scotland, but a few winter in Northern Ireland and some as far south as the English Midlands and even Cornwall; most remain dispersed for their first three to four years. Adult birds also disperse widely in winter, mainly down the west coast and into west Central Scotland.

Kittiwake There are two colonies Geugasgor on Canna and Eusabric on Sanday. The main colony at Geugasgor has increased significantly, at an average rate of 2.9% pa. (n 12, r 0.87) since 1962 from 400 to a maximum of 685 nests. The smaller Sanday colony has increased significantly over the same period at the apparently faster rate of 5.3% pa. (n 15, r 0.94), from 120 to a maximum of 341 nests. Since 1975 the rate of increase appears to have slowed down. This is comparable with the national trend, which showed an average rate of increase of 2% pa. between 1969 and 1979 (Coulson 1983). This overall figure masks regional variations, as some areas, such as west Scotland, showed a decrease which was particularly marked between the 1974 and 1975 breeding seasons.

Guillemot Since 1974 the ten sub-colonies counted most years (Swann and Ramsay 1983) have indicated rates of increase between 10 and 16% pa. Some colonies remained stable, other increased at up to 14% pa. and several new sub-colonies were established. Between 1974 and 1983 long established sub-colonies significantly increased at 10.8% pa. (n 9, r 0.96), whilst colonies established since 1974 increased significantly at the even faster rate of 39% pa. (n 8, r 0.93). These rates of increase are similar to those found in other east coast and northern colonies (Wanless et. al. 1982, Stowe 1982, Harris and Galbraith 1983). An analysis of ringing results for this species has already been published (Swann and Ramsay 1983).

Razorbill Between 1974 and 1983 our 'nest' counts showed a significant rate of increase of 9.1% pa. (n 8, r 0.8). This mirrors similar increases at other west coast, east coast and northern colonies (Wanless et. al. 1982, Stowe 1982, Harris and Galbraith 1983). Young and adults disperse quickly from the island during July. First year birds move south to wintering areas around Brittany and the English Channel, with a few reaching the Mediterranean, one as far east as Tunis. Immatures and adults winter further north in the English Channel and southern North Sea. Birds return to Canna from their second year and start breeding in their third year or older.

Black Guillemot Ten pairs in 1933 had increased to 17+ pairs by 1961 and to 25 pairs in 1974. Counts of individual birds between 1974 and 1983 showed a significant increase of 12.8% pa. (n 10, r 0.9). Few comparative counts for other areas are available, but numbers have declined on Foula since the early 1970's (Furness 1981) and on Auskerry, Orkney (A.D.K.R.).

Puffin We estimate the island population as of the order of 1000 pairs and probably fairly stable. Decreases which took place on the stacks (probably due to severe erosion) are being compensated for by increases on the grassy slopes at Geugasgor.

Discussion

Our results show that the populations of most seabird species on Canna appear to be in a very healthy state. Shag, Guillemot, Razorbill and Black Guillemot populations are all continuing to increase and, with the possible exception of the last, are following national trends. The populations of the *Larus* gulls and Kittiwake, after undergoing major increases, are now increasing only slowly or have stabilised at fairly high levels. Again this appears to fit national trends. Both Manx Shearwater and Puffin seem to be maintaining stable populations whereas the Fulmar, having undergone major increases, has now, against national trends, stabilised and even declined, though peculiar local factors may be responsible.

Breeding success for the two species monitored (Manx Shearwater and Shag) also appears to be high, again reflecting the healthy state of these seabird populations.

It is important that this monitoring work continues. Many seabird colonies in the Northern Isles and on the east coast are already being monitored but Canna is perhaps the only colony in northwest Scotland that is being regularly checked. In the past differences have been detected between west coast seabird population changes and North Sea ones (Coulson 1983,

Harris 1976), and it is only through continued monitoring that any such variations in the future will be detected.

Acknowledgments

We are grateful to Dr J. L. Campbell and the National Trust for Scotland for giving us access to Canna. Our thanks are due to David Aiton, John Carruthers, Colin Corse, Ronnie Graham, Doug Forrest, Alan Leitch, Iain Cameron, Dugald Ross and the boys of Glenurquhart Secondary School Bird Club for help in the field. Mike Harris and Sarah Wanless helped with the regression analysis and commented on earlier drafts of the paper. The SOC supported us with assistance from the Endowment Fund.

Summary

Details are given of seabird counts on Canna between 1969 and 1983. In addition the breeding success of Manx Shearwaters and Shags has been monitored since 1973 and 1976 respectively. Comparisons with data from other colonies suggest that the seabird populations on Canna are currently in a very healthy state with many having undergone major increases in numbers. Brief details are also giving of the seabird ringing programme.

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Notes on the Collared Dove in South-east Sutherland

D. MACDONALD

Introduction

Apart from a nest predation study in 1976 (Macdonald 1977), the following notes record mainly random observations of the Collared Dove from its first arrival at Dornoch, South-east Sutherland, in April 1964 until the end of the 1983 breeding season. By 1966 numerous doves frequented Dornoch gardens and a large colony was established at Pitgrudy Farm, 1½ km. north of Dornoch, where the farm buildings are sheltered on three sides by small spruce *Picea* plantations, which provide an ideal habitat for the species.

By the early 1970s a flock of 60 was quite a usual sight but in recent years flocks of more than 20 are seldom seen. These figures suggest that a considerable decrease has taken place but whereas during colonisation the doves were concentrated in only two or three localities they are now widespread throughout the area.

Plumage Buffish coloured doves were observed on three occasions, and in the 1979 breeding season a female was paired with a normally plumaged male. It is possible that these birds might have been crosses with the Barbary Dove but it appeared evident from close observation of their posture and behaviour that all were colour variants of the Collared Dove.

Voice In the breeding season the male has, in addition to the normal trisyllabic version, a distinctly lower toned and slower tempo song, which does not appear to be mentioned in the literature. It is delivered only from the nest-site area and appears to be confined to the nest prospecting and nest building period. This variant is uttered with monotonous frequency and on rare occasions can be heard up to 60 times in succession.

On three visits made to a nest in May 1974 the incubating dove flew off uttering a series of low 'kekking' notes reminiscent of the louder chatter of a small falcon. On no other occasion was a flushed dove heard to call in this manner.

Food Grain, seeds and poultry food were the main items seen to be eaten in the Dornoch area and on two occasions doves were flushed from heavily fruited elder trees *Sambucus*. At the bird table they are voracious eaters and will gobble up almost anything except, perhaps, meaty items.

Display and courtship The Collared Dove, like several other



PLATE 8. Work Parties on the Isle of May

a) Outside the Lookout in 1934—W. B. Alexander, E. V. Watson, Donald
Watson, Frank Elder & Archie Bryson (l to r) *R. M. Lockley*

b) Gull cull team 1970—Nancy Gordon, Tony Colling, Dave Hollands, John
Young, David Grant & Frank Spragge.

N. J. Gordon





PLATE 9. Much of the Thrift which carpeted the May in the 1930's was destroyed when gull numbers were at their peak, but it is now recovering.

Upper — *G. M. Cowie*
Lower — *N. J. Gordon*





PLATE 10. Some aspects of the island have changed little over the years.

a) The approach to the Low Light

b) The Low Trap—erected in 1934 and still going strong

Tom Weir

R. M. Lockley

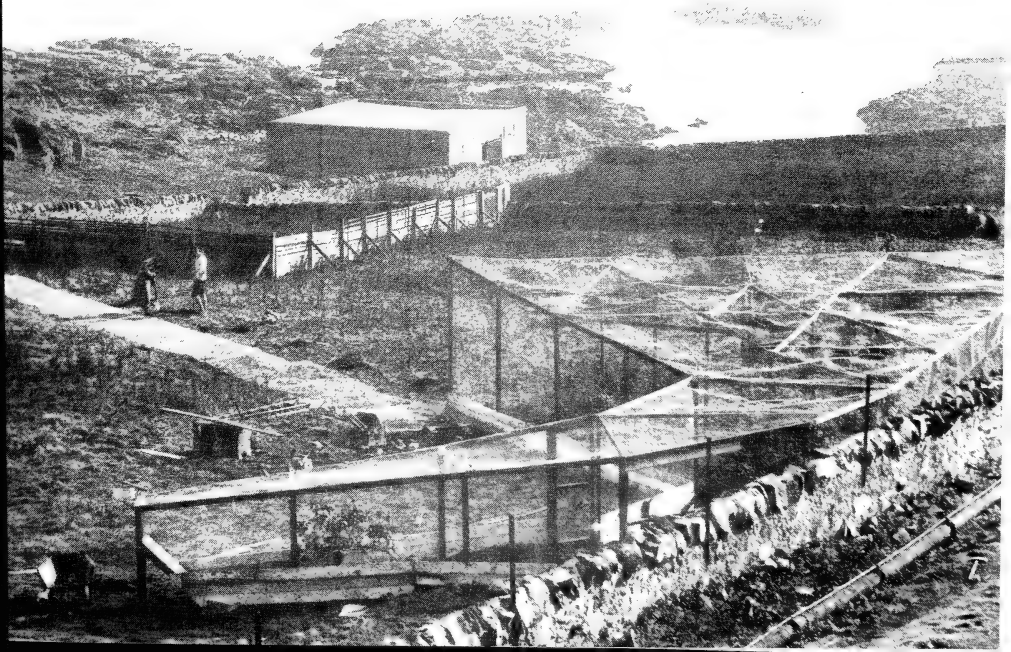




PLATE II. Nest of the Mourning Dove on board ship at Montrose (p. 51).

Chris Christie

pigeons and doves, has a particularly arresting display flight. Selous (1901), describing the very similar display flight of the Turtle Dove, states "This is a beautiful thing to see, and especially in the early morning of a clear, lovely day". The flight may have both nuptial and territorial significance as it sometimes appeared to be set off by the sighting of a dove, other than its mate, flying in the vicinity.

Two distinct approaches were observed leading to copulation. Usually it was initiated when a pair perched close to one another began to mutually preen each other's head and neck, or sometimes the female alone did so to the male, whereupon without further ceremony coition took place. On one occasion, however, the female had to solicit the male three times before he responded. A distinctly more elaborate ritual was witnessed on three occasions. Each time the pair were perched three or four metres apart when the male suddenly began to coo, then pouting out his breast and bobbing his head up and down he slowly waddled up to the female and coition followed.

Nest building and the nest Nest building was observed only once. On two days that the pair were watched closely no building took place later than 1115 hrs. Bockenski (1958), who watched a nest being built in Poland, states that on three days the work began early in the morning and finished before 0900 hrs., the birds spending the rest of the day, as they did at Dornoch, flying about and cooing near the nest-site without paying any attention to it.

Fifty nine nests ranged in height from one to 7½m. with an average of 3½m. Most were sited at the junction of a horizontal branch with the tree trunk but a few were placed a few centimetres out from the trunk. Nests were built in the following trees or shrubs: spruce *Picea* 40; cypress *Cupressus* 4; holly *Ilex aquifolium* 3; yew *Taxus*, Scots pine *Pinus sylvestris*, laurel and ivy *Hedera helix* on tree trunk, 2 each; beech *Fagus sylvatica* and hawthorn *Crataegus*, 1 each. Two failed nests, the contents of which were not ascertained, were built in different years on a concrete ledge at 5m. under the roof of an open fronted shed. This site was in open country adjacent to the shore and about 400m. from the nearest trees.

The clutch and incubation Laying of first clutches began in mid April and no fresh clutches were found after mid September. Of 49 nests found at the incubation stage 43 held 2 eggs and the remaining 6 singles. Nests with single eggs, however, may earlier have had full clutches, as Collared Doves are notorious for dislodging eggs when rising from their flimsy platform nests. The incubation period at two nests was found to be 14 and 15 days respectively. Skutch (1976) refers to

several species singing while incubating and in 1968 an incubating bird was heard cooing on two separate occasions.

Nestling and fledging periods The nestling period was ascertained at only two nests and in each case was 18+ days. Collared Dove fledglings tend to return to the nest after fledging (Marchant 1963). Accordingly, when fledging is imminent, visits to a nest must be made at least twice daily as otherwise an incorrect assessment of the nestling period can result. At one of the nests studied both nestlings had left the nest between 0830 and 1230 hrs. on 6th October, but both were back on the nest at 1500 hrs. on 8th October. Distraction display was witnessed on two occasions when the young were still in the down stages. Each brooding adult when flushed dropped to the ground, where it fluttered along with half open wings for a distance of about 15m.

After leaving the nest fledglings usually perched close by for several days. At one nest-site the two fledglings remained in the near vicinity until the 25th day after fledging (Macdonald 1967), when they suddenly became quite wary and were flying freely with their parents on the following day. The black half collar was first observed on a fledgling on the 23rd day after fledging.

Predation Out of a total of 57 nests only 16 produced at least one fledgling, and of 56 young known to have hatched only 26 fledged. Of the other 41 nests 31 were predated, 2 were deserted, the nestlings were found dead in 4 and the outcome of the remaining 4 was unknown. In a survey of the Pitgrudy Farm colony in the 1976 breeding season (Macdonald 1977) it was found that clutches laid prior to mid June were much more heavily predated than those later in the season and a similar trend was noticeable in garden nests at Dornoch. Carrion Crows at Pitgrudy Farm and Jackdaws at Dornoch appeared to be the most likely predators, as there was a marked increase in the success rate of nesting doves after these two species had completed their breeding cycle.

Behaviour outwith the breeding season A regular watch was kept on a pair of doves which frequented my garden at Dornoch in recent winters. Groups of doves often feed amicably together but this pair would not tolerate the intrusion of any other dove in the garden. Feeding stints were rather intensive, usually lasting from 10 to 15 minutes and rarely exceeding 20 minutes. They drank frequently. Rest periods were prolonged, ranging from 25 to 105 minutes and consisted of long quiescent spells interspersed with preening sessions.

Sunning Kennedy (1969) includes the Collared Dove in a

list of species which perform sunbathing. No sunning was observed by any dove at Dornoch but on 17th July 1970, a warm but cloudy day following three cool, sunless days, a dove was seen at 1020 hrs. lying on a lawn in a partially tilted posture. During the next 25 minutes the bird frequently moved a pace or two forward, each time changing over and tilting on to its other side. It was always alert, constantly turning its head from one side to the other and sometimes picked up something from the grass. On four occasions it lifted its uppermost wing over its back for two or three seconds, and before walking away it preened for a few minutes. It is, perhaps, significant that Stainton (1982) states, "sunning may always be habitual in the case of Galapagos Doves Nicolai (1962): as they regularly adopted sunning postures around noon in the winter, whether the sun shone or not, particularly after long periods without sunshine".

Roosting Hudson (1965) states that communal roosting is a regular feature outside the breeding season. That may be so where there is a colony of doves but those haunting Dornoch gardens were found roosting singly or in twos on several occasions. The Collared Dove retires early for the night and often comes to roost an hour before dusk.

Summary

Random notes are given on details of population, plumage, voice, food, display, breeding, predation, sunning and roosting of the Collared Dove at Dornoch, South-east Sutherland.

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Short Notes

Transportation of Mourning Dove nest to Montrose

On 27 September 1983 I was given two small slightly glossy, white eggs for identification at Montrose Museum. The eggs had been found in a flimsy twig nest on a steel structure on board the 'Euroclipper' which arrived in Montrose on 21/22 September from Rotterdam. Upon making enquiries at J. M. Piggins, Stevedores, I discovered that the steel struc-

ture was originally shipped from Houston, Texas, U.S.A. on the 'Finnhawk' to Rotterdam where it was transferred to the 'Euroclipper'.

The eggs and nest (see photograph) were undoubtedly those of a dove *Columbiformes* and by using Bent (1932) and Goodwin (1970) I identified them as belonging to the Mourning Dove *Zenaidura macroura carolinensis* Linné 1758. Both authors refer to the occasional use of buildings by nesting Mourning Doves. One of the eggs was broken and revealed a half-grown embryo. The other egg was blown and is now in the Montrose Museum collection. It measures 28.5 x 21.5mm and compares well with an average of 47 eggs measured by Bent (1932) of 28.4 x 21.5mm.

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NORMAN K. ATKINSON

Scottish Storm Petrels in Iceland

There is much evidence to suggest that British Storm Petrels can be separated into two classes: (a) adult birds of breeding age which are "imprinted" on a colony, and (b) wandering juveniles which may be attracted to tape-recordings of the burrow call played on shores away from colonies. The wanderers arrive in northern waters from the end of June onwards and range widely, visiting, but not occupying, colonies (Mainwood 1976, Furness and Baillie 1981, Fowler et al. 1982). For example, Storm Petrels ringed in Shetland have been recaptured as far afield as Ireland, the Hebrides, St Kilda, the Isle of May, Faeroe and the Lofoten Isles, Norway. Movements may be very rapid: one day to Orkney and five days to St Kilda is not unusual.

The capture by the 1983 Brathay Expedition on the south-east of Iceland of four Storm Petrels previously ringed in Scottish waters can, therefore, hardly come as a great surprise. The recoveries are, nevertheless, of considerable interest, not merely because they are the first Icelandic reports of British ringed Storm Petrels, but because they clearly demonstrate that wandering Storm Petrels range throughout the eastern half of the North Atlantic in summer, presumably prospecting for nest sites; a trans-Atlantic recovery may only be a matter of time.

Two of the birds were ringed by the Leicester Polytechnic Shetland Expeditions in 1982 and 1983; one by Fair Isle Bird Observatory in 1981 and the other by the Clyde Ringing Group in 1983. Tape recordings were involved in the capture and the recapture of the birds.

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J. A. FOWLER and R. SWINFEN

Dartford Warbler in Berwickshire

On 18th May 1983, while looking at migrant passerines that had arrived overnight in light easterly winds at St Abb's Head, Berwickshire, my attention was attracted by a quiet Whitethroat-like song coming from the depths of a hawthorn/bramble thicket. A small *Sylvia* warbler, dull-red above and blue-grey below with some white in the moustachial area, suddenly appeared in the open. Initially the possibility of a Subalpine

Warbler occurred to me (there had been one at Fife Ness earlier that week) but this thought was soon dispelled when I realised that the colours were too dull and that there was no distinct moustachial stripe. The small flecks of white feathering on the throat immediately suggested a male Dartford Warbler.

Description Upperparts uniform slaty-grey from crown to rump, including the wing-coverts and primaries; tail blackish-grey; throat, breast and upper abdomen a dull burgundy becoming lighter towards the lower abdomen and flanks. The lower abdomen and ventral area was a dirty whitish colour. The dull red throat was lightly flecked with a very bright, contrasting white, there being more flecks in the lower lores and moustachial area. The bright red eye-ring contrasted well with the iris and head colouring. The upper mandible and the last 1/3 of the lower mandible were dark brown, the basal 2/3 of the lower mandible being light brown. The legs were dull brown. The tail was relatively long compared to other *Sylvia* warblers.

The bird was an inveterate skulker and moved rapidly within and between the hawthorn and gorse scrub. I returned two hours later with a recording of Dartford Warbler song and was pleased to find that the bird immediately responded to it by singing more loudly and moving towards the tape recorder. I then made a recording of the response using a parabolic reflector and found that the warbler's response was even greater, the bird approaching within 1 m. under the cover of thick gorse bushes. The song was a Whitethroat-like jumble of notes; the snatches of the song lasted approximately one second but contained up to a dozen separate notes. The song was monotonously repeated about every 2-3 seconds. The bird occasionally produced a rather melodic, harmonica-like scolding. The song at all times was quiet, only audible within 20 m.

Although the Dartford Warbler is a well known British bird it was surprising to find that it had never before been recorded in Scotland. The resident status of Dartford Warbler populations clearly makes an extra-limital occurrence unusual. The definite lack of brown pigments on the St Abb's bird and the relative clearness of the red and blue-grey colours suggests that it was probably not from the British population but rather from the nominate continental subspecies. This would tie in to some extent with the arrivals of vagrant species on the east coast the previous week; these included Little Egret, Golden Oriole, Subalpine Warbler and an unidentified scrub warbler, either Sardinian or Orpheat.

R. D. MURRAY

Two female Hen Harriers at the same nest

On 18 June 1983, on moorland in the West Mainland of Orkney, I flushed two female Hen Harriers from the same nest. The nest contained 5 eggs and was in the characteristic vegetation favoured by the species in Orkney, with soft rush and heather co-dominant. As I was less than 5m from the nest when the birds rose I could be certain that both were females and neither was a first-year male. I could not be certain, however, that one bird had not risen from outside the nest rim. I revisited the site on 4 July, with Brian Ribbands, to check its success. On this occasion the nest was approached to within 3m before the birds took flight and there could be no doubt that both rose together from the nest platform. The nest still contained 5 eggs which were found to be addled. As the nest had failed anyway, we remained close to the site in an attempt to identify the wing-tags both birds were carrying. One bird was 9 years old and the other 3 years old; they were unrelated. No male was seen on either visit.

The site was not examined again until 27 July, when all the eggs had disappeared and there was no sign of females in the vicinity.

These observations are consistent with what Newton (1979, Table 4) termed 'Type A' polygyny and, as such, represent the second example of this type of polygyny amongst the Orkney Hen Harrier population. Newton's 'Type B' polygyny (where separate nests occur close together in an area that would normally be occupied by one pair) occurs occasionally in Orkney, while 'Type C' polygyny (where separate nests occur far apart in areas that would normally be occupied by separate pairs) is frequent. The previous example of 'Type A' (Picozzi 1983) referred to different individuals at a site some 23 km to the south-east, in Orkney's East Mainland, in 1981. In both that and the current example one bird was old (8 & 9 years) and the other much younger (3 & 4 years).

I should like to thank N. Picozzi for his constructive comments on an early draft of this note.

E. R. MEEK

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Kingfisher attacked by Magpie

As I was walking along Blackford Glen Road, Edinburgh on 3rd January—a bright and frosty but very windy morning—a Kingfisher flashed up the Braid Burn, which runs along by the road. It disappeared under the bridge and culverts at the local authority road works; but, a few yards farther on, I discovered that a Magpie had pounced on it from an overhanging tree and was attacking it in its claws on the far side of the stream. As I moved forward, the Magpie released its hold, and the Kingfisher flew very uncertainly upstream, still pursued by the Magpie. They disappeared out of sight below the bank, but seconds later the Magpie re-appeared on the road without the Kingfisher. One can only assume that the prey escaped by flying under the next bridge, or possibly it plunged or fell into the water, where it would be swept down by the current, which was very strong after rain. In any event, it seems doubtful whether the Kingfisher would survive, as it seemed to have a trailing wing. I searched the banks of the stream in both directions, but could find no trace of it.

MARGARET MOWAT

Letter

Dear Editor,

Crested Tits on Deeside

I was interested in Alan Knox's recent article on this subject (SB 12: 255). The 1939 record quoted by Baxter & Rintoul refers to my late father, and the 1950 record quoted by Campbell (1958) to me. I had crossed the Cairngorms in autumn and was lying in the heather near the Linn of Dee when I heard what sounded like the high-pitched note of the Crested Tit. A search revealed nothing, but about an hour later I distinctly heard the unmistakable trill, and shortly thereafter had a good view of two Crested Tits in the large spruces. I recall a subsequent discussion with the late Evy Baxter in which she agreed with me that Crested Tits would be more likely to have spread from Speyside directly over the Lairig Ghru than by following the circuitous route down the Spey, through the woods of Moray and Banff, and up Deeside.

The Crested Tit population in Speyside is subject to considerable variations, and after a hard winter can be reduced to a fraction of its peak numbers. In good years, however, it is surprising to see fair numbers in the stunted Scots pines of the uppermost fringes of the forest. It is not difficult to envisage that from these areas, either by natural outward spread, or, since Crested Tits feed not only in trees but also in the heather—sometimes at an appreciable distance from the trees—, swept southwards by northerly gales over the hill or through the Lairig, small numbers might occasionally reach the sanctuary of the Deeside woods. What I agree is more puzzling is why they have not become successfully established in Deeside.

J. P. GRANT OF ROTHMURCHUS

Fieldwork Reports

These brief reports have been submitted by recipients of
SOC Endowment Fund grants

East Scotland Mute Swan Study In 1983 a complete census of Mute Swans in the study area was undertaken by air survey at two critical times of year: the breeding season and the moult period. The former coincided with the national swan census and allowed the accuracy of the air census to be checked against ground counts. About 450 adult birds were recorded in spring and some 635 in autumn, an increase during the moult period of over 40%. During autumn most of the swans were concentrated in two moulting flocks, and at the end of July attempts were made to round up and capture both these flocks. As a result 427 birds were caught in 2 days: 181 at Loch of Strathbeg and 246 at Montrose Basin. Colour-ringing at both sites should reveal their dispersal pattern; already several sightings have been reported from further south. Blood samples were collected, from broods of young as well as moulting adults, for estimation of lead levels. Analyses of the first batch of samples suggest that lead levels in blood are generally low enough not to cause serious concern in this area, although isolated cases of high lead levels apparently occur and need further investigation.

CHRIS J. SPRAY

Long term seabird studies on Canna Three visits were made to the island during 1983, in May, July and August, enabling us to conduct our normal censusing and ringing programmes. Most seabirds had another excellent season. In our sample areas Guillemots had increased by 9.3% and Razorbills by 4.6% confirming that Canna birds were little affected by the January/February 1983 wreck as the relatively few ringing recoveries had suggested. Gulls also had a good season, with Herring Gulls maintaining their high numbers with 1151 pairs (1212 pairs 1982). They also had good breeding success with 76.8% of nests in study areas producing young. Lesser Black-backed Gulls increased slightly to 46 pairs and 18 pairs of Common Gulls was the highest we have recorded. Great Black-backed Gulls remained stable with 65 pairs, as did Kittiwakes with 982 nests. Shags maintained their high numbers with 1498 nests (1507 nests 1982). Breeding success was only average with 1.8 young fledged per pair from our 57 study nests. Fulmar numbers were still low with 480 occupied sites—well below the c.650 counted in the late 70's. After two bad seasons, including last year's almost total failure due to rat predation, Manx Shearwaters did much better with 0.68 chicks fledged per pair (based on 38 observation burrows). This was probably aided by

the use of rat poison (supplied by the R.S.P.B.) in the colony during and prior to the breeding season.

4500 birds were handled during the ringing programme, including 2535 Guillemots, 735 Shags, 450 Herring Gulls, 304 Razorbills and 201 Manx Shearwaters. In addition 380 Guillemots and 200 Herring Gulls were colour ringed and observations were made on birds colour ringed in previous years. Food samples were again collected and measured from both Guillemots and Shags. The former were found to be eating large sand eels and sprats. About 60 chicks and 60 breeding adult Guillemots were weighed and measured for comparison with other colonies.

Our 1981-82 Canna Report has now been published and copies are available in the SOC Library or can be purchased (price 50p) from R. L. Swann, as can our recently-produced Birds of Canna (also 50p).

R. L. SWANN

Buzzards in Glenurquhart This study was started in 1975. The number of occupied territories tends to remain fairly stable from year to year, varying between 20 and 23 pairs, but not all pairs lay each year. 1983 was an average year: 16 (76.2%) pairs laid with an average clutch size of 2.08. This compares with the 1975-83 averages of 76.4% laying and clutch size of 2.38. In 1983 13 nests were successful and fledged 14 young, giving an average of 0.88 young fledged per breeding pair or 1.08 per successful pair (c/f long term averages of 1.8 and 1.48). This lower than average figure was mainly due to higher than normal chick mortality. Only one nest fledged two young; in all other nests the smallest young died, presumably a sign of food shortage. Buzzards in Glenurquhart nest at fairly high densities but food often appears to be a problem due to the lack of rabbits. They feed mainly on small mammals (such as voles and shrews), birds and reptiles. There is evidence that the cold late spring of 1983 reduced the amount of such food available to the Buzzard.

R. L. SWANN

Status and breeding ecology of Merlin in Grampian During 1983, work was continued in the original study area. Two new areas were looked at in detail and this resulted in the best year for coverage so far. Many individuals are reporting sightings and 10 SOC members are now contributing to the study. Altogether 57 of the known or suspected nesting areas were checked and signs of occupancy were found at 48 of these. Eggs were laid at 21 sites and 13 of the 14 sites checked late in the season all had at least one young on the wing. The atrocious weather during April and May in the North East of Scotland resulted in many sites being deserted in June. The pairs still present after the bad spell did reasonably well and 36 young were ringed. The young in 4 broods were weighed and measured until they left the nest, in a continuation of last year's attempt to establish reliable sexing. Pellets and prey remains were collected on most visits and these are being analysed. It is planned to continue the study during the next few years.

GRAHAM REBECCA

Heron studies in East Scotland The colonies studied in 1983 were: Angus—4 (Brechin, Carnoustie, Lintrathen, Glen Isla), Fife—4 (Kingsbarns, St Andrews, Tentsmuir—2), Kinross—1 (Loch Leven), Perthshire—5 (Bridge of Earn, Dunning, Bankfoot, Pitlochry, Glen Shee). This was 1 colony down on 1982. This colony was deserted as a result of shooting during the 1982 season and the new site was not found in 1983.

No season goes by without at least one of our study colonies being

affected by timber operations. This year it happened at Lintrathen, where nests were either destroyed or deserted due to clearing and thinning of windblown trees. The main problem was the timing of the work which coincided with the wet cold spring weather just after the chicks had hatched and when they were most vulnerable to chilling. Only 2 pairs were successful, and an increase in breeding pairs at the Glen Isla colony may have been due to a shift of birds between the 2 colonies. Overall, breeding numbers were much the same as in 1982. Brood sizes were down on average due to the cold wet spring. Another facet of the poor spring weather was the high number of early failures, however many of the birds laid repeat clutches and were successful in rearing broods.

A total of 296 young were ringed, which was down on the 1982 total of 320 but still a high percentage of the BTO annual total, currently running at c.1,000. Tagging of young from selected colonies was again continued, in conjunction with Mick Marquiss of ITE. We still have to locate any of our previously marked birds breeding in the study colonies, although this has not been helped by high mortality in previous winters. Hopefully a mild winter will allow a higher survival of young birds so that more are available for recruitment into the colonies.

K. BROCKIE, M. NICOLL

Status and breeding biology of Yellow Wagtails in Clyde During summer 1983 parts of Ayrshire and Lanarkshire were intensively surveyed for breeding birds. The survey was incomplete due to the late spring delaying and depressing territorial behaviour, and the labour-intensiveness of searching large areas. It is hoped to continue for another one or two seasons to achieve complete coverage of suitable habitat in Lanarkshire. A total of 52 pairs was located in 1983: 27 in Ayr, 23 in Lanark, and single pairs in Dunbarton and Stirling. Most Ayrshire nests were in hay fields, whereas barley fields were the preferred habitat in Lanarkshire. Breeding success is being studied in relation to habitat selection, agricultural changes, climate and other factors. An area of 400 ha. of north Ayrshire farmland, which held a concentration of 15 territorial males in 1983, has been chosen as the main study site. Pairs usually fail in silage fields, and have to find new territories in hay fields which may already hold breeding birds, resulting in intensified competition. Some males remain territorial after successfully rearing young, and may attempt to acquire a second mate in the same season. As an aid to the study of breeding biology, birds have been ringed with individual colour codes: 73 nestlings and 9 full-grown birds in 1983. Two foreign ringing recoveries were interesting, both birds on return migration through the Western Sahara in spring 1983. A full report of the survey will be deposited in the Waterston Library, and an account of the species' historical and present day status in Scotland is being written up for publication.

IAIN GIBSON

Breeding Dunlin on South Uist Two visits were made to a damp machair grassland on the Army Ranges at Loch Bee, South Uist, to continue a study of breeding Dunlin started in 1981. The first visit between 23rd and 25th April revealed several small parties of adult Dunlins back on the breeding grounds with some birds already in song display. Attempts to estimate the large Lapwing population were frustrated by the inclement weather. During the period 25-30 May a more comprehensive study of Dunlin was conducted, involving intensive nest searches and the ringing of breeding adults and chicks. In a study plot of 6.7 ha. a minimum of 25 pairs of Dunlin bred (23 nests found). Occupied nests averaged 45 metres apart and showed a strong tendency to clumping, as in previous

years. The nest density recorded suggests a population in excess of 400 pairs on the Loch Bee machair—an outstanding concentration. A disturbing feature of the 1983 season was the unusually high failure rate compared to the previous two years. This was mainly due to a small number of Black-headed Gulls specialising in wader nest predation. Their effect on Dunlin was locally severe; during the 6 day study period, 20 (59%) of 34 known nests were predated by this gull. Adult Dunlin (14 males and 15 females) were nest-trapped for biometric studies. Nine of these birds had been caught previously as breeders in 1981 or 1982. Further visits to this outstanding wader community are planned in future years to monitor long-term population trends.

B. ETHERIDGE

Golden Eagles in Grampian region During the 1982 survey a pair of birds was counted with confidence if an occupied nest was found. If birds were present but only empty nests could be located, then doubts set in. Was the pair just not breeding that year, or had eggs been laid but then stolen? Or had the birds flown in from an adjacent range? By the end of the 1982 survey there was still some doubt about the breeding status of 5 ranges in Grampian Region.

In February and March 1983 these 5 ranges were visited regularly. During this period, birds can be very conspicuous as they display or build up old nests, and it is the best time to find out what is happening in an area. In one range, thought to have been occupied by a separate but non-breeding pair over the last few years, the birds were seen, after much watching, to be refurbishing a small obscure eyrie, previously unknown but clearly several years old. So it is possible that the birds did breed after all in 1982. In 1983 eggs were laid in this newly-found eyrie, proving that the birds did constitute a separate breeding pair.

In the other 4 ranges, adults were seen regularly in each, but only one breeding pair was found. The other adults were considered, with some confidence, to be from adjacent ranges, with birds moving over greater distances than had been thought likely. Without positive identification features (e.g. wing tags) there is of course always the possibility that a pair is super-secretive and that a nest has been overlooked.

The work described here was a small part of the monitoring of eagles in Grampian and east Tayside carried out by the North-East Scotland Raptor Study Group in 1983, and summarised as a Short Note in *Scot. Birds* 13: 24-26.

SANDY PAYNE

Waders of rocky shores in northern Scotland The second part of the two-year project to survey the waders on the coasts of the Orkney Islands was completed during December 1983/January 1984 by the Tay and Orkney Ringing Groups. Nineteen islands have now been visited and practically all rocky and sandy shores were surveyed at low tide; some sections of cliff were omitted from the survey. Over 50,000 waders were counted, the most abundant species being Curlew (18,000), Redshank (7,000), Turnstone (6,000) and Purple Sandpiper (6,000). Relatively large numbers of Ringed Plovers (1,600), Sanderlings (860) and Bar-tailed Godwit (930) were also found. For practically all species the numbers counted represent only a part of the Orkney population, for most species use grass fields for foraging as well as the shore. Purple Sandpiper and Sanderling were the only species not seen feeding in fields. Also, repeat counts of a section of shore showed that day to day variations greatly affect the counts of Curlews, Oystercatchers and Redshanks, but these variations are small for Purple Sandpipers and Turnstones.

RON SUMMERS

Breeding waders in the Outer Hebrides Between April and July 1983 the Wader Study Group and the Nature Conservancy Council jointly surveyed the breeding waders on 131 km² of machair on South Uist, Benbecula and North Uist. Over 12,000 pairs were located by the transect method, comprising 511 Snipe, 3451 Lapwing, 2071 Oystercatcher, 2038 Dunlin, 1974 Redshank, and 2116 Ringed Plover (all pairs). These figures are probably under-estimates, and are certainly so in the case of Snipe. Species' distribution varied greatly: Ringed Plovers were abundant on the drier cultivated and fallow land while Dunlin, Redshank and Snipe preferred wetter grasslands and marshy areas. Detailed distribution maps were prepared as an aid to assessing the conservation value of different areas, and to serve as a baseline against which to measure the effects of any change in agricultural practices resulting from the EEC's Integrated Development Programme.

The results of the survey confirm that the mosaic of machair habitats supports a unique community of breeding waders at a greater overall density (90 pairs/km²) than has been recorded in any other part of Britain. The densities of Ringed Plover and Dunlin are unrivalled elsewhere in Britain; comparison with the results of the 1973-74 survey of Ringed Plovers shows that the area studied probably supports about 25% of the British population. The Redshank population is also notable, with breeding numbers comparable to the total of 2104 pairs found in damp grasslands throughout England and Wales in 1982. Future near-annual surveys of selected areas are planned, starting in 1984.

This survey was funded by grants from SOC, British Ecological Society, NCC, WWF, BOU, BTO and RSPB. A short report on the background to the survey, methods used, results, future plans, and publications to date may be obtained from Wader Study Group, c/o G. H. Green, Windy Ridge, Little Comberton, Pershore, Worcs, WR10 3EW.

G. H. GREEN

Breeding waders of Scottish agricultural land 1983 was the second and final year of field-work for the breeding wader survey. Though completed cards have only recently stopped coming in, it is possible at this early stage to evaluate the efforts made in relation to the targets set. After the first field season (1982), our main aims were to extend coverage in the more intensively surveyed south and east and also to improve sample sizes in the more remote west and north. In both aims we have been successful, as the following table shows:

Region	Coverage (km ² surveyed)	
	1982	1982+1983
south-west	99.8	177.4
south-east	87.5	103.2
north-east	76.8	94.3
south-west Highlands	9.1	22.6
northern Highlands	15.4	40.3
western islands	10.1	17.1
Orkney/Shetland	23.7	41.4
		496.3

A full analysis of the data will appear in *Scottish Birds* but we would like to take this opportunity to thank all of those dogged SOC members who gave up their valuable time to help make this survey possible.

HECTOR GALBRAITH & BOB FURNESS

Reviews

Owls of Europe by H. Mikkola; T. & A. D. Poyser, Calton, 1983; 397 pp.; 75 b.w. photographs; 8 colour plates; £16.80.

This is an excellent book that fills a major gap in the ornithological literature. It includes all European owls as well as four species that occur round the fringes. Each species is given separate treatment in highly detailed accounts covering all aspects of the species biology. The author has undertaken the formidable task of searching out and consulting nearly all of the European literature on owls and for the first time an immense amount of fascinating information is made available that formerly was inaccessible to most British ornithologists. In Sweden and Finland, in particular, there has been a vigorous interest in owl ecology and the accounts of species such as the Great Grey Owl and the Eagle Owl make absorbing reading.

The text is lavishly illustrated with a superb collection of black and white photographs by a variety of photographers and a set of colour plates by Ian Willis. Some of the photographs are simply breathtaking, especially those by E. Kemlitt, showing a Great Grey Owl hunting and those of Barn Owls in flight by Donald Smith.

With so many bird books coming on to the market in a seemingly endless flood one has to be highly selective but this book thoroughly deserves the highest ranking on any shopping list.

I. R. TAYLOR

Enjoying Ornithology edited by Ronald Hickling; T. & A. D. Poyser, Calton, 1983; 296 pp, 39 maps and text figures; £13.00.

The title of this book really gives little indication of its content. Note "Enjoying Ornithology" not "Enjoying Birds"—so it is not in the line of Lord Grey or Canon Raven. It is in effect a *festchrift* from various pens in honour of the demi-centenary of the British Trust for Ornithology. It is not, we are told, a history of the B.T.O.—but it most certainly is, and a great deal more besides: history and personalities from the early days onwards, details and descriptions of all the activities of the Trust from single species census to the greatest co-operative effort of all—The Atlas.

Many may associate the Trust mainly with ringing and migration—a very Scottish topic perhaps in view of early work at Aberdeen University, Fair Isle and the Isle of May. Ron Hickling gives credit to all and reminds us that Ken Williamson's theory of migrational drift was anticipated by over thirty years by the "Good Ladies"—the Misses Baxter and Rintoul. Nothing is static in nature and even the most casual observer of birds must be aware of change, such as the appearance of the Collared Dove or the disappearance of Corncrakes. Bob Spencer's brilliant contribution is in itself a good reason for buying the book—a scholarly dissertation on changes in species, numbers and distribution.

The grand finale is a sort of ornithological Guinness Book of Records, of facts and figures drawn from ringing recoveries and other B.T.O. investigations: the Arctic Tern which travelled 18,000 km. seems old news, but what of the Great Tit which clocked up 1446 km. or the Manx Shearwater which was known to be at least 29.92 years old?

This slim volume, unadorned by plates may look expensive at £13 but it is packed full of meat and is undoubtedly recommended reading for anyone with more than a casual interest in British Ornithology.

IAN DURANCE PENNIE

Fair Isle's Garden Birds by John Holloway; Shetland Times, 1984; 159 pp; 60 col pl; drgs; £18.

The tongue-in-cheek title includes all the vagrants seen from John Holloway's garden on Fair Isle between 1978 and 1983, and there are a lot of them in his garden list of 177. Together with some commoner migrants they provide the first part of this collection of his paintings, coming in any order as he saw the birds. The brief description of each discovery shares something of his delight and excitement in a text characterised by enthusiasm rather than by Latin names. The second section trawls through an even bigger selection of rarities seen elsewhere on the island, particularly warblers and buntings, and the final part brings together bird memories and anecdotes from each of the families on Fair Isle.

John Holloway's pictures are detailed and stylised studies without backgrounds of some eighty species, with a few smaller sketches. Their style is part field-guide (the pages are 8 by 6 inches) and part art-book. It is a pity that the printing does not always do full justice to the paintings, especially at such a price, but the book is a splendid surprise package from Pine Bunting to Red-flanked Bluetail to Pallas' Grasshopper Warbler and the rest.

J. M. S. ARNOTT

A Complete Checklist of the Birds of the World by R. Howard & A. A. Moore; Macmillan, London, 1980, 1984; 732 pp; new revised edn. with complete index of English names, £7.95 (limpback).

New Colour Guide to Hong Kong Birds by C. Viney & K. Phillipps; Hong Kong Government, 1983; 194 pp; incl. 77 col plates; map; completely revised and enlarged edition of the Colour Guide to Hong Kong Birds (1979), £12.50 (limpback).

PAPERS OF SCOTTISH INTEREST Articles and reports on birds in Scotland, mainly on status and distribution, are listed here. Some biological studies are excluded, as are references from the widely available journals **British Birds**, **Bird Study**, **Ringling and Migration**, and **Ibis**. Most items listed are available for reference in the Waterston Library. The librarian welcomes copies of work on any aspect of ornithology.

North-East Scotland Bird Report for 1982. (56 pp). M. V. Bell (ed) 1983. In addition to a Systematic List there are articles on 'Birds of Cruden Bay 1968-1983', 'Toxic chemicals in Grampian Seabirds' and 'A Year in the Bird-life of Rubislaw Terrace Gardens'.

Survey of breeding Waders on the Machair of the Outer Hebrides in 1983. In *Wader Study Group Bull.* 39 : 5-29. Several authors have contributed to this preliminary account (M. W. Pienkowski, editor) of this joint Wader Study Group/Nature Conservancy Council survey. The techniques used in the survey are discussed and preliminary results given.

Patterns of population turnover in Ringed Plovers and Turnstones during their spring passage through the Solway Firth in 1983. M. Moser & M. Carrier 1983. *Wader Study Group Bull.* 39 : 37-41.

Feeding strategies of the Arctic Skua at Foula, Shetland. B. L. Furness 1981. *Proc. Symp. on Birds of the Sea and Shore*, African Seabird Group, Cape Town : 89-98.

Forth Area Bird Report for 1981. C. J. Henty 1983. *Forth Naturalist and Historian* 6 : 25-33. Covers Clackmannanshire, Stirlingshire and southwest Perthshire.

The decline of the Raven as a breeding species in Central Scotland. J. Mitchell 1983. *Forth Naturalist and Historian* 6 : 34-42.

- Perthshire Peregrines in 1983.* (3 pp). P. Stirling-Aird 1984. Covers central and west Perthshire.
- Edinburgh Nat. Hist. Soc. Journal for 1983* (56 pp. 1984). Includes 'Forth Island Bird Counts in 1983' and a letter describing unusual feeding behaviour in a Great Spotted Woodpecker.
- North Sea Bird Club Report for 1982.* (45 pp). 1984. Includes a systematic list, a more detailed analysis of occurrences of Lapwings, Great Skuas, Guillemots, Wheatears, Chaffinches and Bramblings, etc.
- Status of Mute Swans in the Lothians.* (2 pp). A. W. Brown & L. M. Brown 1984.

W. G. HARPER

Notices

Seabird Group Conference A conference with the general theme of "Population studies and population monitoring" is to be held at Denstone College, Uttoxeter on 15-18 February 1985. The charge for full board and Conference fee is not expected to exceed £30-£40; limited funds may be available to help defray travelling costs. Offers of talks and poster presentations on the Conference theme (or other seabird topics) are invited. Those interested in contributing or attending can obtain further details from Dr J. P. Croxall, The Seabird Group, c/o RSPB, The Lodge, Sandy, Beds. SG19 2DL.

Raptor collisions with power lines The U.S. Bureau of Land Management is assembling all available information concerning collisions of raptors with powerlines and other utility lines. Actual case histories, no matter how circumstantial or fragmentary, are needed. Anyone with such information is asked to write to Dr R. R. Olendorff, US Bureau of Land Management, 2800 Cottage Way, Sacramento, California 95825 USA; a form on which to record the information will then be sent by return mail.

Ringling in the Scottish Borders In an attempt to encourage and co-ordinate ringing in the Scottish Borders, Tom W. Dougall plans to produce a short annual report in the yearly "Borders Bird Report" which covers the former counties of Berwickshire, Peebles-shire, Roxburghshire, Selkirkshire and includes peripheral 10-km. squares partly in those counties. He would be grateful for details of annual totals of fully-grown birds and pulli ringed; and of any recoveries and controls involving the region, whether birds ringed casually or as part of a research project. All contributions will be acknowledged in the annual report. Please submit them to: Ray Murray, 143 Eskhill, Penicuik, Lothian EH26 8DE.

The Scottish Ornithologists' Club

ANNUAL CONFERENCE and ANNUAL GENERAL MEETING

The 37th annual conference and 48th AGM of the Club will be held during the weekend 2nd-4th November 1984 in the Marine Hotel, North Berwick, East Lothian. The conference theme is Scottish islands, with the emphasis on the Isle of May—as 1984 sees the 50th anniversary of the Isle of May Bird Observatory. The conference programme, booking form and AGM agenda will be sent to members with *Scottish Birds* 13(3) early in September.

BRANCH MEETINGS

The dates for the first meetings of branches next winter are as follows :

Aberdeen, Borders, Glasgow—17 September
Edinburgh, Inverness, Wigtown—18 September
Ayr, Dumfries, St Andrews, Thurso—19 September.
Dundee, New Galloway, Stirling—20 September

WILDFOWL COUNTS IN SCOTLAND

Please note this correction to the list which appeared in SB 13(1).

Strathclyde South East A. Wood, 47 Kilbowie Road, South Carbrain, Cumbernauld G67 2PZ.

THE BIRD BOOKSHOP

The latest catalogue, lists of recent books and new books at reduced prices are available free. The bookshop is now open 8.30 am to 5.30 pm including lunchtime. Books are sent post free to all SOC members, however small or large the order and however far away you live.

THE SCOTTISH BIRD REPORT 1982

We apologise for the considerable delay in publishing the 1982 SBR, and hope that all subscribers will have received their copies long before this notice appears. After many years as compiler &/or editor of SBR, Roy Dennis has had to resign, due to the pressure of his work as the RSPB's Highland Officer. We thank him for the tremendous amount of work he has done over the past years.

Angus Hogg, Kirklea, 11 Kirkmichael Road, Maybole, Ayrshire, is to succeed Roy as Editor and will be starting work on SBR 1983 immediately. Alan Brown and Pete Ellis will continue to assist with compilation, and Roy will retain responsibility for all records relating to rare breeding birds, which should be sent direct to him as before.

SCOTTISH BIRDS

Copies of all back numbers of the journal and the SBR are available, although some issues in short supply may be bought only as part of a complete volume. For an up to date price list write to the Secretary.

VOLUNTEERS

Although the SOC and the Bird Bookshop now have 6 full-time and 2 part-time staff, some voluntary help from Club members would be greatly appreciated at certain times. We basically require two types of people : those who can help out at busy times in the office or bookshop, or when a member of staff is sick or on holiday (or having a baby!), and those with particular skills such as electrical, plumbing, carpentry, painting and decorating, gardening, etc. If you'd like to help and live in or near Edinburgh please contact John Davies, the Secretary.

PHOTOGRAPHIC COMPETITION

The closing date for the 1984 competition is Saturday, 22 September. This competition is open to anyone, but the photographs (colour slides or black & white prints) must be of birds which occur in Scotland. The entries are judged by the Editorial Committee.

STOP PRESS - BOOKSHOP MANAGER VACANCY

Maureen Williams, who is expecting a baby, is leaving us in June; we wish her and her husband Ben all the very best. The post of bookshop manager/SB business editor is advertised in this number.

Recent Reports

These notes include unchecked reports and are not intended as a permanent record, nor will they be indexed. Please send reports to Pete Ellis, Houss, East Burra, Shetland, via local recorders, at the end of March, June, September and December. The period January to March is covered here.

The second half of the winter produced a spell of hard weather in January with a lot of snow still on the hills at the end of March. Gales in January and February contributed to high auk mortality. **Guillemots** were the main species involved, but in January fair numbers of **Puffins** and about 100 **Little Auks** were also washed ashore in Shetland. The predominantly south-east winds brought unusually many large, brightly-coloured northern **Bullfinches** to the Northern Isles in February and a fall of Scandinavian thrushes and finches there at the end of March. Late March also produced an unprecedented influx of **Avocets** on the east coast, with at least 16 reported—though the only ones I saw were on blue car-stickers.

White-billed Divers were off Orkney in January and Whalsay throughout the period and the Hermaness **Black-browed Albatross** returned on 29 February. Two **Manx Shearwaters** off Turnberry on 3 January were very early. Amongst the less usual wildfowl were 7 **Bewick's Swans** in East Lothian, and **Bean Geese** there, at Strathbeg, and in Orkney, where a **Brent Goose** was also seen. Other notables were a female **Mandarin** in Edinburgh, the Loch Ryan **American Wigeon**—still present into February, and a **Green-winged Teal** in Shetland, while a male **Garganey** at Loch Stiapavat, Lewis, on 3 February was an exceptional winter record. The Loch Insh **Ring-necked Duck** visited Inverness during the hard weather in January and another called at a waterfowl collection on Islay in February. Red-head **Smews** were reported from 7 sites during the period and males at Inverness, Hoselaw and Kelso.

Three or four **White-tailed Eagles**, two lacking tags and rings, were in Shetland, with singles in Orkney and Jura. (We now know that some of the Rhum birds have lost both tags and rings). **Gyr Falcons** were seen at Thurso and in Orkney and Shetland; Bobby Tulloch saw one from his kitchen window and Eric Meek saw another while changing a car wheel.

Two **Cranes** visited Orkney at the end of March, when there were 6 **Avocets** at Findhorn, 2 at Lossiemouth, 2 on the Ythan, 2 at Invergowie, 1 on the Eden, 2 at Dunbar, and one on the Clyde at Ardmore. **Killdeers** were on South Uist and in Ayrshire in January, at least one **Spotted Redshank** wintered in the Lothians, and there were 3 late-January records of **Great Skuas**, **Glaucous Gulls** were scarce but there was a big influx of **Iceland Gulls** from mid-January, resulting in peaks of 55 at Stornoway, 15 at Scalloway, 12 at Ullapool and 10 at Kirkwall. Other gull records of interest include **Mediterranean Gulls** at Largs and St Andrews, an early **Lesser Black-back** at Stornoway on 16 February, and the Thurso **Ross's Gull**—which continued to perform in broad daylight into March. Wintering **Sandwich Terns** were seen at Peterhead and Aberlady, when there were up to 3 in January. A **Brünnich's Guillemot** in Orkney was characteristically dead, but a few live **Little Auks** accompanied the dead ones in January. January 22 was an odd date for a **Turtle Dove** at Culterty.

The falls at the end of March brought **Black Redstarts** to Newburgh, Eyemouth and Lerwick, the first **Wheatear** to Ayrshire, and 2 **Great Grey Shrikes** to Unst. The 35 **Jackdaws** seen at Carloway, Lewis in February were probably migrants—but a **Chough** reported in Shetland eluded all the local birders.

PETE ELLIS

THE SCOTTISH ORNITHOLOGISTS' CLUB

MANAGER FOR THE BIRD BOOKSHOP

THE Bird Bookshop is run by the Scottish Ornithologists' Club for the benefit of the Club and Scottish Ornithology. The Bookshop is one of the world's leading ornithological booksellers, carrying a stock of over 600 English language titles. Its business is primarily mail order with a significant proportion of orders from overseas. The Bookshop sales in the last financial year were over £125,000. The staff of the Bookshop consist of a Manager and three Bookshop Assistants.

We are looking for an enthusiastic person with an interest in birds who will be responsible to the Club Secretary for the management and day to day running of the Bird Bookshop. A knowledge of accounts is desirable but not essential. Most important is enthusiasm for the job, a willingness to work hard, and the ability to get on well with people. The Bookshop Manager also acts as business editor of the Club's journal *Scottish Birds*, and deputises for the Secretary in his absence.

Further details of the job and application forms are obtainable from John Davies, Secretary, Scottish Ornithologists' Club, 21 Regent Terrace, Edinburgh EH7 5BT. Tel. 031 - 556 6042.

THE SCOTTISH ORNITHOLOGISTS' CLUB

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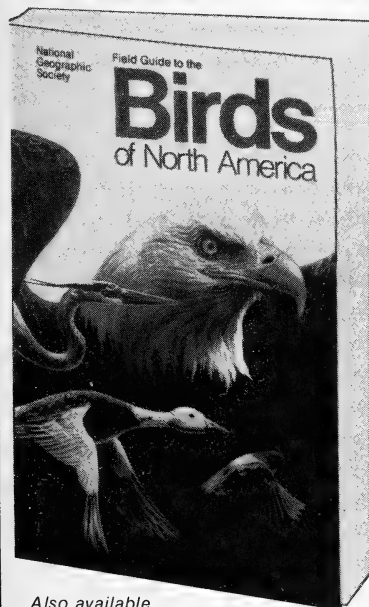
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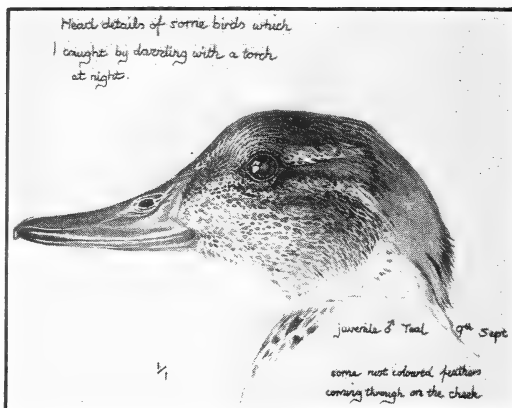
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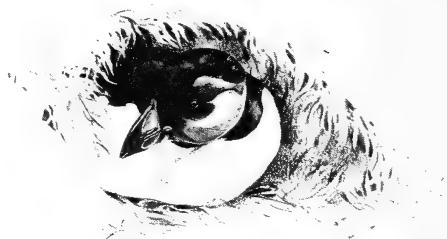
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Editor Valerie M. Thom

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12th October 1984



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Volume 13 No. 3

Autumn 1984

Edited by V. M. Thom, assisted by S. R. D. da Prato, R. W. Furness
and I. R. Taylor

Editorial

It has been encouraging to note recent signs of changing attitudes towards conservation among the farming community, and—even more important—a growing interest in practical opportunities for action to benefit wildlife. The formation of Farming, Forestry and Wildlife Advisory Groups followed increasingly close liaison between the Advisory Services of the Colleges of Agriculture and the Nature Conservancy Council. The National Farmers' Union of Scotland has established an Environmental Group, and a consortium including the Countryside Commission for Scotland and Scottish Agricultural Industries PLC recently launched a "Scottish Farming and Countryside Award", the purpose of which is to demonstrate that good farming and conservation are not incompatible. And landowners and farmers are funding a Game Conservancy research project designed to help farmers avoid the use of those pesticides most harmful to beneficial insects—several of which are important to Partridge chick survival.

It is perhaps opportune that these developments have coincided with a move (largely due to EEC dictates) towards "lower input—lower output" farming. Reductions in pesticide use and land "improvement" are more likely to result from a combination of conservation and financial concerns than from either one alone. With luck, similar influences may in due course help to ensure a more sympathetic approach to upland afforestation.

A Reminder Entries for the 1984 Photographic Competition must be in by 30 September—details in *SB* 12: 173.

Mrs Irene Waterston All who knew her will be saddened to hear that Irene, who had been ill for some weeks, died on 5 August 1984. A tribute will appear in the Winter number.

Isle of May Bird Observatory and Field Station report for 1983

*Prepared for the Observatory Committee by B. ZONFRILLO,
Hon. Secretary*

The Observatory's 49th year of operation officially opened on 30th March and closed on 19th November, but between 1st January and 4th December additional records were made out-with the official period. Three new species were added to the island's list: Honey Buzzard, Grey Phalarope and Rose-coloured Starling*. Rarities recorded included Thrush Nightingale*, Red-flanked Bluetail*, Woodlark, Pallas's Warbler* and Long-tailed Skua. NCC's summer and winter wardens Dr Sarah Wanless and David Pullan respectively, contributed to the Observatory's records as did Dr M. P. Harris. Keith Brockie gave invaluable help throughout much of the year. 8805 birds were ringed.

Migration summary

Observations during **January** showed that even in mid winter the island was far from barren. Species such as Teal, Sparrowhawk, Merlin, Kestrel and Snipe were present most days along with small numbers of Wren, Dunnock, Robin, Song Thrush, Blackbird and Redwing. 18 Snow Buntings were seen on 22nd. Seabirds included Black Guillemot, Little Auk, Common Gull and a Glaucous Gull on 28th. Two Short-eared Owls were present on 29th. **February** had many of the same species with additions such as Woodcock, another Glaucous Gull, one Puffin, two Iceland Gulls and six Siskins on 6th. A Peregrine on 14th didn't stay long. Of special interest was the build up of Little Auks, with a maximum of 76 on 6th. On 20th an oiling incident killed several birds; washed ashore were 2 Shags, 19 Guillemots, 9 Razorbills, 1 Puffin, 3 Little Auks, 1 Kittiwake, and 2 Herring Gulls. Dead but unoiled were 3 Guillemots, 8 Razorbills, 3 Little Auks and a Kittiwake, all of which were presumed victims of the severe weather around mid February. Cormorants at the traditional roost on the west cliffs totalled 26 and very large numbers of Guillemots were ashore on 25th. **March** saw Eider numbers grow to 240 on 3rd and 10 Lesser Black-backed Gulls arrived on 4th. Up to 300 feral Pigeons and 4 Pied Wagtails were present during the month. Two Snow Buntings arrived on 20th and a Sparrowhawk, 3 Linnets and a

*Records subject to approval of Rarities Committee

Goldcrest were around on 31st after easterly winds. **April** began rather spectacularly with the arrival on 1st of a superb Firecrest which stayed for a week. Two Wheatears and a Woodcock were also seen. A Black Redstart and a Brambling arrived on 6th as migration got under way in earnest. The first Chiffchaff arrived on 12th and the first Willow Warbler on 17th along with a Ring Ouzel and a White Wagtail. On 21st a fine male Brambling was the first bird caught in the newly built Heligoland Trap. Also on that date 5 Ring Ouzels, a Grasshopper Warbler and an early Wryneck made their appearance. On 22nd the Wryneck became the second species caught in the new trap. Easterly winds on 23rd brought in more migrants including 15 Chiffchaffs, a Blackcap, a Lesser Whitethroat and a Corncrake, now a scarce species on passage. Further migrants arrived in foggy conditions with a Merlin, 5 Redstarts, 5 Black Redstarts and 2 Swallows on 24th, Whinchat and Whitethroat on 25th, and Common Sandpiper, Yellow Wagtail and Moorhen on 27th. A Black Redstart on 30th ended the April influx.

Fog and east winds at the start of **May** brought 7 Barnacle Geese and 2 Whimbrels in addition to small numbers of passerines. On 5th a Great Grey Shrike was trapped and the island's first Whimbrel was ringed. By 6th a Swift, Yellow Wagtail, 15 Tree Pipits and 2 Fieldfares had arrived along with a rather early juvenile Blackbird. Ten Common Scoter, 2 Black Redstarts, a Turtle Dove and a Cuckoo were seen on 10th. Easterly winds continued during mid May and on 15th a Woodlark was sighted, arriving on the same day as a Black Redstart and a Collared Dove. Next day a Nightingale and then a Thrush Nightingale* were trapped and two Black Redstarts were seen. Thereafter interesting species continued to turn up each day—a Wood Warbler and Tufted Duck on 17th, a Twite on 18th and another Firecrest and a Quail on 19th. A fine Long-tailed Skua flew close by the boat on 21st. On 24th a Turtle Dove, two Bluethroats and a Red-flanked Bluetail* arrived, the last a juvenile male or a female which managed to avoid the mist nets set to catch it. Another Bluethroat was ringed on 26th and on 31st a Red-breasted Flycatcher was trapped. Excitement continued into **June** with another Quail, a Red-backed Shrike, a Blue-headed Wagtail and a Turtle Dove on 1st. On 2nd a flock of seven Canada Geese arrived and a superb adult Rose-coloured Starling* appeared. Joining the resident Starlings it didn't look too out of place amongst the Sea Pinks in flower. On 4th a Marsh Warbler was trapped and on 9th a Honey Buzzard drifted over the island, the second new species for the island's list in eight days. After a Turtle Dove on 14th

another Marsh Warbler was trapped on 21st and 4 Mute Swans were seen.

July was quiet for migration but interesting species recorded were a Treecreeper on 5th, 2 Roseate Terns on 19th and an Arctic Skua on 30th. Autumn migration was slow. August began with a Greenshank on 1st, then a Peregrine on 14th and little else until a Wigeon, Greenshank, Wood Warbler and Goldcrest on 29th. The first Pied Flycatcher of autumn was caught on 31st. Strong westerly winds in September reduced migration considerably. A Little Stint and a Mistle Thrush were seen on 4th and a Grey Wagtail and 10 Goldcrests on 7th. Waders were present in good numbers and species ringed included Curlew, Oystercatcher, Turnstone, Purple Sandpiper, Redshank and another Whimbrel. Sea passage proved interesting on 11th with 17 Sooty Shearwaters, a Manx Shearwater, 4 Great Skuas, 13 Arctic Skuas and one of the very few daytime records of Storm Petrel. On 21st a Snow Bunting, 2 Wrens and 200 Meadow Pipits arrived. A Pomarine Skua was sighted on 23rd and a Quail on 24th, while on 25th 35 Velvet Scoters flew past the island.

A Goldeneye arrived on 26th, when 2 Red-throated Divers were offshore, and a Little Grebe, 4 Common Scoter, 35 Pink-footed Geese and 7 Barnacles were seen on 27th. North easterly winds on 28th accompanied by driving rain brought down good numbers of migrants including 2 Jack Snipe, a Shore Lark, 25 Wheatears, 3 Bramblings, 3 Pied Flycatchers, 10 Reed Buntings, a Yellowhammer and 4 Grey Herons. Similar conditions on 29th yielded the best fall of autumn with a Peregrine, a Water Rail, 6 Tree Pipits, a Black Redstart, a Whinchat, a Barred Warbler, a Reed Warbler, 6 Lesser Whitethroats, a Pied Flycatcher, 4 Twites and 2 Scarlet Rosefinches. In greater numbers were 60 Skylarks, 250 Meadow Pipits, 600 Robins, 100 Redstarts, 24 Ring Ouzels, 30 Blackbirds, 55 Fieldfares, 100 Garden Warblers, 250 Blackcaps, 10 Chiffchaffs, 40 Willow Warblers, 15 Spotted Flycatchers, 12 Siskins, 50 Bramblings and no less than 3000 Goldcrests. At sea, passage included 1 Red-throated Diver, 1 Sooty Shearwater, 11 Manx Shearwaters and 4 Arctic Skuas. Improved weather on 30th slowed migration but new arrivals included a Red-breasted Flycatcher, a Snow Bunting, a Little Bunting, a Shore Lark and a Wryneck. Southerly movement at sea included a Great Northern Diver, 250 Pink-footed Geese and 170 Barnacle Geese, one of which was albinistic.

October 1st saw the wind veer westerly once more and only a Turtle Dove, and 2 Short-eared Owls were new. As expected, migration was slight but on 15th a small influx of birds

included 4 Coal Tits, only the fifth record of this species on the May. At least one Coal Tit remained until mid November. On 16th that other scarcity the Blue Tit was trapped. A Long-tailed Duck and a Mistle Thrush were seen on 18th and on 19th 6 Whooper Swans flew over. Two Little Gulls were recorded on 23rd but from then until the end of the month migration was unspectacular. On 30th another new species was added to the island's list—a Grey Phalarope, which arrived after force 10 westerlies and performed close to shore on the South Ness.

November began quietly with only small numbers of birds around. On 3rd thrush numbers increased and 400 Redwings were counted; also present was a Black Redstart. Unusual visitors on 5th were 7 Long-tailed Tits. By 11th thrush numbers were building—1000 Blackbirds, 200 Fieldfares, 30 Song Thrushes and 600 Redwings, while 25 Woodcocks were flushed. Migration continued on 12th, new additions included 2 Blackcaps, 3 Chiffchaffs, 22 Siskins and a Peregrine. On 13th 6 Long-eared Owls and 3 Short-eared Owls were present and a Water Rail strolled among the new born Grey Seal pups. A Pallas's Warbler arrived on 14th and was later caught emerging from a Rabbit burrow! This brought the records of Pallas's Warbler on the island once more to one ahead of Coal Tit. A Glaucous Gull on 18th and 4 Little Auks and a Black Redstart on 19th were new arrivals and on 24th 2 Little Grebes were seen. On 28th Little Auks had increased to 18. The first few days of December saw the Black Redstart still present along with other species such as Wren, Dunnock, Robin, Mistle Thrush, Starling and Brambling. A short visit to the May on 29th revealed small numbers of thrushes as well as Little Auk, Mallard, Teal, Goldeneye, Snipe and Curlew. Large numbers of Guillemots were again thronging the west cliffs.

Breeding birds

Most seabirds again showed increases in breeding numbers. Some 45 of the island's ringed Puffins were recovered dead in a "wreck" in mid February but breeding numbers were largely unaffected, with new areas colonised. Summer counts of Razorbills and Guillemots showed that these too were increasing and not materially affected by the "wreck". Fulmars showed an upsurge in breeding numbers with 94 eggs laid and 90 chicks counted in August. Shags built 1855 nests during the season and breeding success was good. Kittiwake numbers continue to increase at both coastal and 'inland' cliffs, 100 nests now decorate the cliffs to the north and south of the loch. Around 30 pairs of Common Terns nested with reasonable success while Herring and Lesser Black-backed Gulls increased to around 3,000 and 690 pairs respectively. Small numbers of

both species were shot by NCC in the vicinity of the terns' nesting area. Four pairs of Shelduck occupied burrows but no young were seen. Eiders showed a quite remarkable increase with 545 nests found and 1002 birds counted on 16th May. A vast carpet of mussel spat on the rocks in 1982 was probably the main reason for the resulting increase in numbers, as this is the main food of Eiders. Four pairs of Lapwings again laid eggs and again were unsuccessful. Oystercatchers fared better with 30 pairs breeding. Swallows, Meadow Pipits, Rock Pipits and feral Pigeons all bred. Stock Doves may have bred but the Great Black-backed Gulls did not return to nest.

Ringling

Good numbers of birds were again ringed with record totals for Fulmar 95, Lesser Black-backed Gull 1019, Guillemot 446, Razorbill 51 and Kittiwake 932. Keith Brockie, working mainly at night, boosted wader ringling totals to record levels with 125 Purple Sandpipers, 92 Turnstones, 21 Redshanks, 8 Curlews, 2 Whimbrels, 2 Woodcocks, and one each of Golden Plover, Dunlin and Snipe. Dazzling birds at night has long been a feature of ringling on the May but Keith's new equipment proved very successful. High numbers of Shags 1109, Herring Gulls 2150, and Puffins 1560 were also ringed. Ringling retraps from the May revealed a Purple Sandpiper ringed in September 1969 present in August 1983—a longevity record for this species. A Puffin ringed on the island 23 years ago was caught by Mike Harris in his study area. Strong winds meant only 4 Storm Petrels were lured. The new Heligoland trap helped increase the Observatory's catching abilities but passerine numbers were down to normal after last year's huge numbers. Rarities ringed were Thrush, Nightingale and Pallas's Warbler and unusual species caught included 2 Marsh Warblers, 2 Firecrests, a Red-breasted Flycatcher, a Reed Warbler and a Bluethroat. Four Coal Tits and a Blue Tit were added to the 'scarcities' ringed on the May.

Ringling recoveries

Over 300 ringling recoveries were received during the year with, understandably, Shags and Herring Gulls—our most ringed species, to the fore. While data on such species can be quickly accumulated others take several years or even decades to show patterns of migration or dispersal. Some species, with no recovery or retrap information whatsoever to signify movements, remain, after 50 years' effort, a total mystery.

Age codes are bracketed after species and are as detailed in the Scottish Bird Report for 1981 (page 53).

Ringed Isle of May

Recovered/controlled

Fulmar (1)	04.08.82	08.01.83	Den Helder, Holland (injured)
Storm Petrel (4)	28.08.82	10.07.83	Fair Isle B.O. (control)
Storm Petrel (4)	02.08.81	25.06.83	Ailsa Craig, Strathclyde (control)
Lesser B-b Gull (3)	21.08.82	31.10.82	Aviero, Portugal (dead)
Lesser B-b Gull (1)	07.07.82	03.06.83	Kenitra, Morocco (dead)
Kittiwake (1)	05.07.80	23.01.83	Schluttseil, Schleswig- Holstein, F.R. Germany (dead, oiled)
Guillemot (1)	24.06.83	17.09.83	Bovbjerg, Denmark (oiled)
Razorbill (4)	28.06.82	06.02.83	Varaville, Calvados, France (dead)
Razorbill (1)	15.06.81	05.03.83	Cascais, Estremadura, Portugal (dead in net)
Puffin (8)	05.07.79	09.02.83	Hartlepool, Cleveland, England ("wrecked")

The Storm Petrels were attracted to tape lures. Lesser Black-backed Gulls make good progress towards their north African wintering grounds shortly after leaving the May, juveniles often remain there in summer. The Kittiwake and Guillemot recoveries show that oil pollution is still a problem, other oiled Guillemots were recovered in Norway and Holland. There is one previous recovery of a Razorbill in France but the bird in Portugal is our most southerly record. The Puffin is representative of some 45 birds "wrecked" along the English coast in February.

Dunnock (4)	07.04.82	18.04.82	Akeroya, Ostfold, Norway (control)
Wheatear (3)	06.09.82	09.04.83	Bechar, Algeria (dead)
Blackcap (2♀)	09.10.82	25.01.83	Benicarlo, Castellon, Spain (killed)
Blackcap (2♀)	11.10.82	15.12.82	Carry-le-Rouet, Bouches- du-Rhone, France (dying)

The Dunnock is our second record from Norway, and the Wheatear our first anywhere. The Blackcaps were part of the 1982 "fall".

Chiffchaff (4)	06.04.82	10.12.82	Felanitx, Mallorca, Balearic Is., Spain (dead)
Willow Warbler (4)	08.05.81	23.05.83	Stuartfield, Grampian (dead)
Willow Warbler (3)	12.08.82	02.05.83	Castle Sween, Knapdale, Argyll (control)
Willow Warbler (4)	28.09.83	14.10.83	Dounby, Orkney (killed by cat)
Siskin (3♂)	11.10.82	15.04.83	Sutton Coldfield, W. Midlands (control)

The Chiffchaff is our first wintering in Spain; a previous record was of one wintering in Sicily, Italy. Willow Warblers returning north and west in spring are perhaps to be expected but the autumn bird in Orkney had moved 324 km due north, with little in the line of wind assistance in the period between ringing and recovery. The Siskin is our third recovery, one of the previous birds having reached Belgium.

Ringed elsewhere		Recovered/controlled Isle of May
Purple Sandpiper (3♂)		
Calf of Man BO, Isle of Man	07.11.77	05.05.83 (controlled)
Great Skua (1) Foula		
	Shetland 01.07.82	12.10.83 (exhausted, died)
Whitethroat (3), Cousland,		
	Lothian 27.06.81	18.05.83 (controlled)
Reed Bunting (3) Spurn Pt,		
	Humberside 21.10.82	27.04.83 (controlled)

Few Purple Sandpipers are ringed at The Calf, and this bird's presence amongst those on the May poses some questions as to its origins. The Great Skua was a victim of westerly gales. The Whitethroat was perhaps returning to its natal area, similarly the Reed Bunting was perhaps heading back to Norway where our only previous record originated

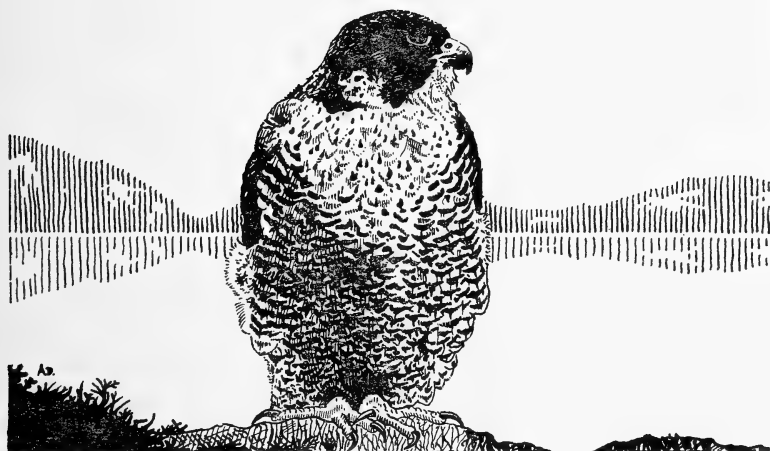
Observatory notes

1983 was an eventful year in many ways for the Observatory. The replacement Heligoland trap was erected in April and the Arnott trap rewired in September, both operations made possible largely through the generosity of the SOC. Keith Brockie, Robert Morton, Ian English, James Ferrie, Mike Harris and Sarah Wanless provided the much appreciated labour. The Low Light was generally redecorated and a new multifuel fireplace installed in the living room. Much of the unsightly driftwood lying around the island has been consumed but each turn of the tide brings new supplies. Keith Brockie spent much of the year preparing his new book on the island's wildlife (due September 1984), and following his activities was a film crew producing a programme for the BBC wildlife series *The World About Us* (screening due October 1984). In November another crew made a film on the island's seal colony for the BBC's Open University programmes. The Grey Seal *Hali-choerus grypus* numbers declined from last year's 650 to around 275 pups. Graham Trigg returned to the island to follow up some work on the island's House Mouse *Mus musculus* population, started several years ago. Graham reckoned the mouse population could number between 3000 and 6000 individuals, depending on time of year. An eagle eye was kept on the island's Rabbit *Oryctolagus cuniculus* numbers. By November a definite decline was noted with improved vegetation cover. Other mammals seen were two Common Seals *Phoca vitulina* on 10 May and a Lesser Rorqual (or Minke Whale) *Balaenoptera acutorostrata*, just off Pilgrims Haven on 19 June.

Our thanks are due to Jimmy Smith for transporting visitors and equipment alike without mishap, to the visitors themselves for their observations and ringing efforts over the years, and to the 'keepers and Commissioners of the Northern Lighthouse Board who have made possible, for all, the privilege of staying

on and enjoying such a fascinating and beautiful island. We hope the next 50 years will be as exciting.

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PEREGRINE *A. Dowell*

Winter sightings of Peregrines at Caerlaverock

R. MEARNS

The Wildfowl Trust (WT) Refuge at Eastpark Farm, Caerlaverock, was established in 1970 with the aim of increasing the sanctuary area available to Barnacle Geese and other wildfowl, and managing the farmland for their benefit. In recent years Caerlaverock has become a good area in which to see some birds of prey; more Peregrines use the area now than at any time since before the general decline of raptors in the 1960s (Newton 1979). This short note examines seasonal and annual variation in Peregrine sightings by staff at the WT Refuge in the nine winters 1974/75 to 1982/83.

Methods All sightings were of birds seen from the WT Refuge above the open merse (coastal saltmarsh) or adjacent farm-

land. Staff were present throughout the year but time in the field was longer and more consistent when the Refuge was open to visitors (every day from September to April inclusive, except 24 and 25 December).

Some of the birds were seen well enough to age as juveniles (brown streaked breasts) or adults (grey, pale breasts, dark heads) and some were sexed on the basis of size (female Peregrines are about a third larger than males). Data on the numbers of Peregrines reared in south Scotland and ringing recoveries are from a wider study of the species started in 1974 (Mearns 1982, Mearns & Newton 1984 and in prep).

Results Peregrines were rarely seen between mid-April and late August. Combining the records from all 9 winters, sightings increased rapidly in late September, remained fairly constant, increased again in February and then fell during March (fig. 1). This seasonal pattern varied when each year was examined separately, but sample sizes were small. On a three yearly basis, there was no obvious seasonal difference between the early, middle and late part of the period, and the seasonal pattern for each three year period was similar to the pattern for all the winters combined. In 8% of all sightings age was recorded; almost all birds were juveniles (23:3 adults). For those sexed (17% of all sightings) the ratio of male to female was about even (25:29).

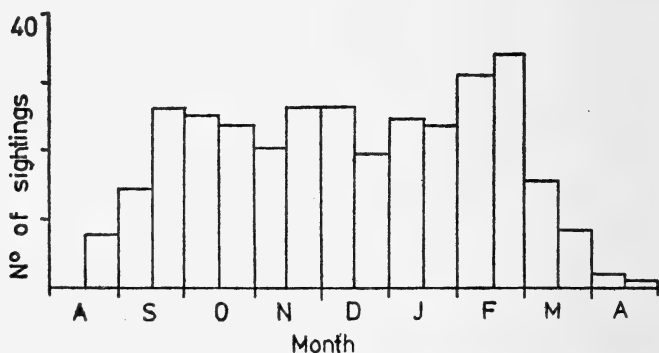


Fig. 1. Fortnightly totals of Peregrine sightings at Caerlaverock, August-April 1974-83

An almost regular increase occurred in the number of Peregrine sightings from the winter of 1974/75 until the winter of 1981/82, when numbers fell sharply (fig. 2). The number of sightings was correlated with the number of young produced in the preceding summer in south Scotland within 110 km of Caerlaverock ($r=0.87$; $df=7$, $P=0.002$), and in northern Eng-

land, within 130 km of Caerlaverock, ($r=0.69$; $df=7$, $P=0.0386$). There was a similar correlation for the two areas combined ($r=0.79$; $df=7$, $P=0.0105$). For both areas, about 95% of the young were reared within 90 km of Caerlaverock, but none closer than 25 km. Sightings were less well correlated with the general increase in the number of territorial pairs. (For south Scotland $r=0.67$; $df=7$, $P=0.05$).

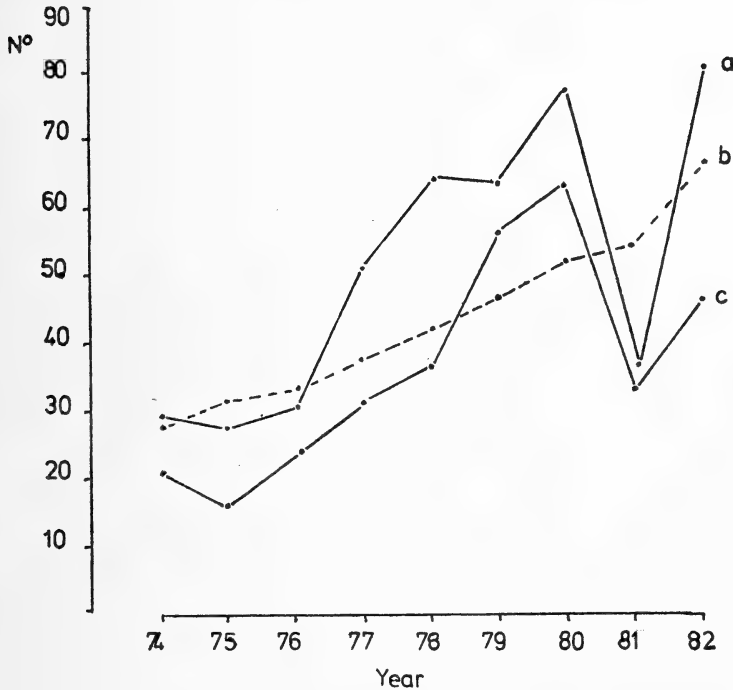


Fig. 2. Annual variation in the number of Peregrine sightings at Caerlaverock and production of young in south Scotland
 a. young reared, south Scotland.
 b. territorial pairs, south Scotland.
 c. sightings in following winter, at Caerlaverock.

Discussion Observer effort was assumed to be the same, both seasonally and annually, although there was at least some variation because time and location in the field were somewhat dependent upon the movements of the Barnacle Geese and the number of visitors. For example, the number of sightings fell over the Christmas period (fig. 1). The number of sightings did not necessarily reflect the number of individual Peregrines present. It was impossible to determine whether birds visited

the area once, for a few days or longer. Thus an increase in the number of sightings may have represented more individuals using the area or the same number using the area more often. Despite these reservations, the results seemed worth interpreting in the light of local breeding data.

Although only a small proportion of birds were aged or sexed, these observations agreed with other winter sightings on the north Solway shore, lower Nithsdale and lower Annandale, where most Peregrines on low ground in winter were juveniles, with no detectable habitat preference between the sexes (Mearns 1982).

Most Peregrines in south Scotland fledge in late June or July and then disperse, in any direction (Mearns & Newton 1984), usually to low ground where prey is abundant (Mearns 1982). The time juveniles spend with their parents varies. One bird found dead on 4 August, 87 km from its birthplace about 40 days after first flight, may have been exceptional, since the first Peregrines at Caerlaverock were not seen until the last week of August. Ratcliffe (1980) reported that separation from parents (ie dispersal) occurred from August to October or even later.

Table 1. Season of recovery (up to June 1983) for Peregrines ringed as nestlings in south Scotland, 1974-1982

Season	Age when recovered			Totals
	<1 year old	1-2 years	>2 years old	
July-December	23	7	4	34
January-June	6	2	10	18

The late peak in sightings in February was surprising, considering the high mortality of juveniles in the first six months of life and the overall higher mortality during the period July to December (table 1). However increased activity by the remaining birds in search of food or breeding territories probably accounts for the greater number of sightings in February. A similar pattern of activity occurs in some other relatively sedentary birds of prey (Newton *et al.* 1982).

The number of sightings may also have been correlated with the overall national situation, but as figures were not available for all areas or all years this possibility could not be examined. Other areas of Britain have shown different rates of increase (Ratcliffe 1980), but the poor breeding season in 1981, associated with very wet weather when young were small, was common to many areas (Ratcliffe 1984).

Ringing recoveries for south Scotland show that few Peregrines move further than 150 km from their birthplace (Mearns

& Newton 1984) and most adults remain attached to their breeding territories in winter (Mearns 1982), though they would be capable of travelling to estuaries for short periods. There is no evidence at present to suggest that Peregrines elsewhere in Britain behave differently, so it is unlikely that many of the birds at Caerlaverock were from areas further afield than south Scotland or northern England.

Summary Peregrines were seen on the Solway coast at Caerlaverock between August and April each year, with a peak in February. Most Peregrines that were aged were juveniles; the sex ratio was about even. The number of birds seen in each winter was correlated with the number of young produced locally in the preceding summer. Only a small proportion of birds were thought to have come from further afield.

Acknowledgments Special thanks are due to C. Campbell, Wildfowl Trust manager at Eastpark Farm, Caerlaverock, for making his diaries freely available, and to his assistants who also contributed sightings: L. Colley, R. Goater, B. Sears and G. Wright. Details for northern England were kindly supplied by Dr D. A. Ratcliffe. C. Campbell and Dr M. Marquiss gave constructive comments on an earlier draft of this paper for which I thank them.

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Breeding seabirds on the Yell Sound Islands, Shetland

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The Yell Sound Islands comprise a group of 18 uninhabited islands, holms and skerries lying in the Sound which separates Yell from the Mainland of Shetland; Gloup Holm and the Ramna Stacks, which lie to the north of the Sound, may also be conveniently associated with the group. The islands range in size from about $\frac{1}{4}$ ha. up to 76ha.

The recorded history of the breeding birds of the islands is sparse. Venables and Venables (1955) give a full species list

for only Muckle Holm, and data collected during Operation Seafarer were qualitative or non-existent (Cramp, Bourne and Saunders 1976). Interest in the islands was aroused when the Shetland Islands Council decided to site the new terminal for North Sea oil on Calback Ness in Sullom Voe. The Environmental Impact Assessment, prepared by the Sullom Voe Environmental Advisory Group during the planning of the terminal, stated that there were no major seabird colonies in Yell Sound (SVEAG 1976) and Syratt and Richardson (1981) concluded that few seabird populations in that area were of any major significance by Shetland standards. Berry and Johnston (1980) classed the marine interests of Yell Sound as quite important, though not exceptional, and the Royal Society for the Protection of Birds considered that some of the islands (Grunev, Muckle Holm, Uynarey, Samphrey and Fish Holm) were of sufficient value to justify their lease as reserves from 1980, adding to its previous acquisition of the Ramna Stacks (Tulloch 1980). The vulnerability of the Sound and its islands to the threat posed by the operations of the oil terminal was demonstrated during the winter of 1978-79 when the tanker *Esso Bernicia* spilled 1,174 tonnes of fuel oil during berthing manoeuvres at the Terminal. This oil was subsequently spread widely throughout Yell Sound and Sullom Voe causing the deaths of at least 3,700 birds (Heubeck and Richardson 1980).

Surveys of breeding seabirds of the islands have been conducted systematically since 1977 as part of a wider environmental monitoring programme. The RSPB conducted a survey of many of the islands in 1977 and surveyed terns in 1980 as part of a general enquiry in Scotland (Bullock and Gomersall 1980). The Shetland Oil Terminal Environmental Advisory Group (SOTEAG) commissioned surveys of the islands in 1978, 1980 and 1981 (Bettencourt, Enticott and Schofield, 1979; McKay, Muir and Shepherd 1980; McKay, Prentice and Shepherd 1981). Expeditions from Leicester Polytechnic have surveyed most of the islands each year since 1977 as part of a programme of more general ecological studies in the area. In 1981 the Nature Conservancy Council conducted a survey of Kittiwakes breeding on the Ramna Stacks and Gloup Holm (Pritchard 1981, Richardson 1983) and in 1983 SOTEAG commissioned a survey of Tysties throughout Shetland. This paper presents a summary of the results of the surveys conducted by these organisations in the period 1977-83.

Methods

RSPB and SOTEAG surveys were conducted in the last week of June mainly from boats, with occasional landings and ground surveys; the NCC Kittiwake survey was conducted

Table 1. Estimated numbers of pairs of the common seabird species breeding on Yell Sound Islands, Shetland. For the less common species, see text.

B=breeding, numbers uncertain; P=present, breeding not proven; *see text for further details

	Lunna Holm	Weather Holm	Linga	Sinna Skerry	Fish Holm	Samphey	Orfasay	Broch of Copister	Bigga	Uynarey
Fulmar	20	70	150		25	55	13	10	150	250
Storm Petrel						50		B	10	?P
Shag						2			4	4
Eider	B		2	2	5	7			8	2
Arctic Skua						3			2	
Bonxie			2		1	12			10	
Common Gull						20	2		15	
Lesser B-b. Gull			10			2			2	
Herring Gull			20		10	10				20
Great B-b. Gull	20	10	30	1	30	40	20	1	40	25
Common Tern				1		2				
Arctic Tern				50	70	150*	52		225*	
Tystie	3	1				6*	1	4*		1
Puffin	50				100	120	6			100

	Little Roe	Lamba	Brother	Little Holm	Muckle Holm	Holm of Westsandwick	Gloup Holm	Gruney	Ramna Stacks
Fulmar	165	250	13	5	50	25	300	40	100
Storm Petrel			P					B*	
Shag		1					45	25	
Eider	4	1	3	B	4	2			
Arctic Skua			1						
Bonxie			3						
Common Gull			15						
Lesser B-b. Gull									
Herring Gull			5						
Great B-b. Gull	20	25	20	40		40	50	250	50
Common Tern	30	2	10		20				
Arctic Tern		30	50*		45*	50			
Tystie			B*		1		1		
Puffin					150		500	500	

entirely from a boat. The Leicester Polytechnic surveys, conducted in July, were ground surveys (sometimes involving several consecutive days and nights on an island) supplemented by boat surveys. The count criteria for some species were not necessarily the same for each survey. Thus, numbers of birds present; apparently occupied nests; nests with eggs or young; females with young nearby (in the case of Eider) were all used. In the results which follow, a consensus figure of the estimated number of pairs of each species is given when the results are essentially in agreement.

Results

Table 1 shows the estimated number of pairs of each of the common species of seabird found breeding on the islands between 1977 and 1983. Most species were subject to small annual variation in numbers and, in these cases, an upper limit is given. More important changes in status or other noteworthy factors, together with details of the less common species (i.e. present on fewer than three islands) are described in the individual species notes which follow.

Storm Petrel Like many of the Pictish brochs in Shetland, Copister has its colony of Storm Petrels. Ringing was first carried out in 1966 (95 birds ringed) and individuals from that sample have been recaptured in subsequent years (including 2 in 1982). An analysis of recapture data suggested a population of 1,500 pairs but as some catches were made in July, this figure is certainly inflated by wandering juveniles (Fowler *et al.*, 1982); perhaps 500 pairs is more realistic. Storm Petrels have been heard "churring" in stone walls on many of the islands, but breeding was proven on Gruney when an incubating bird was found in an old Puffin burrow in 1983. There is a small (10 pairs) colony on the broch at Westsandwick, Yell, an island only at high tide.

Leach's Petrel Birds occupying burrows were found on Gruney in 1980 and breeding was confirmed in 1981 (Fowler 1982, Fowler and Butler 1982); incubating birds were also found in 1983. This colony of perhaps 25 pairs is the second Shetland and sixth British site for this species.

Cormorant Cormorants nest in Yell Sound in only small numbers and, as elsewhere in Shetland, can suddenly move to new breeding sites (Kinnear 1978). Thus, Tinga Skerry was occupied for two seasons (12 nests in 1977, 7 in 1978) and Little Holm was colonised in 1979 or 1980 and was still occupied (20 nests) in 1983. The Ramna Stacks site, which has a recorded history of 100 years (Venables and Venables 1955) was deserted in either 1979 or 1980.



PLATE 12. This Wryneck, which reached the Isle of May on the rather early date of 21st April, was the second bird caught in the newly reconstructed Heligoland trap.

S. Wanless



PLATE 13a. April 1st 1983 brought this immaculate Firecrest to the Isle of May, where it was trapped the following day.

B. Zonfrillo

13b. "Blue" phase (back left) and normal Fulmars on Tantallon Cliffs.

S. R. D. & E. S. da Prato



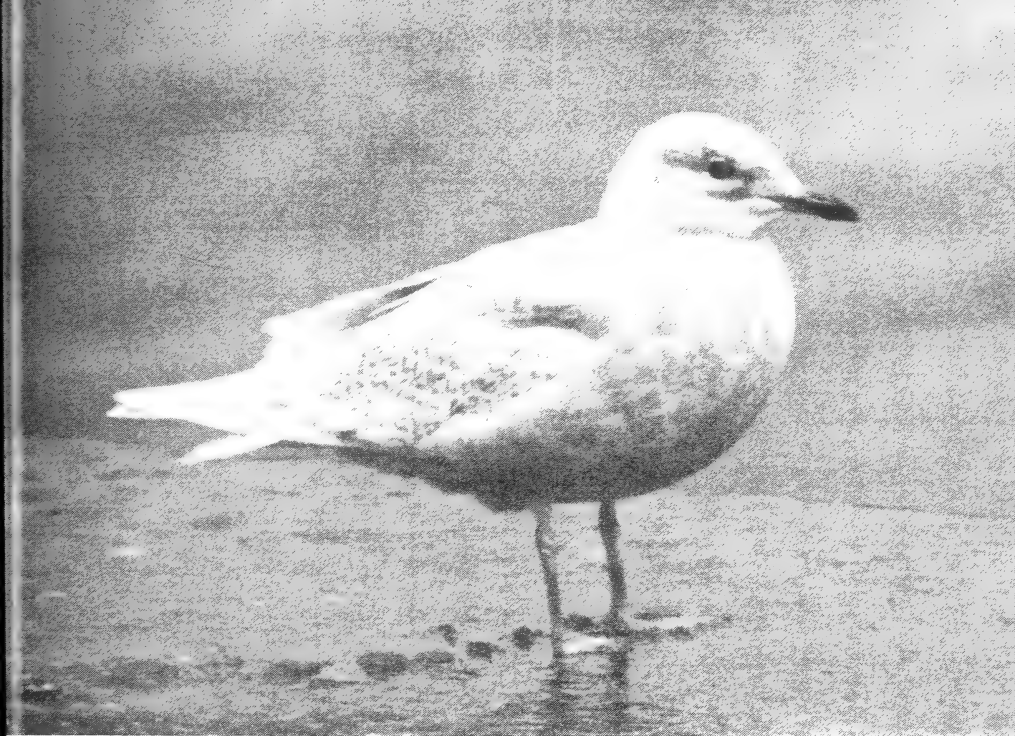


PLATE 14. Glaucous (below) and Iceland Gulls are sometimes among those following the fishing boats into East Lothian's harbours; these two immatures were photographed at Dunbar and Port Seton respectively.

S. R. D. & E. S. da Prato



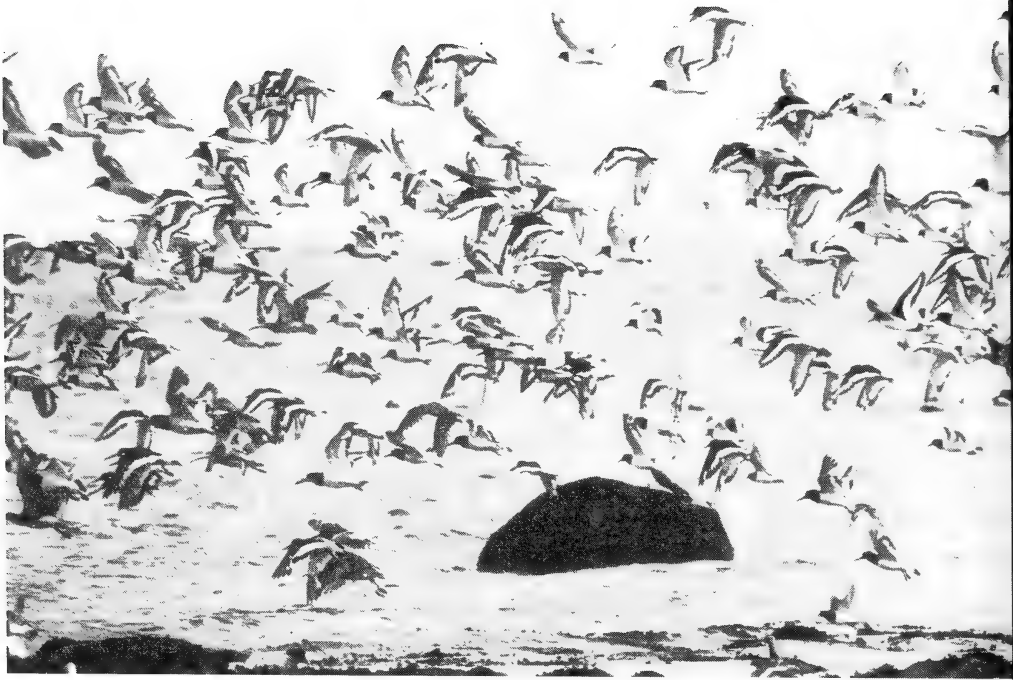


PLATE 15. East Lothian's varied coastline attracts a good diversity of waders. The Oystercatchers above were at Gosford Bay, and the Turnstones and Dunlin near North Berwick.

S. R. D. & E. S. da Prato



Kittiwake Maximum counts of 80 apparently occupied nests in 1980 on Gloop Holm and 1,350 on the Ramna Stacks in 1981 are the most recent figures.

Arctic Tern Some 1,000 to 1,500 pairs of Arctic Terns probably nest on the islands in any one year, but their distribution between individual islands can vary from year to year. Thus, on Samphrey, 120-150 pairs were present in 1977 and 800-1000 in 1982; on Bigga, numbers declined from 225 birds in 1978 to 40 in 1981.

Guillemot Breeding occurs on Gloop Holm and on the Ramna Stacks but because of the prevailing sea conditions and the topography of the stacks it is very difficult to census this species accurately. On Gloop Holm up to 100 birds have been counted on the cliffs, whilst estimates for the Stacks have varied from 3,200+ birds in 1980 to 6,550 in 1976 (an estimate of 8,800 in 1978 is now considered to be suspect).

Razorbill Over 200 birds have been seen ashore on Gloop Holm and 100-150 on the Ramna Stacks.

Tystie Numbers declined on most islands in 1978. Thus, 12 pairs on Brother, 6 pairs on Samphrey and 4 pairs on Copister Broch recorded up to 1977 were not present in 1978. Breeding recommenced in 1980 (Samphrey) and 1981 (the Broch) with 3 or 4 pairs on the Broch in 1982; breeding has not since been confirmed on Brother.

Discussion

The various visits to and surveys of the Yell Sound Islands in recent years have resulted in a comprehensive picture of the numbers and variety (19 species) of breeding seabirds in the area. Apart from the Ramna Stacks, where the breeding populations are sufficiently large to be of national importance (and have led the NCC to propose the stacks as an SSSI), the Yell Sound Islands are representative of the many small islands of Shetland. Their conservation value lies in this representativeness coupled with the fact that they are the islands most at risk from oil pollution in Shetland.

The impact of the *Esso Bernicia* oilspill on most of the species of seabirds breeding on the Yell Sound Islands was minimal since few of them were in the area in any numbers at the time. Furthermore, a proportion of those species that are resident in Shetland and which featured prominently in the mortality will have had breeding sites outwith the Yell Sound area, as was evidenced by ringing recoveries of Shags and Cormorants. The local breeding population of Tysties, however, suffered considerably from the oilspill. Although information

on the numbers of actual breeding pairs on the islands prior to the oilspill is limited, obvious decreases in numbers occurred. Tystie nests can be hard to locate and one can never be sure that some are not missed on surveys, but in spite of this, it is clear that a genuine drop in numbers occurred—which is hardly surprising in view of the 633 oiled birds found dead.

On the SOTEAG surveys, only individual Tysties seen around the islands (both offshore and onshore) were recorded and no attempts were made to locate nests. Tysties can fly considerable distances from their breeding sites to feed (P. J. Ewins *pers. comm.*) but, even bearing this in mind, the numbers counted on the SOTEAG surveys indicate a large decline in the numbers of birds in the area, thus 218 birds in 1978 were reduced to 50 in 1980 and 45 in 1981.

Acknowledgments

We are grateful to SOTEAG for permission to cite unpublished reports and to Dr M. G. Richardson for criticising the manuscript and for making available NCC counts of Kittiwakes. The RSPB gave permission to visit its island reserves and to conduct ringing studies on them. The Shetland Islands Council, Capt. Chris. Hunter and Mr Magni Anderson provided transport to some of the islands.

Financial support for the Leicester Polytechnic Expeditions (involving some 35 participants in the bird surveys) was gratefully received from the British Ecological Society, British Petroleum Co. Ltd., The British Trust for Ornithology, The Fauna Preservation Society, The Nature Conservancy Council, RSPB, The Seabird Group, SOTEAG and the World Wildlife Fund.

Summary

Surveys of the breeding seabirds on the Yell Sound Islands have been conducted by the RSPB, SOTEAG and expeditions from Leicester Polytechnic since 1977. Most of the islands are considered representative of the many small islands of Shetland and collectively support 19 breeding seabird species. On the Ramna Stacks breeding seabird populations are of national importance. The local breeding population of Tysties suffered considerably from an oil spill incident in the area in 1978.

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Birdwatching on the East Lothian coast

S. R. D. da PRATO

Many birdwatchers are creatures of habit and tend to flock to well known localities, such as Aberlady, Tynninghame or the Bass Rock. The aim of this article, however, is to draw birdwatchers' attention to the opportunities that exist on the rest of East Lothian's coast line, where the combination of sandy bays, rocky outcrops and offshore islands creates scenery that some claim to be the finest on the east of Scotland. This is ultimately a matter of opinion but the ecological diversity that accompanies such fine and varied scenery means that the birdwatcher can see a wide range of interesting species at any season and in attractive surroundings.

The Firth of Forth is noted as a good place to see seaduck, grebes and divers especially in winter, but visitors are often disappointed when they arrive at a recommended spot only to find a large expanse of choppy sea and a number of dark specks too far out to be identified. To obtain good views one needs to know both where to go and when to visit a particular area. The use made of the various bays by different species is linked to shelter and the depth of water. A glance at a chart shows that, apart from the mouth of the River Tyne, the shore east of Fidra island shelves fairly steeply below low water but

the bays at Gullane and Gosford have extensive shallows. These are attractive to many waterbirds in the non breeding period. Weather, tide and light all affect the birder's ability to see birds on the bays; a calm day with the light behind the observer and the tide approaching full is ideal. Late afternoon is often productive since some birds, notably divers at Gullane Bay, fly in to form a roosting flock then; over 100 Red-throated Divers are not unusual in February or March.

Not all species are found together. Of the "seaduck" (all of which, apart from Eider, breed inland!) Scaup and Goldeneye are less common in East Lothian than further up Forth, where they are often concentrated around effluent outfalls. In fact Scaup are now relatively scarce in the Forth since Edinburgh's breweries and distilleries stopped discharging large quantities of grain waste. Long-tailed Ducks and the Scoters are characteristic of both Gullane and Gosford though they can be well offshore. Flying birds permit the separation of Velvet from Common Scoters and with experience even distant ducks can be identified by their shape and behaviour. For example, even in silhouette, Scoters look different from Eiders and they are much more mobile, often rushing along the surface and frequently taking flight. Surf Scoter has also been recorded here on several occasions.

Mergansers are the commonest sawbill, especially in late summer when they are in moult. The complex sequence of plumages during moult can cause confusion especially with Long-tailed Ducks and Eiders. It also affects grebes and divers which are even more likely to be misidentified when losing or acquiring summer plumage than in midwinter.

A telescope helps, but even with a 'scope some birds cannot be specifically identified. All four divers and five grebes have been recorded though White-billed Diver is obviously a rarity and, of the grebes, Black-necked is irregular, and Little Grebe unusual on the open sea. These birds may be present throughout the year—May and June are the least likely months. Late summer can be particularly interesting, with species such as Red-necked Grebe often still in full summer plumage.

Along the open coast the alternation of sand and rock creates shelter which in turn encourages a range of seaweeds and marine animals. The latter are interesting in themselves, while some are important prey for waders. In winter the coast between Gullane and Dunbar holds waders at among the highest densities so far recorded for rocky shores in Scotland. Most of the common waders occur in good numbers, for example 500+ Purple Sandpipers and 1000+ Turnstones, and there are interesting opportunities for photography along the tide line. Eiders

are the only common wildfowl though other species often occur during passage periods or after displacement by westerly gales. Rough winter weather may bring interesting birds such as Little Auks, which occur in most winters though they are not often seen until an exhausted bird is found on the beach. Sometimes larger creatures appear on the beaches but all cetaceans are now much rarer in the Forth and a repeat of the stranding of the 78 ft. (23.8 m) Blue Whale near North Berwick in 1830 (now the largest exhibit in the Royal Scottish Museum) is unlikely.

Set on cliffs and looking out to the Bass Rock and North Sea, Tantallon Castle is an excellent spot for a visit, not only for its historical interest but also for the 100+ pairs of House Martins using natural nest sites on the cliffs which they share with the second largest colony of Fulmars in the Forth. 'Blue' phase Fulmars have been seen on ledges for several seasons and opportunities for photography are excellent as the birds glide along the cliffs or hang in the updraughts. This is also a good area to watch Grey Seals hauling out on the rocks when the beach is quiet.

Birds which breed on the beach fare less well than those on the cliffs. Ringed Plovers still nest on the shingle but other waders are only sporadic and terns are virtually confined to roped-off areas in nearby nature reserves.

As spring changes to summer many creches of Eider ducklings appear on the sea with attendant females. By this time the drakes are in heavy moult and a walker between Yellowcraig and Gullane can easily count over 5,000 of these birds. Terns range along the coast, often followed by their noisy offspring. Migrant waders begin to appear and this is a good time for wildflowers and butterflies on the coastal grasslands. As well as Eiders and Skylarks, Shelducks still nest here and these isolated pairs breed more successfully than those on Aberlady Bay.

East Lothian has the biggest thickets of Sea Buckthorn in Scotland. This specialized shrub is seen at its best between Gullane and Yellowcraig and holds breeding Long-eared Owls and a remarkable number of passerines. In winter when the leaves fall the mature bushes literally glow orange due to the millions of berries. Thousands of Fieldfares rise at the bird-watcher's approach along with many other small birds, including Blackcaps, which I have seen there throughout the winter.

The harbours too are always worth a visit. Dunbar still has its famous Kittiwake colony on the walls of the old castle though the old warehouse colony has gone. Gulls follow the fishing boats into harbour and both Dunbar and Port Seton

have attracted Glaucous and, less frequently, Iceland Gulls in recent winters.

The four main offshore islands are Fidra, the Lamb, Craigleith and the Bass Rock; all are easily reached by boat from North Berwick but island visits really demand an article of their own to do them justice. However there are a number of smaller islands and rocks, some accessible at low tide, and the shore based birdwatcher can make useful observations of these, especially in winter, when boat trips are often not practicable. Since so little is known about seabirds in the non breeding period it is always worth recording how often many species are seen around the islands.

Auks—other than Puffins—occur intermittently from October, while there are few times in the year when Gannets cannot be seen circling the Bass. Towards evening hundreds of Shags and Cormorants fly in from other parts of the Forth to roost and thousands of gulls come from inland. The closer rocks are to the shore the more likely they are to be used as wader roosts at high tide both in daytime when people tend to push birds off the beach, and at night when birds have to contend with foxes and remarkable numbers of Brown Rats.

Although migrants may occur anywhere on the east coast the small promontory of Barns Ness, just south of Dunbar, is the best place to see them in East Lothian. With an onshore wind this is also a good site for passing seabirds, which usually include Gannets, Kittiwakes and Fulmar, often passing at a thousand or more birds per hour. Other species seen include all four skuas, Manx, Balearic, Cory's and Great Shearwater, Grey Phalarope and Sabine's Gull. Seawatching is easy from a car but birders should not park too close to the lighthouse.

Passerine migrants can be looked for in the scrub, especially the jungle of elder bushes and wartime barbed wire in the hollow by the caravan site entrance. The limited cover at Barns Ness means that migrants do not stay for long and the observer will very quickly learn whether there has been a "fall" or not; if not the site can be very quiet indeed. The species to be expected are typical of sites on the east coast. Rarer species recorded include Richard's Pipit, Red-breasted Flycatcher, Yellow-browed, Barred and Icterine Warblers and Little Bunting in autumn, with Bluethroat, Red-backed Shrike, Water Pipit and *flava* wagtails in spring. Since it is such an easy site to cover observers from Central Scotland often call in at Barns Ness to see what is about and judge whether it is worth making the extra journey to St Abb's Head or even Holy Island.

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Short Notes

Young Crossbill feeding a sibling

On 14 April 1983 D. N.-T. made observations from a pylon hide erected by D.W. at a Scottish Pine Crossbill's nest in a Sutherland forest. The nest, which was 3.5 m above ground was in the crown of a stunted pine surrounded by young lodgepoles of about 9 m in height. It then contained four 17-days-old chick, survivors of a brood of five.

At 16.32 two chicks, one after the other, crept on to the rim of the nest and fluttered on to a branch overlooking it. Immediately the two siblings left in the nest started to beg for food, opening their bills and shivering their wings along their backs. In reply, one of the chicks now on the nest rim also flicked its wings and took a reddish seed from a dropping and placed it inside the open mandibles of one of its begging siblings. It did this twice.

This raises the question of 'latrines' on crossbills' nests. Are the faeces sometimes used as a reserve of food, particularly in severe weather? Is this 'selected in', as against the 'giveaway' of the white mass on the side and edge of the nest? J. F. Young (in D. Nethersole-Thompson *Pine Crossbills* 1975 plate 15) photographed a juvenile common crossbill of a first brood feeding a chick in its parents' second brood nest. Have these unusual birds evolved these practices to assist survival in hard climatic conditions?

On 16 April D.W. attempted to photograph this unusual behaviour. At 14.50 and 15.05, after one of the chicks had moved out of the nest, its siblings begged food from it. The first time the returning chick touched the bill of one of its nest mates but delivered no food. The second time it ignored its three soliciting siblings.

DESMOND NETHERSOLE-THOMPSON,
DAVID WHITAKER

Golden Eagle and fox competing for mountain hare

On 31 May 1976, while watching by telescope, I saw an immature eagle soaring over Craig Tarson, Galloway. Twelve minutes later a fox crossing the hillside startled a mountain hare in summer coat from behind a small rock outcrop. Although the hare had a 5m start, the fox gradually caught up with it in 50-100m, and was within 1-2m when the hare suddenly turned uphill.

As this happened an immature Golden Eagle side-slipped with wings outstretched onto the hare, apparently killing it immediately. The fox, which had slightly overshot, came back towards the eagle which stood on the hare, wings half stretched and head forward towards the fox. The fox stopped and appeared to be snarling with teeth exposed. It raised its tail at right angles to its back with the hair bushed out, unlike its sleek flowing appearance during the chase. After backing off, the fox circled the eagle, brush erect and head pointing towards the hare. In a couple of circuits it was within 2m of the eagle which then flapped towards it for 3-4m. At this the fox retreated and the eagle returned to the hare. The fox walked and trotted to a rocky ledge some 100m away, where it curled up; after 30 minutes it left the area.

Meanwhile the eagle carried its prey 3-4m before removing fur and eating pieces of hare for 50 minutes. It then stood for at least 20 minutes,

after which rain and low cloud made further observation impossible. All that remained next day was some white fur and about 10cm of the rectum containing pellets.

JUDITH J. ROWE

Large, temporary roost of Jays in Midlothian

On 17 October 1982, at 1810 hours, I discovered a flock of Jays (*Garrulus glandarius*) on the ground, in a horse paddock, some 10 kilometres south of Edinburgh and within 300 metres of a large mixed deciduous wood where they roosted. As I watched from a car, small groups of 3, 5, 7 or more, and on one occasion 15, flew in, on a direct and similar course, from the south east, at a height of 9-12 metres. They joined the 127 already assembled, until the flock reached its maximum, of 320 birds at 1840 hours.

The birds were very active and vocal while this assembly was formed, with frequent "strutting", short flights, bill probing at the turf and posturing with outstretched wings towards Jackdaws (200) and Starlings (700) which had also gathered in the field. Eventually, with one accord, they rose and flew into the wood, below the canopy cover. I entered the wood at 2200 hours but after an exhaustive torchlight search, failed to locate a specific roost site.

Returning at dawn, expecting to record the "exodus", I was surprised to see only 5 individuals fly out separately. On the 18th, a similar pre roost assembly occurred, but only 123 birds were present. With the aid of two other observers, it was ascertained that the morning dispersal on the 19th was protracted, singly and at random. By the evening of the 19th, the flock had further decreased to 18 birds, and on the following 5 evenings no birds were seen at the site.

There is no large population of Jays resident in Midlothian and it is tempting to suggest that these were Continental immigrants (*G. g. glandarius*). None, however, were obtained to provide that proof. There were no birds present at this site during October 1983, when an unprecedented invasion occurred in Southern England.

J. G. YOUNG

Common Buzzard eating dead salmon

On Tuesday 22 November 1983, my wife and I watched a Common Buzzard pecking at and eating flesh from a dead salmon lying on shingle at the water's edge near Invercauld Bridge, Aberdeenshire. We have not seen a buzzard eating fish before and it is described as rare in BWP. This is perhaps remarkable as dead salmon are abundant on many rivers in Scotland in late autumn with, for example, hundreds or even thousands available on the river Dee. It seems surprising that such a readily available source of food has not been more exploited by buzzards which often eat other carrion. We wondered if this behaviour really is rare or if it has gone un-recorded.

DAVID JENKINS

Doug Weir comments: "I have unpublished Speyside notes which suggest quite regular catching of spawning Brown Trout at falls/rapids in small burns, but not of feeding on dead salmon, though I intuitively expect that it occurs". He adds that in various studies in Alaska, where dead salmon are abundant, the buzzards there have not been recorded feeding on them, although Bald Eagles regularly do so in some areas. "D.J.'s observation therefore appears to be genuinely unusual".

Mink in a Black-headed Gull colony in the Pentlands

A recent reduction in breeding numbers of waterfowl, especially Tufted Duck, Moorhen and Coot, in the Lothians is causing increasing concern. Much of this decline has been attributed to the presence of feral mink, but there has as yet been little more than circumstantial evidence to support this theory. It is consequently important that any proven cases of mink predation and its effect on breeding birds should be fully documented. An incident in the Pentland Hills provides an appropriate example.

In mid-May 1983 c.1400 pairs of Black-headed Gulls were occupying breeding sites at West Water Reservoir: c.800 pairs on an island, c.550 pairs on the adjoining hillside, and c.50 pairs on the dam. The reservoir was full at that time. All nests on the hillside were lost, through predation, egg-collecting, trampling or being washed out, and some collecting took place on the dam. The island, which also held 2 pairs of Common Terns, remained relatively unscathed, and as the water level dropped during June further laying occurred there. On 22 June the island held about 300 chicks, and on 29 June 100+ unfledged young, 20+ juveniles, and many adults still incubating; several unfledged young and 24 sitting adults were on the dam.

By 9 July the dam had been abandoned, with no sign of eggs or young remaining, and the reservoir keeper, Mr A. Dewar, informed us that the birds had been present one day and gone the next. A few Black-headed Gulls were still sitting on the island, and 70+ juveniles were present, but the terns had gone. By 17 July the island had been completely deserted. We would have expected many adults, unfledged young and small chicks to be present at that date, as the Black-headed Gulls do not normally vacate this reservoir until early August, and the 1983 nesting season was unusually late.

On 10 July A.W.B. saw a young mink at the north-east corner of the reservoir near the dam, and A. Dewar saw two on 16 July. On 20 July A.W.B. set 4 traps and over the week-end of 24-25 July two mink were caught and another two shot nearby; all were young animals. Mr Dewar watched two swim out to a smaller island and then saw a juvenile Black-headed Gull being pulled below the surface of the water and then dragged ashore by a mink.

It seems likely that the arrival of a family of mink at the reservoir was the cause of desertion in 1983. Similar occurrences have been recorded elsewhere in the Pentlands. In 1978 a colony of 300 pairs of Black-headed Gulls at the North Esk Reservoir deserted their eggs and young in early June, and the owner later found mink breeding on the gulls' nesting island where rats were also present (M. Jones pers. comm.). And in 1981 mink were reported to have cleared out the eggs of a Black-headed Gull colony at Harperrig Reservoir although human predation cannot be discounted in this instance (per G. L. Sandeman). Although the evidence is still largely circumstantial, it would be unwise to ignore the potential threat to ground-nesting species from mink. Action to control mink numbers is clearly desirable in order to safeguard breeding waterfowl populations.

We thank the Water Supply Services (now the Water and Drainage Department) of Lothian Regional Council for permission to set mink traps on their land at West Water Reservoir, and gratefully acknowledge the co-operation of Mr A. Dewar, the reservoir keeper.

A. W. & L. M. BROWN

Unusual Peregrine kill

On 3rd January 1983 while watching an adult male Golden Eagle flying to its roosting cliff in an Upper Deeside glen, the following was observed. The Eagle was seen flying South, low over a hill about $\frac{1}{4}$ of a mile from us and was being mobbed by four smaller birds (corvids). We noticed a fifth small bird approaching from the North; this was presumed to be another Crow, and little notice was taken of it, our attention being focused on the Eagle. It was not until this fifth bird 'bound-onto' and dropped to the ground with, the tail-end Crow that we realized it was a Peregrine. The Eagle and the remaining Crows continued in the direction of the roosting cliff. The Peregrine made this opportunist kill within 20 feet of the Eagle.

IAIN C. MACLEOD, KEITH DUNCAN, INNES SIM

Reviews

A Field Guide to the Warblers of Britain and Europe by A. Moore; Oxford University Press; 145 pp; 32 col. pl; 45 maps; £9.50

Anyone hoping this book will do for warblers what Grant has done for gulls or Porter *et al* for raptors will be disappointed. The book covers 53 species in 32 plates, with supporting text and 45 maps. The maps for Green and Greenish Warblers have been transposed while the British breeding distributions of Grasshopper, Garden and Reed Warblers and Lesser Whitethroat extend much further north than shown. There is no indication that Chiffchaffs may winter in Britain, or that Blackcaps often do so in Scotland, while not a single warbler or 'crest' is shown to occur in Orkney or Shetland even on passage! The text borrows heavily from others, but is often vague and sometimes wrong; Whitethroats aren't larger than Blackcaps (p 97) nor are all young leaf warblers "dull editions of the adults" (p 104). Many plates are too bright and some contradict the text—as in the female Whitethroat shown with a bright brown crown although on p 74 this feature is said to be grey. Several pitfalls mentioned in the text are ignored in the plates: the Willow Warblers are all yellowish birds with pale pink legs while none of the Garden Warblers show the greenish tinge of some juveniles. Misleading impressions of size often occur as in *Locustella*, where Lanceolated is painted the same size as the larger Pallas's Grasshopper but Gray's Grasshopper, which is larger still, appears diminutive.

Even non ringers are still better off supplementing their field guides with the Williamson/BTO warbler guides. I sincerely hope that O.U.P. plan a higher standard for the warbler section of the B.W.P.

STAN DA PRATO

Field Guide to the Birds of North America edited by J. L. Dunn & E. A. T. Blom; David & Charles, 1983; 464 pp; incl. 220 full col. plates; £7.95 (limpback).

This book is a serious rival to Peterson's now rather dated two volumes, and to the first single volume guide to North American birds, by Robbins *et al* in the Golden Guide series. No less than 13 artists and even more ornithologists were involved in producing this National Geographic field

guide. Compared to the Golden Guide it uses a larger format which gives a less cluttered appearance, and provides more space for showing plumage variations. It also illustrates more species, largely due to the inclusion of vagrant seabirds, Eurasian species mostly recorded in Alaska, and many of the feral species increasingly likely to be encountered in parts of the U.S.A. Reproduction is generally excellent and the cost is reasonable; my main criticism is that the combination of above average size (for a field guide) and very soft cover will not stand up to hard use. This is an excellent book to take on a birdwatching holiday to the U.S.A. or Canada and better than its competitors for identifying North American vagrants in Europe, though with the really difficult species recourse to specialist literature will still be necessary.

STAN DA PRATO

The Life and Letters of Alexander Wilson by Clark Hunter; American Philosophical Society, Philadelphia, 1983; 456 pp, 4 colour plates, 24 monochrome illustrations and maps; 40 dollars.

Alexander Wilson, "Father of American Ornithology", was a Paisley weaver later turned packman, and a Scottish poet of considerable talent. He was also a social reformer and, largely in consequence of a scurrilous poem lampooning (not mention blackmailing!) a local manufacturer, was forced to emigrate to America. There his boyhood interest in natural history developed and, through friendship with William Bartram, he was encouraged to travel and work towards the publication of his magnificent *American Ornithology*.

It was from Wilson that Audubon received the stimulus to publish his own work, using Wilson's book as his guide, and there is evidence that he actually plagiarized some of Wilson's illustrations. As Clark Hunter puts it "Wilson planted the seed but Audubon reaped the corn".

The letters comprise about two thirds of the book and give a great deal of insight into contemporary American life. This fascinating, elegant volume is a testimony of fine historical research by a dedicated author-editor.

IAN DURANCE PENNIE

PAPERS OF SCOTTISH INTEREST Articles and reports on birds in Scotland, mainly on status and distribution, are listed here. Some biological studies are excluded, as are references from the widely available journals **British Birds**, **Bird Study**, **Ringing and Migration**, and **Ibis**. Most items are available for reference in the Waterston Library. The librarian welcomes reprints or copies of papers on any aspect of ornithology.

Lothian Bird Report for 1982. (66 pp). D. J. Bates & M. R. Leven (eds) 1984.

Includes a report on the 1982 Mute Swan Breeding Census in the Lothians. Estimation of age-specific survival in Hen Harriers. P. Rothery in *Inst. Terr. Ecol. Ann. Report.* 118-119, 1982.

Breeding biology of polygynous Hen Harriers in Orkney. N. Picozzi 1984. *Ornis Scandinavica* 15, 1-10.

Fluctuations in the number of wintering waders at Burntisland Bay, the Firth of Forth. J. Barrett & C. F. Barrett 1984. *Wader Study Group Bull.* 40, 44-48.

A survey of waders breeding on the west coast of the Uists and Benbecula (Outer Hebrides) 1983. (10 pp). G. H. Green (ed) 1984. Published jointly by the Wader Study Group and the Nature Conservancy Council.

The Birds of Canna. (13 pp). R. L. Swann 1983. A checklist giving past and present status of all species recorded on the island up to April 1982.

The Birds of Colonsay and Oronsay. (4 pp). J. Clarke & P. M. Clarke 1983. A list of the birds positively identified in and around the islands since 1970.

Colonsay Bird Report for 1983. (7 pp). J. Clarke & P. M. Clarke.

Ayrshire Bird Report for 1983. (39 pp). A. Hogg (ed) for the Ayrshire Branch

- of the S.O.C. Includes reports on Grey Herons, Mute Swans and Buzzards in 1983.
- Orkney Ringing Group Report* 1983. (32 pp). C. J. Corse & E. R. Meek 1984. This first report from the Orkney R.G. includes articles on seabirds on Aukery 1971-83 by A. D. K. Ramsay, on Merlins, Hen Harriers and Black Guillemots by E. R. Meek, and on post-juvenile moult in Orkney Black-birds by C. J. Corse.
- Holyrood Bird Records* 1978-82. (20 pp). L. L. J. Vick (ed). The collected records for Holyrood Park, Edinburgh, including Duddingston Loch and Bird Sanctuary.
- Orkney Bird Report for* 1983. (64 pp). Includes an article on the breeding population of Black Guillemots, and a full systematic list. £1.75 post free from SOC Bird Bookshop.
- Influences of adult age and experience, nest location, clutch size and laying sequence on the breeding success of the Great Skua *Catharacta skua*. R. W. Furness 1984. *J. Zool. Lond.* 202, 565-576. A study of the Great Skua on Foula, Shetland.
- Scandinavian Herring Gulls wintering in Britain. J. C. Coulson, P. Monaghan, J. E. L. Butterfield, N. Duncan, K. Ensor, C. Shedden & C. Thomas 1984. *Orn. Scand.* 15 : 79-88. A detailed study based on 13000 gulls caught and ringed in northern England and southern Scotland.
- Effect of date on counts of nests of Herring and Lesser Black-backed Gulls. S. Wanless & M. P. Harris 1984. *Orn. Scand.* 15 : 89-94. They conclude from counts made every three days on the Isle of May that censuses should be made as late in the breeding season as possible.
- Hebridean Naturalist* no. 8. (67 pp). £2.25 post free from SOC Bird Bookshop. This journal has a broad range of natural history articles, with several on birds—on breeding wader populations, on wader ringing in the Outer Hebrides, "Birds and birdwatching on the Uists" and the annual bird report for 1983.
- Inherent changes in the body size, viability and behaviour of a fluctuating Red Grouse population. R. Moss, A. Watson & P. Rothery 1984. *J. Anim. Ecol.* 53 : 171-189.
- Movements of wintering shorebirds within the Firth of Forth. F. L. Symonds & D. R. Langslow 1984. *Biol. Conserv.* 28 : 187-215.
- The impact of changes in sewage treatment on Seaducks wintering in the Firth of Forth, Scotland. L. H. Campbell 1984. *Biol. Conserv.* 28 : 173-180.
- Survey of Eider moult flocks in Shetland. M. Heubeck 1982. (15 pp). *Shetland Oil Terminal Environ. Advisory Group*.
- Surveillance of breeding Red-throated Divers in Shetland. (36 pp). C. H. Gomersall & L. H. Campbell. *R. Soc. Prot. Birds* 1982.
- Guillemot monitoring at Hermaness, Shetland. (11 pp). A. F. G. Douse 1981. *Dept. Zool. Aberdeen Univ.*
- Borders Bird Report for* 1983. (40 pp). £1.50 post free from SOC Bird Bookshop.

W. G. HARPER

Grouse Symposium Report

The natural regulation and management of grouse populations was the theme of the Third International Grouse Symposium, 26th-31st March 1984, held for the first time outside Scotland. During the conference Yorkshire grouse moors were visited and a post conference tour to Scotland visited two native pinewoods and grouse and Ptarmigan habitats. Papers on Red and Black Grouse and Capercaillie in Scotland were amongst numerous contributions, many of a high standard, some controversial. At a session on acid rain speakers from Scotland pointed to a

lack of evidence of harm to trees from this cause. Papers of interest about Capercaillie came from Norway, where a woodland grouse project is approaching the report writing phase, and transatlantic contributions included papers on the ecology of Blue Grouse, Sage Grouse and White-tailed Ptarmigan.

Anyone interested in grouse research, in the role of predators, social behaviour and disease in limiting populations and in the contribution of some ethological and ecological ideas to conservation practice should find worthwhile reading in the conference proceedings. These will be available from the World Pheasant Association (Daws Hall, Lamarsh, Bures, Suffolk CO8 5EX), membership of which is open to anyone interested in the conservation of game birds not just to aviculturists and hunters.

A. M. JONES

Notices

West coast Eiders As part of an investigation into Eider predation at mussel farms on the west coast of Scotland, regular counts of Eider numbers along the coast have been carried out during the past year. Large sections of coastline remain uncovered, particularly in the north-west Highland area. Anyone willing to carry out counts, even on a very irregular basis, for any section of the west coast—or having count data from previous years—is asked to contact Colin Galbraith at the address below. To investigate Eider movements, a number have been marked with coloured wing tags, numbered individually. Reports of sightings of tagged birds, giving date, location, colour of tag and if possible tag number, would be greatly appreciated by Colin Galbraith, Culterty Field Station, Newburgh, Ellon, Aberdeenshire AB4 0AA.

British Birds We are again able to offer SOC members a 25% discount off the normal subscription for *BB*. We can thoroughly recommend this excellent monthly magazine for birders, keen birdwatchers and amateur (& professional) ornithologists. Payment should be made using the enclosed form and sent to Mrs Ericka Sharrock, B.B. Subscriptions, Fountains, Park Lane, Blunham, Bedford MK44 3NJ.

BTO/WSG Winter Shorebird Count (supported by BTO, NCC, RSPB, WSG) This winter (December 1984 - January 1985) there will be a survey of the British coastline, excluding estuaries, in order to count waders, Eiders and Herons. This will provide valuable information on the numbers and distribution of these species, and will permit the identification of important sites for conservation. The survey will involve walking sections of coast at low water and recording bird numbers in relation to simple habitat parameters. A full description of the survey, with names and addresses of local organisers, is given in the September issue of *BTO News*. Non-members are welcome to participate, and help is particularly required in remote areas. For more information, please send an s.a.e. to Mike Moser, BTO, Beech Grove, Tring, Herts.

Barnacle Goose migration A Wildfowl Trust expedition is to visit Bear Island, 74°30'N in the Barents Sea, in September/October 1984. The aim of the expedition is to study the migration patterns and mortality of Barnacle Geese as they head for their Solway wintering area. Bear Island is the last staging post for the geese, as they leave their Spitsbergen

breeding grounds in August and September. They stay on this bleak and barren island for 2-4 weeks to build up their energies for the flight.

The final stage of migration takes place between 20 September and 10 October, and the 1500 miles (2500 km) are covered by most of the geese non-stop. Some head south over the Norwegian and North Seas and fly over the Northern Isles and down across eastern Scotland to the Solway. Others fly down the Norwegian coast and head south westwards, arriving in Britain at the Scottish borders and Northumberland. Few normally stop to rest, but in some years, when flying conditions are poor, large numbers have been seen on the ground, anywhere from the Wash to Shetland, and as far west as Ayr.

We would be grateful for any observations of migrating geese, indicating exact position, date, time, number of geese and flight direction. About 20% of the geese are carrying plastic rings which may be yellow, orange, white or blue and have 2 or 3 engraved letters, readable at up to 200 m with a telescope. Records of ringed geese are particularly valuable. Information should be sent **Dr M. Owen, The Wildfowl Trust, Slimbridge, Gloucester GL2 7BT.**

Cormorant survey The SOC is collaborating with the BTO and IWC in a survey of the numbers and distribution of Cormorants in winter, especially their use of inland waters. 1984/85 will be a pilot and planning year, one use of which will be to establish the places in Scotland where Cormorants roost at night and those freshwaters (including rivers) that they frequent. If you know of such a place, please send a note of the locality and whether it is a roost or a daytime site to **Dr Jeremy Greenwood, Dept. of Biological Sciences, The University, Dundee DD1 4HN.** Information on the numbers of birds will be welcome, but there is no need to make special counts at this stage.

Birds of the Outer Hebrides An up-dating 'addendum' covering 1983 is now available from the author; send SAE plus 10p in stamps to **W. A. J. Cunningham, 10 Barony Square, Stornoway, Isle of Lewis PA87 2TQ.**

The Scottish Ornithologists' Club

ANNUAL CONFERENCE and A.G.M.

The 37th annual conference and 48th AGM of the Club will be held during the weekend 2nd-4th November 1984 in the Marine Hotel, North Berwick, East Lothian. The conference programme, booking form and AGM agenda are enclosed with this issue of *Scottish Birds*.

ENDOWMENT FUND GRANTS

This year 10 applicants received a total of £1,450. Applications for grants for 1985 must be made on forms obtainable from John Davies, the Club Secretary, and submitted by 31 December 1984.

ANNUAL RAFFLE

A book of raffle tickets is enclosed with this issue of *Scottish Birds*. We apologise to those members who do not like to receive raffle tickets in this way. However, the Club does benefit significantly from the raffle each year. Additional books of tickets are available at Branch meetings or direct from Pat Webster, the Membership Secretary. Ticket counterfoils and payments must reach Pat Webster by 31 October if sent to the SOC offices or they may be given to her at the Conference before the draw.

WINTER FIELD TRIPS

DUNDEE BRANCH. All trips leave Crichton Street, Dundee at 10 am (bring lunch & tea).

Sunday 14 October 1984 TAY ESTUARY SURVEY. Leader B. M. Lynch.

Sunday 18 November MONIKIE AND CROMBIE. Leader R. Whyte.

Sunday 16 December LAIRD'S LOCH & PIPER DAM. Leader, B. Pounder.

Sunday 13 January 1985 CAMPERDOWN. Leader Alf Robertson.

Sunday 10 February TENTSUIR AND MORTON LOCHS.

Sunday 10 March DUN'S DISH AND MONTROSE FORESHORE. Leader Norman Atkinson.

Sunday 14 April GLEN GARR (Bankfoot to Hermitage). Leader Irene McKinnie.

THE SCOTTISH BIRD REPORT 1982

We apologise for the confusion which arose over the publication of the 1982 *SBR* a few days after the publication of the summer issue of *Scottish Birds* (13:2). We also apologise to Alan Brown and Ray Murray whose names and addresses were omitted from the list of local recorders. We rectify that now:

East Lothian A. Brown, 23 Kings Court, Longniddry, East Lothian, EH32 0QP.

Berwickshire, Peeblesshire, Roxburghshire, Selkirkshire R. D. Murray, 143 Eskhill, Penicuik, Midlothian.

We hope that this is the end of this saga!

THE SCOTTISH BIRD REPORT 1983

Angus Hogg, the new editor, reports that work on the 1983 *SBR* is well under way. We aim to publish this *SBR* before the end of this year (1984).

THE SCOTTISH BIRD REPORT 1984

As from the beginning of 1985 observers are asked to note that all records from the previous year should be sent to local recorders by the end of January. This will help recorders, compilers and the editor to restore the publication date for the *SBR* to October—a move which will be welcomed by everyone. In addition, the editor invites the submission of black and white prints or transparencies of rare or uncommon birds taken in Scotland in 1984, along with any line drawings of Scottish birds. Remember, it is **your** report; please give it your full support by being prompt with the submission of your records.—ANGUS HOGG, editor *SBR*.

CHANGES IN LOCAL RECORDERS

Nairnshire, Morayshire, Banffshire Norman Elkins, after 9 years as recorder, has now handed over to Martin J. H. Cook, Rowanbrae, Clochan, Buckie, Banffshire.

Arran & Bute Angus Hogg, the recorder for Ayrshire has now handed over responsibility for Arran & Bute to: Iain R. Gibson, Arcadia, The Glen, Howwood, Renfrewshire.

STRANRAER BRANCH

At the request of the branch, the Wigtown Branch has been renamed the Stranraer Branch since all their meetings are now held in Stranraer.

REQUEST FOR A FILING CABINET

Alan Brown, one of the compilers of the *SBR* and local recorder for East Lothian, would like a second-hand 4 drawer filing cabinet to store the

large amounts of data he is acquiring. If you can help please get in touch with Alan at home : 23 King's Court, Longniddry, East Lothian, EH32 0QP, tel. no. Longniddry 4013 or at work : tel. no. 031-556 8400 ext. 5056.

Recent Reports

These notes include unchecked reports and are not intended as a permanent record, nor will they be indexed. Please send reports to Pete Ellis, Houss, East Burra, Shetland, via local recorders, at the end of March, June, September and December. The period April to June is covered here.

Most spring migrants were late arriving in force, but when migration did at last get underway it brought some exceptional rarities, particularly to northern areas. The spring and early summer were very dry and perhaps as a result most raptors had a good breeding season, though in Orkney the few **Merlin** nests found all failed. Waders and the small gulls fared poorly in some areas and low water levels prevented divers nesting on many lochs. Terns seem to have had a poor breeding season; in Shetland most colonies failed completely, with only a few producing a handful of young.

In June summer plumage **White-billed Divers** were off Whalsay and Portmahomack and, most unusually, a **Slavonian Grebe** was at Meikle Loch and a **Black-necked Grebe** off Burra, Shetland. A **Little Egret** visited the new RSPB reserve near Motherwell and there was another in Shetland. Reports of **Garganey** were widely scattered from the Borders to Shetland; Orkney's first **Ring-necked Duck** turned up in May; and there were **Ruddy Ducks** in Ayrshire, Aberdeenshire and Orkney. Unusual raptor records included **White-tailed Eagles** at Fair Isle and Shetland, male **Marsh Harriers** at Barns Ness and Strathbeg in May, a June **Goshawk** on North Ronaldsay, several **Red-footed Falcons** in the Northern Isles, and a **Hobby** on Fair Isle.

Notable among the waders were the **Little Ringed Plover** at Aberlady in May and **Kentish Plover** at Rattray in April, and June reports of **Dotterel** in Shetland and **Little Stints** at Meikle Loch and Aberlady—where there were also 2 different **Broad-billed Sandpipers** in May and June. A **Marsh Sandpiper** at Lossiemouth in April was very unusual, as were a **Lesser Yellowlegs** and **Nightjar** in Shetland. But *the* bird of the spring was the **Needle-tailed Swift** which spent late May and early June at Hillwell, Shetland.

Records of rarer passerines included **Woodlark** on Fair Isle, **Red-rumped Swallow** and **Richard's Pipit** on the Isle of May, and **Thrush Nightingales** on both islands. There were 7 **Bluethroats** on the Isle of May and at least 12 in Shetland, and 6 **Black Redstarts** at St Abbs, while **Mistle Thrushes** bred in Lewis for only the second time on record. Fair Isle had **River** and **Paddyfield Warblers** and there was an unprecedented influx of **Marsh Warblers** with 15 on Fair Isle and 13 in Shetland. Seven **Lesser White-throats** were in song at Heads of Ayr in April. An unusually large influx of **Red-backed Shrikes** brought widely scattered reports, the largest numbers (total 70+) being in Shetland and on Fair Isle, which also had a **Lesser Grey Shrike** in early June. Fetlar produced the other special bird of the spring, when the RSPB warden investigated a report of a 'funny bird in my garden' and found a **Yellowthroat**, Britain's second record and (if accepted) the first for Scotland.



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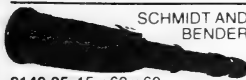


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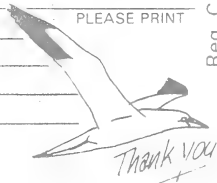
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Volume 13 No. 4

Winter 1984

Edited by V. M. Thom, assisted by S. R. D. da Prato, R. W. Furness
and I. R. Taylor

Editorial

1984 Photographic Competition results

The Editorial Committee was encouraged by the much larger number of entries—more than eighty—for the competition this year and found the final selection of the top three a difficult task. From a short list of about ten, the following were finally chosen:

First - *Kestrel*, by John Clarke, Tewkesbury

Second - *Reed Bunting*, by P. J. Newman, Kilmacolm

Third - *Rock Pipit*, by D. Hassell, Enfield

We congratulate the winners and thank all who submitted entries. We are especially grateful to Edmund Fellowes for the black and white prints he donated for use in *Scottish Birds*. We have an on-going need for photographs and would welcome more offers of material from the very able photographers we know to be among our members.

Another editorial plea!

It would greatly assist the Editor if contributors of reviews and short notes, as well as authors of papers, could please ensure that the material they submit follows the standard layouts used in *SB*. Reference to any recent number should be sufficient to indicate what is required, but copies of the 'Advice to Contributors' which appeared in *SB* 12(6) are available from the Secretary.

Welcome

We welcome the two 'new' members of staff now in charge of the Bird Bookshop (see page 135) and hope they will be happy working for the SOC.

Sir Arthur Duncan

We record with regret that Sir Arthur, the Club's first Chairman, died suddenly on Friday 2 November 1984. An obituary will appear in the spring number.

Habitats and distribution of waders breeding on Scottish agricultural land

H. GALBRAITH, R. W. FURNESS and R. J. FULLER

Much concern has recently been expressed regarding the potential threat to breeding wader populations from agricultural development. The surveys reported here covered a large area of farmland of different types and the results consequently provide the most realistic assessment yet made of the seriousness of the situation for some species.

Large numbers of waders nest on Scottish farmland yet only a few local studies of their numbers and habitat preferences have been published. Galbraith and Furness (1983) showed that poorly drained rough grazing held much higher densities of most wader species than improved grazing or cereal fields and presented some tentative evidence for regional density differences. Barrett and Barrett (1984) showed that in east Sutherland unimproved pasture with extensive Bracken *Pteridium aquilinum* growth held higher densities of breeding waders than other available habitats. Outer Hebridean machair and related habitats have been shown to hold particularly large numbers of breeding waders (Fuller 1981; Fuller *et al* 1979) but the importance of these island populations in relation to other parts of Scotland has not been established.

This paper presents results from recent surveys of the breeding wader populations of Scottish farmland and Outer Hebridean machair and compares the overall breeding densities and numbers in different broad classes of habitats and geographical areas. These data provide an indication of the relative importance and conservation significance of these habitats and areas for breeding wader populations, and are intended to give a baseline against which effects of future agricultural changes may be assessed.

Methods

Information was available from two separate surveys. Firstly, the Scottish Ornithologists' Club/Wader Study Group "Survey of the Breeding Waders of Scottish Agricultural Land" took place in 1982 and 1983 throughout the country. Secondly, between April and July 1983 the Wader Study Group and Nature Conservancy Council conducted a survey of waders breeding on the Outer Hebridean machair. For con-

venience, the two surveys are hereafter referred to as the "mainland survey" (although the Northern Isles and Inner Hebrides were also included) and the "Hebridean survey", respectively.

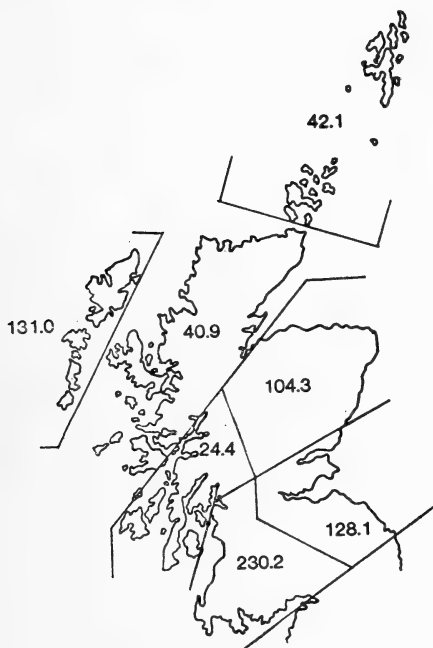


Figure 1. Area surveyed (km²). The figures represent the coverage within each of seven arbitrarily defined regions.

In the mainland survey standard recording cards were completed by a large body of volunteers covering areas of suitable habitats throughout Scotland. Sites, generally of about 1-3 km², were chosen by observers and visited 1-3 times between mid-April and early June during fine weather. Habitat composition (dry pasture, damp pasture, rough grazing, arable, riverbanks and shingle banks) and the numbers of pairs and individuals of each species were recorded, together with information on the stage of breeding. Wherever possible, observers walked through each field as well as counting from a distance since our preliminary observations indicated that only Oystercatchers *Haematopus ostralegus* and Lapwings *Vanellus vanellus* could be counted accurately without attempting to flush hidden birds. Counts undoubtedly tended to underestimate numbers of Snipe *Gallinago gallinago* and per-

haps Redshank *Tringa totanus* and Dunlin *Calidris alpina* because of their unobtrusive behaviour. The methodology of the mainland survey was described in full in Galbraith and Furness (1981).

For parts of the analysis the results of the mainland survey were subdivided into those sites surveyed because they were known to hold wader concentrations and those for which no prior knowledge existed. The latter will be referred to as "random sites".

In the Hebridean survey, 131 km² of machair and related habitats (mainly on North Uist, South Uist and Benbecula), were surveyed using rather different techniques to those employed in the mainland survey. The exact methods employed in the Outer Hebrides were described in Reed and Fuller (1983). The main difference from the mainland survey was that the Hebridean work was carried out by pairs of observers who walked parallel transect lines 100 or 150m apart. The majority of the Hebridean data were collected in June when most species were particularly conspicuous (Reed *et al.* 1983). This transect method has been shown to give a realistic estimate of the numbers of most species of breeding waders (Jackson & Percival 1983).

Despite the differences in the techniques we are confident that the two surveys were sufficiently comparable to assess the relative importance of machair for breeding waders in a Scottish context. It is important to appreciate that the term "machair", as used in this paper, refers to the complex of habitats which Fuller (1981) has described. Technically machair is the coastal plain of wind blown sand but here it is used to define the whole complex of dune systems, dune slacks, cultivated machair, marshes and damp grassland associated with this plain. Fuller (1981) showed that variations in wader density occurred between these different habitats but it is beyond the scope of this paper to consider these habitat preferences of machair waders in detail.

Results

Altogether 701 km² were censused. Coverage was not uniform: the Outer Hebrides, south west and south eastern areas (which include the central lowlands) were better represented than the Highlands, Inner Hebrides, north east, Orkney and Shetland (Figure 1). Table 1 shows the total number of pairs of each species counted and their overall nesting densities in each habitat. The Snipe data from the mainland survey include only those sites censused during suitable conditions, i.e. in late evening in fine, windless weather (Smith 1981). The machair Snipe density is certainly a considerable underesti-

mate since the data include areas censused under non-optimal conditions for this species. Table II shows the percentage of sites occupied by each species and the wide variation in breeding densities between sites. This variation is likely to be due to differences in habitat quality e.g. food availability, predation levels, cover etc.

Table I. Overall densities, in pairs/km² surveyed, (where overall density = total number of pairs in each habitat/total area of each habitat) of waders on Scottish agricultural land, riverside shingle and Hebridean machair. The figures in parentheses below the species names and habitats refer to the total number of pairs counted and the area of each habitat surveyed (km²) respectively.

	Lapwing (6919)	Oyster-catcher (3524)	Redshank (2539)	Curlew (728)	Snipe (857)	Dunlin (2059)	Ringed Plover (2176)
Dry Pasture (160.4)	3.6	2.1	0.2	0.6	0.0	0.0	0.1
Damp Pasture (45.7)	9.0	1.9	2.0	1.4	2.6	0.1	0.0
Rough Grazing >300m (17.8)	2.5	0.5	0.1	2.9	0.8	0.0	0.0
Rough Grazing <300m (198.1)	4.7	1.6	0.7	2.4	2.6	0.1	0.2
Arable (134.7)	6.0	2.0	0.1	0.3	0.0	0.0	0.0
Shingle (13.3)	2.5	4.8	0.0	0.0	0.0	0.0	0.1
Machair (131.0)	26.3	15.8	15.1	0.0	3.9	15.6	16.2

Note: the mainland habitat areas given in the table refer only to species other than Snipe. The mainland Snipe densities were calculated using only those sites censused during optimal conditions; the relevant areas (km²) were: dry pasture - 65.3; damp pasture - 15.2; rough grazing >300m - 2.5; rough grazing <300m - 57.5; arable - 46.4; shingle - 2.4.

Overall breeding densities (all species and habitats combined) varied widely between regions (Outer Hebrides - 92.8 prs/km²; Northern Isles - 13.5; north east - 5.4; northern highlands - 5.1; south east - 4.9; south west - 4.6; south west highlands - 2.1) and breeding densities in particular habitats differed between regions (Table III). These differences were investigated using Chi square tests where the actual number of pairs counted in each habitat in each region was compared with the expected number (obtained by multiplying the area

Table II. The percentage of sites at which each species was recorded. Figures in parentheses below habitats show the number of sites surveyed; those in the species columns denote the range of densities recorded on sites of 50ha or more. Dashes indicate that too few sites (<10) were available for analysis.

	Lapwing	Oyster-catcher	Redshank	Curlew	Snipe	Dunlin	Ringed Plover
Dry Pasture (232)	47.4 (0.2-43.6)	32.3 (0.2-43.6)	9.0 (0.1-5.0)	13.7 (0.1-6.2)	1.2 (—)	0.0 (—)	1.2 (—)
Damp Pasture (155)	51.0 (0.8-23.7)	25.2 (0.8-10.0)	29.6 (0.6-10.0)	27.1 (0.8-6.9)	17.4 (—)	1.2 (—)	0.0 (—)
Rough Grazing >300m (23)	21.7 (—)	17.4 (—)	4.3 (—)	69.0 (—)	8.6 (—)	0.0 (—)	0.0 (—)
Rough Grazing <300m (226)	54.9 (0.4-98.6)	26.1 (0.1-61.8)	23.8 (0.2-37.8)	49.1 (0.2-56.7)	28.7 (0.2-27.0)	2.2 (—)	6.6 (—)
Arable (195)	69.2 (0.2-47.7)	55.8 (0.1-14.0)	5.1 (—)	11.2 (—)	0.0 (—)	0.0 (—)	1.5 (—)
Shingle (75)	11.0 (—)	44.3 (—)	31.5 (—)	5.8 (—)	0.0 (—)	0.0 (—)	8.4 (—)
Machair (24)	100.0 (16.5-66.6)	100.0 (1.5-34.5)	100.0 (3.3-47.3)	0.0 (—)	96.0 (0.6-38.1)	100.0 (1.1-46.2)	100.0 (0.8-39.6)

Notes: (a) the site totals given in the table refer only to species other than Snipe. The Snipe data were calculated using only those sites censused under optimal conditions and the resulting site totals are: dry pasture - 76; damp pasture - 42; rough grazing >300 m - 5; rough grazing <300m - 76; arable - 51; shingle - 21.

(b) much of the machair area surveyed did not fall into clearly defined sites. The 24 machair sites were arbitrarily selected and represented approximately 70% of the entire area surveyed. These machair sites varied substantially in habitat composition (see text for definition of "machair" as used in this paper) and densities of waders in these different machair habitats varied substantially (e.g. Fuller 1981).

of each habitat surveyed in each region by the overall density for that habitat). Significantly more pairs of Lapwings and Oystercatchers were counted in dry pasture in the Northern Isles than in the same habitat further south ($x^2=12.08$, $P<0.001$; 418.1, $P<0.001$ respectively, 1df). Numbers of Oystercatchers in rough grazing were significantly higher on the Northern Isles than in the south east and south west combined but the converse was true for Lapwings ($x^2=399.9$, $P<0.001$; 7.66, $P<0.01$ respectively, 1df). Oystercatcher numbers on arable land were higher in the north east than the south east and south west combined ($x^2=27.6$, $P<0.001$, 1 df) but Lapwing numbers did not differ significantly. Only "random sites" were used in this part of the analysis to ensure

that any density differences obtained were not merely due to differences in selectivity on the part of the observers. Sample sizes were not adequate to allow comparison between all species, habitats and regions.

Table III. Regional differences in overall breeding densities of Lapwings (a), and Oystercatchers (b). Sample sites (area surveyed in km²) in parentheses. Dashes indicate that area surveyed was not large enough for comparisons i.e. <10 km².

(a) Lapwing	dry pasture	rough grazing (<300m)	arable
south west	2.0(39.5)	2.8(72.8)	4.3(26.9)
south east	2.2(22.6)	2.4(12.2)	3.1(43.2)
north east	1.3(13.6)	—	3.0(18.4)
n. highlands	—	1.7(18.4)	—
N. Isles	3.5(13.7)	1.9(12.5)	—
(b) Oystercatcher			
south west	0.2(39.5)	0.1(72.8)	0.5(26.9)
south east	0.3(22.6)	0.1(12.2)	0.9(43.6)
north east	1.1(13.6)	—	2.2(18.4)
n. highlands	—	0.1(18.4)	—
N. Isles	7.8(13.7)	5.4(12.5)	—

Using the breeding densities established by the mainland survey and land use statistics supplied by the Department of Agriculture and Fisheries for Scotland (DAFS 1982) we have produced estimates of the total populations of Lapwings, Oystercatchers and Redshanks breeding on typical Scottish farmland (i.e. excluding machair). Curlew *Numenius arquata* and Snipe are excluded from the calculation because substantial numbers breed outwith farmland. These estimates must be tentative since the DAFS land classification system is not identical to that used in the survey. Furthermore, the calculation assumes that there are no regional differences in breeding densities within habitat types but this survey has shown that this is not the case for, at least, Lapwings and Oystercatchers.

Of the 59,720 km² of farmland in Scotland (DAFS 1982) only one third i.e. 19,906 km² lies below 300 metres (Glentworth in Coppock 1978). Above this altitude breeding densities of the three species are comparatively low (Table I). Below 300 metres approximately 7100 km² is pasture, 8600 arable and 3100 rough grazing (DAFS 1982). The remainder is root crops or horticultural produce and is excluded from the calculation. Multiplication of the habitat areas by the breeding densities gives estimates of the total populations nesting in typical Scottish farmland (Table IV). The Hebridean survey established that minima of 3500, 2100 and 2000 pairs of Lapwings,

Oystercatchers and Redshanks, respectively, bred on the Outer Hebrides machair and related habitats. These totals are also included in Table IV.

Table IV. Population estimates for three species on machair and typical Scottish farmland. Figures in parentheses are breeding densities obtained from "random sites" (see text), so as to reduce any bias resulting from observers concentrating on better areas. Damp and dry pasture densities are combined to conform to the DAFS land classification scheme. All totals have been rounded to the nearest one hundred.

	Lapwing	Oystercatcher	Redshank
rough grazing	9600(3.1)	1900(0.6)	600(0.2)
pasture	20,600(2.9)	9200(1.3)	2100(0.3)
arable	30,100(3.5)	9500(1.1)	300(0.04)
machair	3500	2100	2000
total pairs	63,800	22,700	5000

Discussion

The results presented in this paper confirm both the importance of marginal farmland (damp pasture/rough grazing) and of the Outer Hebridean machair as breeding areas for waders in Scotland.

The importance of marginal farmland: The mainland survey has shown that marginal farmland is particularly important for Snipe, Curlew and Redshank. Current trends towards drainage and subsequent improvement of marginal land are likely to have most effect on the status of these three species. Redshank are likely to be affected most severely since the total Scottish population is comparatively small, relatively small numbers nest on non-agricultural land, and the species has not colonised improved farmland to any extent. Since approximately 40% of Scottish Redshanks nest on Outer Hebridean machair and a further 40% on rough grazing/damp pasture, any extensive improvement or drainage of these habitats may adversely affect a large proportion of the total Scottish breeding population.

Although Oystercatchers and Lapwings nest at comparatively high densities on improved land, the consequences of continued improvement are difficult to predict since there is little information on their breeding success in different habitats. Matter (1982) has shown that the fledging success of Lapwings in arable areas in Switzerland is less than half that on marginal land and substantially less than that required to maintain the arable population. Therefore, the existence of populations on intensively farmed land might depend on recruitment from marginal areas. Heppleston (1972) and Briggs (1984) have shown that Oystercatchers breeding in agricul-

tural land are more successful than those on riverine shingle or on the coast. Like Lapwings, however, Oystercatchers lead their chicks to pasture soon after hatching. The finer details of habitat structure (e.g. heterogeneity, the proximity of pasture and the timing of farming operations) may be important determinants of breeding success in both species on improved agricultural land. Further studies of chick production and habitat utilisation throughout the breeding cycle in different agricultural habitats are needed before the effects of a continuing shift toward land improvement and cereal production can be predicted. It would be unrealistic to make such predictions on the basis of breeding densities alone.

The importance of Outer Hebridean machair: With the exception of Curlew, breeding densities on machair and related habitats are many times those of the best habitats in more typical farmland. The machair habitats hold approximately 5% of Scotland's breeding Lapwings, 40% of its Redshanks and 9% of its Oystercatchers (Table IV). These figures are very approximate because unknown numbers of birds nest in non-agricultural habitats; this is likely to be so particularly for Oystercatcher which nests commonly on riverine shingle and on the coast.

These tentative estimates emphasise the importance of the Outer Hebrides, particularly for Redshank. It is likely that the 2038 pairs of Dunlin and 2116 pairs of Ringed Plovers *Charadrius hiaticula* found on the machair by the Hebridean survey also represent substantial proportions of the total Scottish populations. However, for these species it was not possible to compare the Outer Hebrides with the rest of Scotland on the basis of the results of the mainland survey because both Dunlin and Ringed Plover commonly breed outwith farmland on the Scottish mainland.

In addition to demonstrating the importance of the Outer Hebridean wader populations in a Scottish context, this paper has also indicated the likely importance of farmland in the Northern Isles for breeding waders (particularly for Oystercatchers). There is a need for further studies in Orkney and Shetland since these islands are likely to be affected by changes similar to those occurring elsewhere in Scotland (Okill 1982).

Acknowledgments

The SOC/WSB ("mainland") survey would not have been possible without the support and financial assistance of the SOC and Craignish Conservation Trust and the cooperation of the WSG. Fieldwork was carried out by a long-suffering band of volunteers including J. M. Anderson, J. B. Angus, B. Bailey, K. Banks, S.

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Summary

Results from the two separate breeding wader surveys on Outer Hebridean machair and more typical Scottish agricultural habitats are presented. Marginal farmland (i.e. rough grazing/damp pasture) is shown to be particularly important for Redshank, Curlew and Snipe. The status of all three, but particularly Redshank, could be affected by large-scale reclamation of marginal land. Lapwings and Oystercatchers breed in comparable densities on both improved and unimproved farmland but, in the absence of information on breeding success in different habitats, the effects of land use changes cannot be realistically predicted. The Scottish population estimates resulting from this study confirm the national importance of the Outer Hebridean machair as a wader breeding area.

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The status of the Corn Bunting in the Lothians

A. W. BROWN, M. R. LEVEN and S. R. D. da PRATO

Within the last ten years the Corn Bunting has virtually vanished from many areas where it was formerly quite common. This short paper summarises the decline in the Lothians. It is hoped that it will stimulate comparable reports from other areas.

The Corn Bunting is a rather drab and easily overlooked species except when male birds are in song. It has been relatively little studied by ornithologists but all observers seem

to agree on one point: the species has declined over much of its British range. This decline has been particularly marked in northern and western Britain and seems to have started before the end of the 19th century (Parslow, 1973). Evidence that this species is still on the retreat came from the breeding season *Atlas* project, when many observers reported that areas holding Corn Buntings in 1968 had lost them by 1972 (Sharrock, 1976).

In Scotland the decline appears to have been most pronounced, and best recorded, in the Northern Isles and the Hebrides (Baxter & Rintoul, 1953), whereas on the mainland the good ladies could only refer to "... a general but poorly documented decrease...". In this note we attempt to document the continuing decline of the Corn Bunting by summarising recent observations in the Lothians, an area where local observers were unanimous that the species had declined since 1968-72 when *Atlas* fieldwork took place.



Figure 1. Locations of Corn Buntings in the Lothians in 1982 (open circles) and as recorded by G. L. Sandeman in 1933-68 (closed circles). Note that GLS did not cover many inland or western areas. The larger circle at Tranent refers to an area with 6 singing males.

An indication of the former distribution of the Corn Bunting in the Lothians is given in Figure 1 which shows the location of Corn Buntings (mostly singing males) observed by G. L. Sandeman during the period 1933-68. Though subject to bias

since the observer was concentrating his activities in particular areas, general occurrence of the species along the East Lothian coast and around Edinburgh is suggested. Further evidence of decline is available from counts made at winter roosts at Duddingston Bird Sanctuary within the City of Edinburgh and at Aberlady Bay Local Nature Reserve in East Lothian (Table 1).

Table 1. Maximum winter counts of Corn Buntings roosting at two sites in the Lothians 1950-1983

Winter	Duddingston	Aberlady
1950/51 - 1957/58	300+	n.c.
1970/71 - 1974/75	70	26
1975/76 - 1978/79	30	95
1979/80 - 1982/83	15	0

Notes : n.c.=no count available.

Few counts of winter flocks have been made other than at these two roosts. It is unusual to see more than five birds together in the Tranent area where one of us (SDP) lives beside Corn Bunting habitat and sees Corn Buntings throughout the year, yet in February 1982, after a period of very hard weather, a flock of 20 appeared. At Dirleton a flock of 25 was recorded during the same cold spell (January 1982), and a flock of 78 at Whitekirk in February 1979—also during cold weather. Such records suggest influxes into the area, a supposition supported by many references in the literature to movements of Corn Bunting flocks but not yet confirmed by ringing recoveries.

In 1982 a breeding season survey was mounted in the Lothians and covered 27 of the 29 ten kilometre squares in the Region (the exceptions being two upland squares in the Moorfoot Hills). During the April-July survey period 46 records were received, of which 37 related to singing males (an average of less than 1 Corn Bunting per observer!). Corn Buntings were found in only 10 ten kilometre squares as against 25 in the breeding *Atlas*. Their distribution is shown in Figure 1 and represents a density of one territory per 27.6 square kilometres of suitable habitat—assuming that observers located all the singing males.

More detailed information on density was obtained from two areas. In the southern half of the ten kilometre square NT46 (Fala) G. Smith recorded eight singing males over twelve weekends between 1st May and early July, equivalent to a density of one bird to 6.25 square kilometres. In the course of daily visits to a study area south of Tranent SDP recorded Corn Buntings at an overall density of one bird to

2.73 square kilometres. The higher density near Tranent seems to be genuine rather than an artefact of more frequent visits, since the birds were all located within one part of the study area—the Tranent-Elphinstone ridge. Other parts of the 16.35 square kilometre study area had no Corn Buntings, but on farmland immediately to the north observers also found Corn Buntings. These records, together with those from SDP, show up as a group on Figure 1. These aggregations are typical of Corn Buntings on the continent and reflect the species' unusual breeding system (Moller 1983).

However in several areas with apparently suitable habitat no Corn Buntings were recorded. It is difficult to assess census efficiency over the large areas of farmland involved but at least 100 square kilometres were covered thoroughly enough for us to be certain that the negative results obtained were genuine. Taken together with the results for Tranent and Fala this gives a density of one per 11.9 square kilometres and, by extrapolation, a maximum figure of 86 males for the region. This may still be too high since there is historical evidence that the Corn Bunting has always had a rather patchy distribution in the Lothians (Nash 1935) and Fala and Tranent seem to be particularly favoured sites. It seems that the birds are now confined to a few favoured areas and we suspect the true population is nearer the minimum figure of 37 singing males.

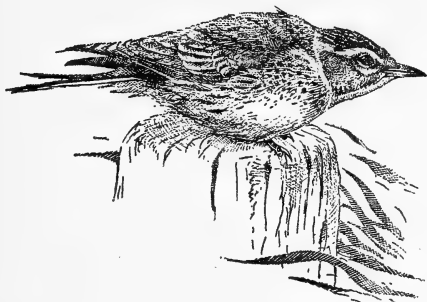
Finally, what reasons are behind this decline? It has continued throughout a period when the area of cereals in the Lothians has actually increased. Although cultivation might destroy nests in crops, there are many remaining areas of rough grass and low scrub adjacent to cornfields which do not hold Corn Buntings. Modern agriculture may, however, have affected the birds' food supply. Nowadays, arable land contains many fewer weed seeds and invertebrates—a situation which has been shown to affect Grey Partridges, especially when feeding chicks (Potts, 1979). However the decline started before recent agricultural changes and it may be that the Corn Bunting—a species with a predominantly continental distribution—has been affected by other factors whose effects have been most marked at the edge of the birds' range.

Acknowledgments Over 50 observers in the Lothians contributed to this survey: the fact that space precludes a full listing of their names in no way detracts from their contributions.

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SKYLARK *Keith Brockie*

The Year of an Orcadian Field

PAUL HEPPELSTON

18 August I decide to trace the annual cycle of the Field; it lies beside a road on which I travel every fortnight or so. The sea is nearby, less than a quarter of a mile away—as it often is in Orkney—so the birds using the field include many shore birds and gulls as well as the more usual farmland inhabitants.

This is a lowlying agricultural area in the east of the county. There are hardly any trees or hedges; stone dykes abound and the crofts and farm buildings stand out clearly and are visible for miles around. The coastline is indented with bays forming peninsulas or 'ness' points—and the Field is on the edge of one of these. To the north lie other islands—Shapinsay and Stronsay—and in the south-east one can just glimpse the Copinsay lighthouse seven miles away. It is typical rural Orkney, friendly, peaceful and unspoilt.

To bring some objectivity into the story, I plan to restrict my observations to the time around high water as often as possible. The farmer has, in the past, tended to divide the 38-acre field into two, but there is no fence and in the late winter months the two parts merge with one another and appear unified, albeit only for a short while.

28 August A day of drizzle; half the field has oat stooks standing in stubble—the other half is rather poor grass, a little marshy in places; there are no birds here. The stooks,

on the other hand, bear 100 Starlings, a Herring Gull, 13 Common Gulls and 5 Rooks—all busy stripping the oat seed-heads. In the surrounding stubble there wander 20 Curlews, 5 Lapwings, another 50 Starlings and half-a-dozen Rock Doves. It is a busy place.

4 September The stooks are still there, shining gold in the morning light; small numbers of Curlew, Starlings, Rock Doves and gulls are still present. The grass portion is a refuge and feeding place for 34 Golden Plover—maintaining, as so often, a discrete group-identity, ever alert and separate from neighbouring species.

19 September A strong ESE wind edges the bright sunlight with chill. The stooks have gone—merged with hundreds of others in the oat-stacks which spring up beside almost every farm in Orkney around this time, a sudden change in the skyline only slowly to be removed as the winter demands more and more fodder for the cattle in the byres. The only birds in the field on this bitter day are 48 Curlew and some Starlings—both groups part of what turn out to be resident flocks.

1 October The breeze is still from the east—in fact there will now be few windless days until springtime. The stubble is sporting a green tinge of undersown grass making the most of what remains of the growing season. The Curlew (20) are still there on this stubble-grass together with three young Herring Gulls and 12 Black-headed; a trio of Rock Doves are obviously wintering in nearby steadings. The grass half-field now seems more popular—it's strange to see how preference swings to and fro over the months—with a few Lapwing and Redshank and 130 Golden Plover.

16 October A cold day, frequent showers. The fields are beginning to turn a green-brown; they look inhospitable. Some doves and Lapwing are all that can be seen.

6 November Again cold and windy. Ten Redwing are feeding on the undersown grass, which has itself now ceased growing. On the wetter grass a large flock of Golden Plover and some Lapwings are joined by a Raven, two Fieldfares and a Song Thrush. The beach shore below the farm now has the familiar winter masses of pulverised tangles and other brown and red seaweed cast up on the high water mark.

27 November The strong wind is now in the west, but bright sun entices the keen birdwatcher. Rain over the past days has left pools amongst the grass; here rest the usual 100+ Golden Plover and 25 Lapwing. These are the resident winter waders it seems, though Curlew flocks remain elsewhere in the parish all winter, showing more fidelity to their feeding grounds than the Curlew visiting our field. Four Redshank call high

above twenty Starlings which are probing rapidly amongst the stubble remains.

12 December I saw no birds on the fields today, but it was a marvellous day for walking: no wind, the fields completely covered with snow and all puddles, pools, ditches and lochs completely frozen over. The stillness in the cold, crisp air brings an expectancy of the New Year, but the hint of new weather proved to be far too early.

30 December The wind is back—a strong easterly from Scandinavia and western Russia. The undersown stubble is now not an inviting place; there is little food in such fields at the best of times let alone at the cold turn of the year. But the wet grass provides plenty of fare for Curlews, Golden Plovers and Starlings. A lone Fieldfare and Blackbird bring the whole field species total so far to fifteen.

23 January A fine, still day. The score of resident Doves are resting grey on the edge of the stubble-grass. The Starlings seem to have moved over to the other half where their preferred food of earthworms and leatherjacks will abound. Numbers are high today: 39 Starling and a large mixed flock of almost 200 Lapwing, Redshank and Plovers.

28 February The winter breeze is back—from the west, so the air is damp. Again no birds on the oats half-field, but the same mixed wader flock of last month is augmented by 25 Dunlin, the whole lot now having an air of anxiety evident in their feeding actions. Could this be the start of the spring passage northwards...?

12 March Not the best of days, but quite pleasant for walking. The wader flock on the wet grass is down to 28, mainly Golden Plovers—their faithful winter's stay must surely be drawing to a close with the rapidly increasing day-length stirring their inward gaze north once more.

25 March Winter is not yet over, for today is bitterly cold. It must be a real drop in air temperature for, although the white horses dance out in the tides-stream beyond, the wind is not stronger than usual. But today is special, for spring has returned—in the form of an undoubted *pair* of Curlew on the stubble-grass. The other half-field has more Starlings than waders (!) and the Golden Plovers have gone.

6 April The Curlew pair is still on station despite the gale-force northerly wind from the Arctic. A new species for the field this winter is an Oystercatcher feeding alone amongst the grassy rushes. The dozen or so Lapwings are still in a group (although on mainland Scotland many will have paired—and even laid—by now).

24 April It is definitely no longer winter. The Curlew are

feeding in the grass half and fly to the stubble-grass to rest; it will be interesting to see where they nest. The rain is driving hard westwards and in these conditions it seems incongruous to find not only five pairs of Lapwings, but that two of them have laid eggs. The Oystercatcher has remained—solitary—but 19 Rock Doves resting on the field margin provide a tangible link with winter.

21 May The last month has seen a major change with the ploughing of the stubble-grass, which now holds no birds. The day is fine and sunny (the first such observation day since I began 9 months ago), the Oystercatcher is paired and there is a third Lapwing nest in the grass half.

18 June My visits have, perforce, been less frequent, so the changes this time are more noticeable. The ploughed field has passed through all the stages of cultivation and now has the green sheen of young oats barely inches tall. The Curlews are now outside the field, calling anxiously above a peat-heather moss nearby, but there is an Oystercatcher nest in the newly-sprouted corn. The grass field, now much drier than before, has 7 pairs of Lapwings (all with eggs or young) and a pair of Redshank nesting amongst the rushes at the edge of the field. Despite being the time of the summer solstice the day is dull, though with a gentle warming breeze, which ruffles the surface of the sea over towards the neighbouring islands, whose farmsteads are visible far in the distance.

27 July Five weeks have gone by and the oats are now at full stretch, green waving corn providing marvellous refuge for skulking birds that dare to venture within the thick stalk-forest. Already, in what seems so short a time, the avian breeding season is ended; 43 Curlew feed quietly on the grass and 110 Golden Plover have returned—harbingers of another autumn. Even the Starlings have reached their peak flock size this year.

28 August The anniversary of my first visit to the Field. It's a dull, drizzly day in which I see the clock at full circle again; the oats have been cut and stoked and seem to provide interest for birds—almost exactly the same species spectrum as a year ago—Curlews, Lapwings, Common Gulls and Starlings. The grass-half is already taken over by part of the Golden Plover flock and a single Rock Dove flies from one end of the Field to the other. Nature's cycle is all set to begin again as the hints of autumn appear with the wind from the east and Redshank calls shrill through the descending mist.

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Short Notes

Unusual roost-site of Pied Wagtails

Introduction The Pied Wagtail is known to use a variety of habitats, both natural and man-made, for communal roosting and such sites have been occupied in both rural and urban environments. Galbraith (1977), Fuller (1982) and Spencer (1984) describe reed-bed sites and Boswall (1966) discusses the famous tree roost in Dublin city centre. Murton (1971) mentions the use of man-made structures such as the insides of green-houses and power stations and the outsides of factories; and the species is also known to use sewage works for roosting purposes.

The Site A previously unrecorded roost habitat was discovered by accident at 1600 G.M.T. on 20 November 1983 when I was walking past a busy brewery site beside a main road in central Edinburgh. At least 100 Pied Wagtails were seen converging on an area of stacked plastic crates containing empty beer bottles awaiting destruction. Thinking the birds might be using the area as a pre-roost before heading off elsewhere, I remained to observe them and was surprised to find them using the site as a roost proper. Four counts were subsequently made of the birds using the roost (Table 1) and three catches, using high-level mist-nets, were made by members of Edinburgh Ringing Group.

The roost-site was very sheltered, being bounded to the south and west by a high retaining wall, to the north by buildings, and to the east by other stacks of crates. The stack actually used by the birds measured c.5 m. in height by 18 m. north-south by 13-18 m. east-west; only a very little of it was exposed to the south and west above the top of the wall; there were regular gaps (less than 75 cm.) between the columns of crates. Observations suggested that the main area utilised by the birds was the south-west corner—the part most sheltered from all winds.

Observations Before entering the roost around dusk the birds gathered on the roofs of surrounding buildings (one in particular), but latecomers flew directly into the roost and could be seen to drop in from a considerable height if the sky was clear; most birds entered the roost horizontally by flying from the pre-roosts and over the top of the wall. The numbers recorded (Table 1) must be regarded as minima since on overcast days not all the birds could be seen arriving at the pre-roost nor entering the roost. However the figures indicate a roost holding up to 260 birds on occasion, from an unknown catchment area.

Table 1 Numbers and timing* (G.M.T.) of Pied Wagtails arriving at pre-roosts and entering roost

Date	25.11.83	17.12.83	07.01.84	11.02.84
Nos. arriving at pre-roost	182	77	155	198
Nos. entering roost	231	162	181	260
	hrs.	hrs.	hrs.	hrs.
"Official" sunset time	1555	1543	1601	1710
Time of first bird at pre-roost	1545	1510	1545	1600
Time of last bird at pre-roost	1630	1605	1635	1720
Time of first bird into roost	1605	1545	1620	1715
Time of last bird into roost	1630	1615	1640	1725

*measured in five-minute periods

In relation to sunset, birds assembled at their pre-roosts between 70 and 10 minutes before "official" sunset time (Royal Observatory, Edinburgh, pers. comm.) and continued to arrive until between 10 and 35 mins. after sunset. It would appear that in mid-winter (November-January inclusive) the earlier the time of sunset, then the earlier the birds began to assemble at the pre-roosts and the earlier they entered the roost proper (Table 1).

Ringling results, although based on small sample sizes, suggest a preponderance of first-winter birds at the roost; their mean weights were consistently lower than those of adults (this will be reported in more detail elsewhere). Adult and first-year Pied Wagtails in Scotland are almost completely migratory, many wintering outside the country (Galbraith op. cit.) and so the presence of a mid-winter roost of up to 260 birds is noteworthy in itself, irrespective of the unusual site in which it occurred.

Acknowledgments I wish to acknowledge the interest and co-operation of the brewery concerned and to thank them for permission to observe and net on their property. I thank P. W. Dundas and J. Hunt for commenting on an earlier draft of this note, and fellow members of the Edinburgh Ringing Group for helping to catch the birds.

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T. W. DOUGALL

Unusual Wren roost

While trapping birds for ringling at a malting in Haddington, East Lothian, on 28 December 1983, four Wrens were seen to fly from rat burrows in a heap of discarded barley. Further observation showed that the Wrens entered the burrows in spite of the fact that rats were coming and going quite frequently. Grain in the centre of the heap was quite warm, which may have been the attraction.

K. E. HART

Unusual behaviour of Long-tailed Tits

On 23 February 1984 I disturbed a flock of Long-tailed Tits feeding on bread lying on the ground. They returned to the bread, ate for fully a minute and then flew off when a domestic cat appeared. I understand that it is unusual for these birds to feed on bread and to be on the ground.

SANDRA R. HACKER

Perrins (1979) in *British Tits*, states that the Long-tailed Tit practically never comes down to the ground in search of food (p. 71) and rarely comes to bird tables, though if one or more of a party break with this tradition the whole party may visit the table regularly for much of the winter and even succeeding winters.—Eds.

Unusual Dipper nest site

On 26 March 1983 when doing the first of my British Trust for Ornithology Waterways Bird Surveys on the River Almond (Perthshire) I was intrigued to see a Dipper's nest, the size of a football, on the horizontal branch of an alder tree some $2\frac{1}{2}$ m. above the water and about 3 m. along the branch from the trunk of the tree, and effectively overhanging the water. A pair of Dippers were there still taking material up to it and, in due course, adults were seen feeding juveniles in the vicinity of the nest. Bannerman says that "occasionally the branch of a tree is used (as Seton Gordon relates)" and also quotes a report by Mr R. J. Younger of a nest which he found in a fork 11 ft. from the ground. I have inspected the photograph of the nest, which was published in *Scot. Nat.* 1932, and it is in the fork made by a branch with the trunk so is not really overhanging the river to any marked extent. In an article on Dipper breeding biology (*Bird Study*, 25: 149-160, 1978) Geoffrey Shaw summarises details of 1159 dipper nest sites, but does not include that of a tree branch.

M SHIMELD



Successive use of same site by two female Merlins

As part of a long-term study of the status and breeding ecology of the Merlin in Grampian routine visits are made to a number of sites. In the spring of 1983 Merlins were found to be breeding in low numbers, due to the cold wet weather in April and early May, and many long-established sites were without breeding birds. The site in question has a history of continuous occupation over a number of years and breeding had been successful there in 1980, 1981 and 1982. In 1983 when this site was visited on 8th May with Sandy Payne, a male Merlin was seen in the company of two females. One female, thought to be the occupant, flew low over the area calling loudly, while the second female circled high over the hill.

A second visit on 15th May, made to confirm breeding, revealed a female Merlin lying dead 10m from a nest containing egg-shell fragments. The bird had been recently killed, probably by a mammalian predator, and was ringed; she had bred in 1982 at a site 2.8km distant. During the visit the male Merlin was seen flying over the site and a second female was seen for a brief period.

On 19th June, when Logan Steele and I visited the site all the usual signs of occupation were seen. As the heather bank previously utilised for nesting was approached a female Merlin flushed off a nest containing three eggs. This nest was 25m from the first one. Breeding was successful and three young were seen on 7th August.

We assume that the same male mated with both females as on two occasions a second female was seen in his presence. The presence of this extra female in a year of low breeding density suggests that there was a surplus of non-site-holding females ready to take over any sites which became available, as happened in this case. Seebohm (*A History of British Birds* Vol. 1, 1883 London) records two females breeding at the same traditional site in one year (1870) and a similar occurrence has been noted in Cumbria, but in that case the second nest also failed (Newton *et al* in press). It would be interesting to hear of any further occurrences.

BRIAN L. COSNETTE

Common Buzzards feeding on fish carrion at Loch Lomond

With reference to a recent short note on an Aberdeenshire buzzard eating a dead salmon at the water's edge (*Scot. Birds* 13: 88), in the past buzzards have been seen feeding on beached salmon at Loch Lomond. Powan *Coregonus lavaretus*, a species of whitefish almost unique to Loch Lomond, are also scavenged. Thousands of these herring-like fish were washed onto the shore following an outbreak of a fatal disease in June 1968. Along with other carrion eaters, the local buzzards were not slow in seizing the feeding opportunity presented, and on this occasion several powan were found at a nest on one of the islands.

JOHN MITCHELL

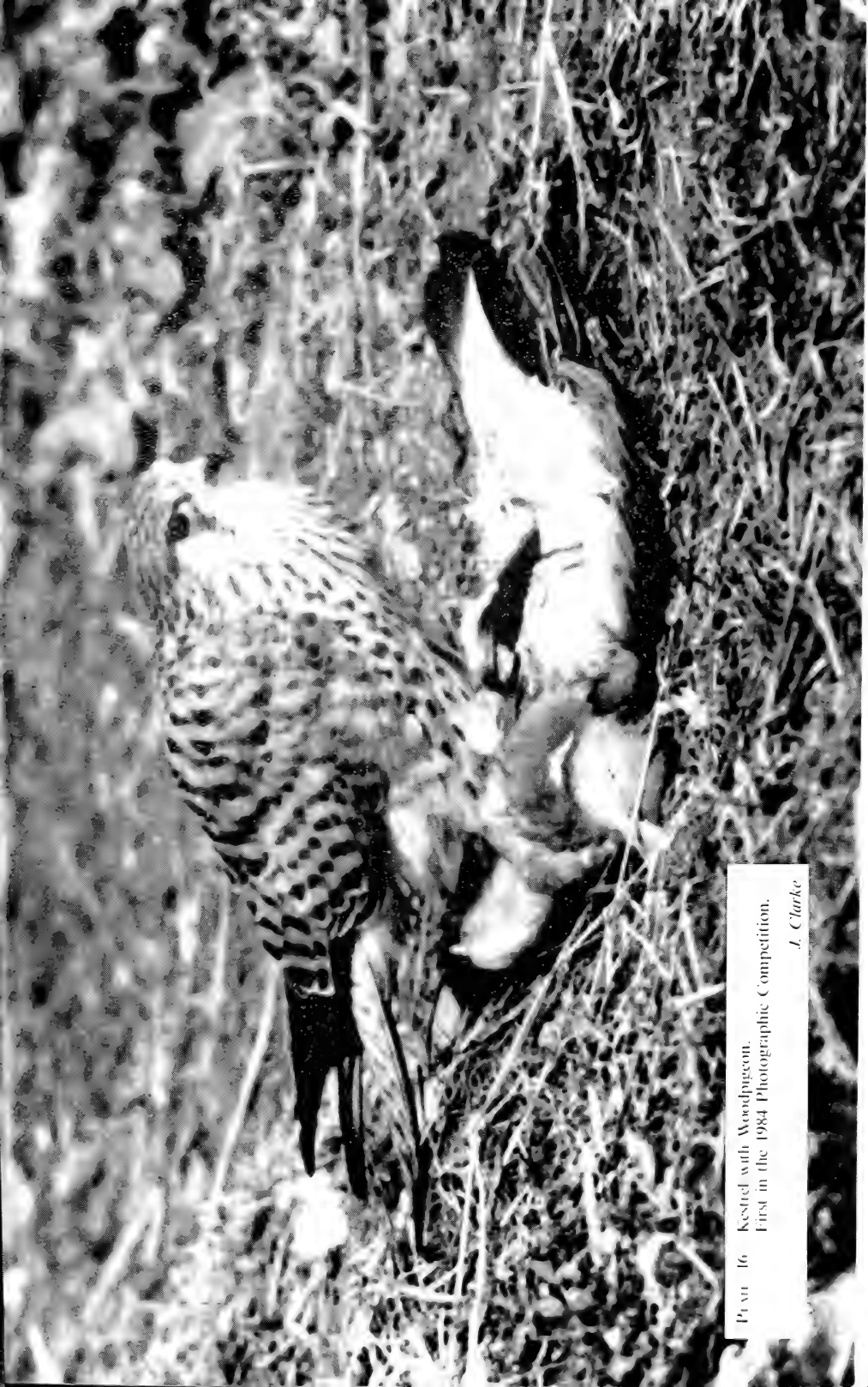


PLATE 16 Kestrel with Woodpigeon.
First in the 1984 Photographic Competition.

J. Clarke



PLATE 17a. Reed Bunting. Second in the 1984 Photographic Competition.

P. J. Newman

17b. Nightjar with chick; one of the black & white entries.

E. C. Fellowes





PLATE 18a. Rock Pipit. Third in the 1984 Photographic Competition.

D. Hassell

18b. Meadow Pipit feeding Cuckoo: one of the black & white entries.

E. C. Fellowes





PLATE 19. Irene Waterston on Noss during the SOC Bird Islands Cruise in 1966 (see p. 125).

J. McGeoch

Reviews

The Bee-eaters by C. H. Fry; T. & A. D. Poyser, Calton, 1984; 304 pp., 8 colour plates; £19.60.

The bee-eaters' diet, composed largely of venomous Hymenoptera, seems to have imposed a remarkable uniformity of appearance on the entire family (most of the 24 species are united in the one genus *Merops*), yet at the same time has permitted evolutionary divergence to occur to varying degrees in foraging ecology, breeding and social behaviour, migratory patterns and plumage colouration. This book is the most authoritative account of the bee-eaters yet written and serves also as a guide to many aspects of modern biological theory that the bee-eaters illustrate so well. However, I wonder how many British readers will require the detailed species by species accounts which comprise the greater part of this book? Most people will see the European Bee-eater only on their Mediterranean holiday (though a pair nested in Musselburgh in 1920!) and the majority of the remaining species are Afrotropical. Of much more general interest are the later chapters on speciation and patterns of morphological variation, feeding ecology, bee-eaters and apiculture, and on the complex social relationships that develop within the breeding colonies of some species. Bee-eater 'good-neighbourliness' deserved more discussion than it received, to help the non-expert appreciate the unusual evolutionary significance of altruistic behaviour. But these chapters were enjoyable to read and well conveyed the author's enthusiasm for his birds. I wished this part of the book were longer.

This is an attractive book, enhanced by Hilary Fry's own colour paintings and especially by John Busby's engaging drawings that bring the birds alive throughout the book. I hope that the high price (Poyser's most expensive to date) and the fact that the birds are unfamiliar to many, will not deter people from buying it.

P. J. JONES

Newman's Birds of Southern Africa by Kenneth Newman; Macmillan 1983; 461 pp, 2000+ col. pl., 885 maps; £9.95.

This is the best African field guide so far. The area covered—the seven countries south of the Zambezi—is the same as in Robert's "Birds of South Africa" but more species are dealt with due to the inclusion of recent vagrants and southern seabirds. Since Newman painted many of the plates for the fourth edition of Roberts it is interesting to compare them.

The newer book scores as an identification guide but the older has more information and they are best seen as complementary to each other.

S. R. D. da PRATO

A Pictorial Guide to the Birds of the Indian Subcontinent by Salim Ali and S. Dillon Ripley. Bombay Nat. Hist. Soc./O.U.P., 1983, £22.50.

This slim volume depicts all the bird species found in the subcontinent of India arranged family-wise on 106 plates, mostly in colour. It does not include descriptions of the birds, but the plates are generally very well drawn and appear to be accurate. Concise information concerning

status, size, habitat and distribution is provided. The double-cross referenced index is tiresome to use especially when one is trying rapidly to identify a new bird. Having already used this book in India I found it to be invaluable and by far the best available field guide to date and an absolute must for those intending to visit this region.

DAVID L. CLUGSTON

Handbook of the Birds of India and Pakistan, 2nd edn., Vol 4: Frogmouths to Pittas, by Salim Ali and S. Dillon Ripley; OUP, Delhi, 1983; 267 pp., 11 colour plates and many maps & drwgs; £19.50.

Handbook of the Birds of India and Pakistan Compact Edition by Salim Ali and S. Dillon Ripley; OUP, Delhi, 1983; 737 pp. plus 113 colour plates & many maps & drwgs; £45.00.

The *Compact Edition* contains the descriptive text of the ten volume *Handbook*—the complete texts of the second editions of volumes 1-3 and the first editions of volumes 4-10. It contains 113 colour plates, 24 of which are new.

Originally announced at £75, the price has been reduced to £45 because, according to the publishers, "the quality of this book has been affected by difficulties during the manufacturing process. The quality is very much better than many other Indian books I have seen and the book is a bargain for anyone interested in Indian birds.

JOHN C. DAVIES

A Field Guide to the Birds of the USSR by V. E. Flint, R. L. Boehme, Y. V. Kostin and A. A. Kuznetsov; Princetown University Press 1984; 353 pp; 48 colour plates, 71 line drawings and 303 maps; £46.30.

This book—a translation of the Soviet Handbook published in 1968—is the first field guide to the birds of the USSR in English (American?). The information on each species is inevitably limited as some 728 species are described and illustrated in one handy sized volume. Most species have about 200 words of text giving the Russian name, field marks, habitats, range, distribution and comparison with similar species. Rare visitors are more sketchily described.

The 48 colour plates, grouped in the centre of the book, are well reproduced: although rather old fashioned in style they will be a boon to those lucky enough to go birdwatching in the Soviet Union. The distribution maps are most useful and the introduction includes interesting chapters on birdwatching in the USSR, the ecological zones and avifaunas of different regions of the USSR and the five best areas for birds.

I found this book most exciting and wish it had been available in 1980 when we visited Siberia, as it would have helped us considerably. I can wholeheartedly recommend it, though it is a little overpriced in comparison to other guides.

ROY DENNIS

The Shore-birds of the Orkney Islands written and published by the Tay and Orkney Ringing Groups, 1984; pp. 78; £2.50 (limpback).

This booklet outlines the geology, coastal morphology and intertidal ecology of Orkney, describes methods used to count and catch waders,

and gives results of detailed fieldwork around the entire 793 km of Orcadian shoreline during winters 1982-83 and 1983-84. The status and numbers of each species are dealt with in turn (with full distribution maps) and biometrics of birds are tabulated. The total number of waders counted (over 51,000) indicates that Orkney ranks as one of the most important wader wintering sites in Britain. The Tay and Orkney Ringing Groups are to be congratulated not only on bringing this to our attention, but also for pioneering studies of waders in rocky shore regions. Their report of the Orkney study is detailed, thorough and clearly presented. Although not cheap, this booklet is excellent value for money and an important contribution to our knowledge of waders in Scotland.

R. W. FURNESS

One Man's Island : Paintings and sketches from the Isle of May by Keith Brockie; J. M. Dent & Sons, 1984; 150 pp, many illustrations; £12.95.

"One Man's Island" is the product of a year or more spent among the birds and animals of the Isle of May. Keith Brockie's studies of seabird and seal colonies are complemented by details of rare migrants and of flowers and shells. They are drawn with cool searching clarity; the artist finds interest and beauty in the shape of a nostril or a crushed egg-shell, as equally he does in the play of shadows over Guillemots and the delicate forms of Henbane and Silverweed. I particularly enjoyed the subtle composition of the Long-eared Owl roosting among echoing patterns of rock. Minutely scrutinised eyes are quite a feature of Keith Brockie's birds and animals, full of mirror reflections, but I wonder whether the "life" of a creature expressed by its eye is not really an *outward* energy? Nonetheless, Keith Brockie's work shines with the authority of first-hand experience. This book will stimulate both naturalists and artists, and it will delight "islanders" everywhere.

JOHN BUSBY

Short Reviews

The Starling by Christopher Feare; OUP 1984; 315 pp; 16 plates; £15

Perhaps because Starlings are so common many birdwatchers hardly give them a second glance—which is a pity, since any bird as successful as the European Starling must have some interesting features. Dr Feare is well qualified to write this book, having spent the last decade studying what he refers to as "the second hand car salesman of the bird world". After an introductory chapter on starlings in general, the book concentrates on European Starlings, though not just in Europe, providing an account that should satisfy both the general reader and anyone setting out to study the bird. The price is a little high but the book does contain a lot of information and is recommended.

Shorelines by Michael Warren; Hodder & Stoughton, 1984; 128 pp, many paintings and drawings; £14.95.

A large format book in diary form, composed of paintings which "record two years birding in Britain, the USA, Holland, France and Portugal".

The Birds of China by Rodolphe Meyer de Schauensee; OUP 1984; 602 pp; 38 colour plates & 39 drawings; £35

This book is the first single volume work to describe the 1195 species recorded in China. Since so little is available on Chinese birds in English the book provides a checklist, field guide type descriptions, information on distribution, illustrations of over half the species, and useful background material on ornithology in China. As a result it is too large for the pocket, but anyone visiting China should not be without it—its cost is, after all, only a fraction of the air fare!

Cranes of the World by Paul Johnsgard; Croom Helm, London, 1984; 258 pp; 23 colour & 24 b & w plates; maps; £25

The Grouse of the World by Paul Johnsgard; Croom Helm, London, 1984; 413 pp; 51 colour & 72 b & w plates; figs. & maps; £25

The cost of these books will limit their appeal, especially as the European Grouse have recently been dealt with in BWP, but they are nicely produced and not really over-priced. There is a commendable attempt to use photographs of birds in action, supplemented by good line drawings, many of them by the author. The books are produced in the USA and American spelling is used throughout.

Birds of Somalia by J. S. Ash & J. E. Miskell; East African Nat. Hist. Soc., Nairobi, 1983; 97 pp; map; softback; £6

A useful little book summarising the status and distribution of 639 species in what the authors rightly describe as one of the least known African countries.

Finding birds in Japan: the Tokyo area by Mark Brazil, 1984; 35 pp; maps; £2.

This booklet gives advice on birding in Japan as a whole as well as more detailed information on what can be seen in and around the capital.

S. R. D. da PRATO

ITEMS OF SCOTTISH INTEREST Articles and reports on birds in Scotland, mainly on status and distribution, are listed here. Some biological studies are excluded, as are references from the widely available journals *British Birds*, *Bird Study*, and *Ringing and Migration*. Most of these items are available for reference in the Waterston Library. The librarian would be glad to receive reprints or copies of papers on any aspect of ornithology.

Weights, breeding, and survival in European Sparrowhawks. I. Newton, M. Marquiss & A. Village 1983. *Auk* 100: 344-354. Based on studies in Dumfriesshire 1971-80.

Turnover and dispersal in a Peregrine population. R. Mearns & I. Newton 1984. *Ibis* 126: 347-355.

Peregrines and Man in Dunbartonshire. J. Mitchell in *West Dunbartonshire Naturalist Report* no. 6, 5-10, 1984.

Sex ratio, survival and territorial behaviour in polygynous Hen Harriers in Orkney. N. Picozzi 1984. *Ibis* 126: 356-365.

Diets and feeding of Fulmars during the breeding season: a comparison between St Kilda and Shetland colonies. R. W. Furness & C. M. Todd 1984. *Ibis* 126: 379-387.

The value of single counts of waders on rocky shores. R. W. Summers, C. V. Corse, E. R. Meek, P. Moore & M. Nicoll 1984. *Wader Study Group Bull.* 41: 7-9.

- St Abb's Head seabird sample counts in 1983. S. R. Warman, C. E. Warman, C. O. Badenoch & A. J. Panter (21 pp). Report to Nature Conservancy Council, SE Scotland Region, 12 Hope Terrace, Edinburgh.
- The quinquennial Berwickshire seabird colony survey 1982. (41 pp). C. E. Warman 1983. Report to Nature Conservancy Council, SE Scotland Region, 12 Hope Terrace, Edinburgh.
- Observations of birds and mammals on the Isle of Islay 1981-83. (52 pp). S. F. Newton (ed) 1984. Available from Brathay Exploration Group, Brathay Hall, Ambleside, Cumbria LA22 0HP, £2.00 post free.
- Arran Bird Report for 1983. (10 pp). M. H. Dunn (ed) 1984. 65p plus postage from M. H. Dunn, Tigh an Droma, Kings Cross, Isle of Arran KA27 8RG.
- Bird Report for Ross-shire and Inverness-shire for 1983. (20 pp). R. Dennis (ed) 1984.
- West Dunbartonshire Bird Report for 1979-82. C. M. Waltho (ed) in *West Dunbartonshire Naturalist Report* no. 6, 60-94, 1984.

W. G. HARPER

Notices

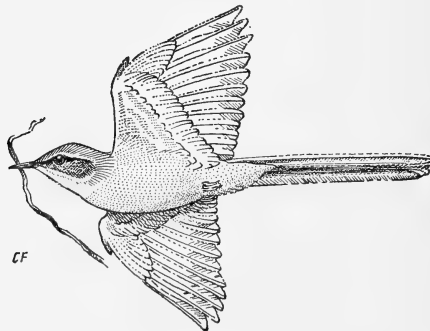
Colour-marked Whoopers In summer 1984 Whooper Swans moulting on the east coast of Iceland were marked with plastic (PVC) neck rings. The birds are expected to be resighted mainly in the British Isles but some may reach the continent of Europe. The neck rings are yellow and carry a code of only two black letters (e.g. AA, AB etc.) read vertically and repeated four times around the ring. The same code is repeated on a yellow PVC-ring on the left leg, but the right leg carries an official steel ring issued by the Icelandic Museum of Natural History (P.O. Box 5320, Reykjavik, Iceland). Anyone who finds swans with yellow neck rings is asked to read the code if possible and to inform **Arnthor Gardarsson, University Institute of Biology, Grensavgur 12, 108 Reykjavik, Iceland**, stating locality, date and other relevant observations. Those who submit records will receive annual interim reports on resightings.

Coloured ringed Barnacle and Pinkfooted Geese As part of a long term study of the population dynamics of Greenland Barnacle Geese, 644 moulting and non-breeding geese were ringed in July 1984 at Orsted Dal, Jameson Land, East Greenland (71°50'N 23°30'W). Eight Pinkfooted Geese were also ringed. Each bird has on the left tarsus a tall white plastic (darvic) ring carrying a three letter code in black to be read from the base upwards, e.g. ABA, ABB, ABC, etc. and a metal ring on the right tarsus. Adult males were given a single orange spiral ring above the darvic while females were given a single yellow. Thirty-five yearling Barnacles (born 1983) have a thin red vertical stripe on their darvic rings and coloured spiral rings above the metal ring on the right tarsus. In addition to the above birds a further 469 Barnacles have been individually marked with darvics and colour rings on the Inishkea Islands, County Mayo (54°8'N 10°11'W) in the period 1968-1984. Any observations of these ringed geese with details of date, location, flock size, number of geese critically examined, rings observed with data on distance from geese, visibility and estimated accuracy of ring reading (1-100%) and size of any accompanying broods and should be sent to: **Dr David Cabot, An Foras Forbartha, St Martin's House, Waterloo Road, Dublin 4**. All records will be acknowledged in publications.

Threave Wildfowl Refuge This National Trust for Scotland Refuge is open to the public between 1 November and 31 March and has four free observation posts giving excellent viewing of many species on the River Dee and surrounding fields. A new hide is planned for letting to bird clubs at a small fee. A leaflet on the Refuge and information regarding escorted visits by a volunteer warden can be obtained from **Threave Visitor Centre, Castle Douglas**, which is open all year.

Seabird: a new journal The Seabird Group is pleased to announce the publication in October 1984 of its new journal *Seabird*, edited by P. G. H. Evans and T. R. Birkhead. As the successor to the Group's former series of reports (1-6), this first issue is entitled *Seabird 7*. The new title, however, marks a significant change in policy to broaden our scope and embrace an international field of contributors. Thus, while we continue to encourage papers from the UK, we aim with *Seabird* to extend the platform for discussion and appeal to a wider readership. We plan to produce *Seabird* on a regular basis, and *Seabird 8* will thus appear in the New Year to coincide with The Seabird Group's Conference on Population Studies & Population Monitoring at Denstone College, Uttoxeter, UK, on 15-18th February, 1985. *Seabird* aims to cater for a wide range of current interests in seabird biology, and *Seabird 7* contains 11 papers on breeding biology, status, migration, diet, moult, and parasites. Apart from UK studies by several eminent researchers, there are contributions from Gibraltar, Norway, and a world-wide review of tick-borne viruses. *Seabird 7*, as will its successors, also includes a number of major book reviews. Copies of *Seabird* are available to non-members of The Seabird Group at a cost of £5 + 50p postage from **Seabird Orders, The Seabird Group, c/o RSPB, The Lodge, Sandy, Beds. SG19 2DL, England, UK.** The Editor of *Seabird* welcomes contributions of original papers, at the same address. 25 offprints (40 if more than one author) will be supplied free to authors of published contributions.

Tawny Owls in Edinburgh A study is being made of the ecology of Tawny Owls in the City of Edinburgh. If anyone has any information that could help to locate territories would they please contact **Andrew Summers, BSc, Department of Forestry & Natural Resources, University of Edinburgh, The Kings Buildings, Mayfield Road, Edinburgh EH9 3JU**, or telephone 031-661 0829 after 6.00 p.m.



GREY WAGTAIL C. Fisher

May Irene Waterston 1914 - 1984

A tribute read by Ian Pennie at the funeral service
in Humble Parish Church

We have come here today to pay tribute to a great friend and outstanding personality, the greater part of whose life was devoted to the service of others—her family, especially her mother, the various organisations for which she worked or was associated in a voluntary capacity—The National Trust for Scotland, the Scottish Ornithologists' Club, the Fair Isle Trust and indeed Fair Isle itself.

We in the S.O.C. will always remember Irene at Regent Terrace; her efficiency and dedication to the work of the Club, tremendous hospitality, her humour, and her understanding of other people's problems. There were hilarious occasions too and only very recently Irene reminded me of the time when we plucked a goose, shot by the Director of the Nature Conservancy Scotland, on the pavement outside the Scottish office of the R.S.P.B. (which at that time was at 21 Regent Terrace). After that of course we cooked and ate the goose.

Her devotion to George, her husband, was of a different nature, a wonderful partnership which stemmed from their common interests. I think it was their love of wild places which brought George and Irene closest together, as on their camping trips to Sutherland where I joined them on many occasions. As I left Badcall this morning I thought of Irene as I had seen her on Foinavon ridge, clad in gym shoes and cotton slacks on a hot summer's day. Following George's retirement from the R.S.P.B. came the famous expeditions to Greenland and the Canadian arctic, but life changed when George's health finally broke down. A kidney machine is a marvellous servant but a cruel master, but together they fought to make the most of what George had left of life; the West Highland visits were resumed and, incredibly, even Fair Isle !

After George's death Irene gradually picked up the threads and made a happy life for herself at Keith Bridge, enjoying her garden and continuing her Fair Isle work. She was an enthusiastic and competent gardener, working immensely hard and sharing her skill and experience with others. It is remarkable that the last year of her life should have been one of such achievement and fulfilment—in that year she saw the Fair Isle book through the publishers, visited Greenland once more, also Fair Isle and Sutherland. Finally on 17th December 1983 she was elected President of the Arctic Club of Great Britain, the first woman ever to receive the honour.

Irene died on 5th August 1984 of an inoperable brain tumour, the day after her 70th birthday. I am proud to have known her and to have become one of her closest friends.

I.D.P.



GOLDFINCHES

The Scottish Ornithologists' Club

REPORT OF COUNCIL

For Year to 30 June 1984

General The past year was again one of change, in particular with regard to the staff of the Club. Details of this and other matters dealt with by Council and its committees are reported below.

Membership On 30 June 1984 the Club had 2,793 members, a net increase of 28(1%) from last year.

Year to 30 June	1979	1980	1981	1982	1983	1984
Honorary	1	5	6	6	7	7
Life	51	58	62	84	91	90
Ordinary	2357	2387	2555	2570	2420	2439
Junior	211	208	211	195	181	183
Children	82	74	80	82	66	74
	<u>2702</u>	<u>2732</u>	<u>2914</u>	<u>2936</u>	<u>2765</u>	<u>2793</u>
	-278	+30	+182	+22	-171	+28

Honorary Membership The Council were pleased to acknowledge the many years of unstinting service given to the Club by Charles Palmar and, in recognition of this, created him an honorary member.

Covenants The number of covenants increased significantly with a consequent benefit to Club income. We are very grateful to members who helped the Club in this way at no extra cost to themselves. Still well over half the members have not taken advantage of this easy way of increasing the value of their subscription to the Club.

Finance The Revenue Account shows a deficit of just over £2,000 for the year. Income for the Bookshop was significantly down (£5,000) from last year's, admittedly exceptional, figures and office expenses were well above budget. The state of the Club's general funds is cause for concern in view of the urgent requirements of replacing essential office equipment and the necessity for immediate repairs and maintenance on 21 Regent Terrace.

George Waterston Memorial Fund No grants from this fund were awarded during the year. At the end of the year the balance in the fund was £2,180.

Branches The usual programme of lectures was held at the 13 branches during the winter and most branches organised field trips during the year. Council wishes to thank the lecturers and those members who led the field trips. The time they spend helping the Club and its members is greatly appreciated.

Annual Conference The 36th annual conference and 47th annual meeting were again held in the Marine Hotel, North Berwick, East Lothian. An account of the conference was published in *Scottish Birds* 13 (1), Spring 1984.

Scottish Birds Four issues of the journal and the index to volume 12 were published during the year. Valerie Thom continued as editor with Maureen Williams (née Doran) as business editor. Council thanks them and the editorial committee, in particular Stan da Prato, for their work during the year.

Scottish Bird Report The *SBR* 1982 was eventually published in June 1984, production difficulties having contributed significantly to this delay. This is the last *SBR* to be edited by Roy Dennis and the Council express their warm appreciation to him and the assistant editors Alan Brown, Pete Ellis and Angus Hogg for their work on the *SBR*. Angus Hogg has taken over as editor and Roy Dennis will continue to compile the rare breeding bird records.

Research and fieldwork Various ornithological projects have been supported by the club and its members during the year. This was the third and final year of the BTO's Winter Atlas fieldwork. Members also contributed to the BTO's ringing scheme, Common Bird Census and Nest Record Scheme. The RSPB's beached bird survey and the Wildfowl Trust's goose and winter wildfowl counts continued to be supported by members. Lists of Scottish local organisers for the surveys and counts and the SOC Local Recorders for the *SBR* were published in *Scottish Birds*. Council appreciates the hard work and dedication of all those members taking part.

Conservation The Club has been indirectly involved in four issues during the year.

(1) Correspondence continued with the Department of the Environment and the Secretary of State for Scotland concerning the appointment of a Chief Inspector and Registration Scheme under the Wildlife and effective once established.

Countryside Act 1981. Whilst the replies to our questions have not been reassuring, we can only hope that the inspection scheme will become

(2) The Club supported the Greenland White-fronted Goose Study's objection to the proposed workings at Duich Moss, Islay. The Secretary of State subsequently granted planning permission. The Club will continue to support the G.W.F.G.S. in its formal complaint to the European Commission.

(3) The Club supported the Shetland Islands Council's decision to refuse planning permission for a mink farm on Trondra, Shetland.

(4) The Club objected strongly to the Forestry Commission granting permission to Seafield Estates to fell 70 acres of Abernethy Forest.

(5) The Club wrote opposing the development of sports activities on Loch Ken. The plans were rejected by the local authority and the Club was invited to make submissions to an overall management plan for the area.

Endowment Fund On the recommendation of the research committee Council awarded grants totalling £1,450 to 10 applicants during the year.

(1) Eric Meek on behalf of the Orkney Ringing Group received £250 to help purchase cannon-netting gear for their studies of waders and gulls in Orkney.

(2) Graham Rebecca received £100 to assist with transport for his study on the status and breeding ecology of the Merlin in the Grampian Region.

(3) Mike Martin on behalf of the Tay Ringing Group received £250 to assist with travel expenses for their study of wintering shore-birds of Orkney and Shetland.

(4) Ian Poxton on behalf of the Edinburgh Ringing Group received £50 for rings and transport for their studies of seabirds in the Firth of Forth.

(5) Alan Heavisides received £50 for transport for his study of Merlins in the Pentlands, Moorfoots and Lammermuirs.

(6) Brian Etheridge received £100 for transport for his study of raptor breeding performance in Morayshire.

(7) Andy Dowell received £150 for transport and maps for his study of Barn Owls in the Cree Valley.

(8) Iain Gibson received £100 for transport for his work on the status and breeding biology of Yellow Wagtails in the Clyde area.

(9) Bob Swann received £100 for rings, transport and boat hire for his long term seabird studies on Canna.

(10) The Scottish Wildlife Trust received £300 towards the cost of construction of their new hide at the Loch of Lowes.

Brief reports submitted by recipients of Endowment Fund grants in 1983 were published in *Scottish Birds* 13 (2), Summer 1984.

Waterston Library Valuable opportunities arose during the year to add to the Library by exchange and purchase. More than a hundred back volumes of important journals were acquired and 92 books were added. A bequest of books was received from the late Dr Helen Crawford Scott. Council wishes to thank the Librarian, Bill Harper, and his wife, Hetty, for their work in the Library during the year.

Bird Bookshop Sales were down by around 15% on last year's, admittedly exceptional, figures whereas costs inevitably rose. The Bookshop is now facing increasing competition from other suppliers, but we hope our reputation for the number of titles in stock and service to customers

will help. Council appreciates the contribution to the Club made during the year by Maureen Williams and the Bookshop Staff.

Scottish Centre Council and committee meetings were held at 21 Regent Terrace during the year. The Edinburgh Branch Discussion Group meetings and Library Evenings were also held in the building during the winter.

The Edinburgh New Town Conservation Committee carried out an external survey of the building in April 1984. Their comprehensive report indicated a number of urgent repairs and recommended a phased maintenance programme. An architect has been appointed to supervise this work. Replumbing the interior, at the building, mainly to remove lead pipes and tanks, is under way.

Club representation Frank Hamilton and Dr Derek Langslow represent the Club on the British Section of the International Council for Bird Preservation. Bede Pounder is a member of the Duck Working Group of the International Wildfowl Research Bureau.

Staff Major Alastair Peirse-Duncombe retired as Secretary and Treasurer on 31 December 1983 after 15 years with the SOC. An appreciation of the magnificent contribution he and his wife, Daphne, made to the Club appeared in *Scottish Birds* 12 (8), Winter 1983. John Davies took over as Secretary and Treasurer on 1 January 1984.

In the Bookshop, Mrs Maureen Williams (née Doran), the Bookshop Manager, left in June to have a baby. The post has since been filled by Mrs Jacquie Clark. Peter Bell (Bookshop Assistant) left in August 1983 and was replaced by Miss Ruth MacLennan. Mrs Betty Bellamy (part-time Bookshop Assistant) left in November and was replaced by Mrs Annette Murchie.

Acknowledgments Council thanks the many members who give so much of their time to serve on Club and Branch committees, arrange meetings, lead field trips, compile records, organise surveys and help in many other ways. We also thank all the members of staff who work so willingly for the Club. Council sends its best wishes to those who have left the staff this year and offers a warm welcome to those who have joined.

IVAN T. DRAPER, President,
for and on behalf of the Council

THE SCOTTISH ORNITHOLOGISTS' CLUB

Revenue Account for year ended 30 June 1984

	Year to 30/6/84	Year to 30/6/83
INCOME		
Subscriptions, including transfer from		
Life Membership Fund	£18003	£18096
Income Tax on Covenanted Subscriptions	3424	2234
Dividends and Interest (Gross)	744	785
Gross surplus on Bookshop (sales £108,065)	25428	30416
Advertising Revenue—"Scottish Birds"	1714	1341
Sale of "Scottish Birds"	971	768
Sundry Sales	12	8
Donations	297	262
Raffle	761	802
Gain on redemption of investment	98	—
	<u>£51452</u>	<u>£54712</u>
EXPENDITURE		
Branch Expenses including lectures	£1946	£1878
Travel Expenses for council members and delegates to conferences	306	579
Secretarial and editorial Expenses	33751	29436
Office Expenses	7701	3329
Scottish Centre for Ornithology & Bird Protection	2328	3435
Library books and binding	450	200
Publishing "Scottish Birds"	6078	5782
Publishing "Scottish Bird Report 1982"	633	737
Editor's honorarium	£115	
Less contribution from "Scottish Birds" Appeal Fund	115	
Loss on conference	239	110
Subscriptions to other Societies	—	100
V.A.T. not reclaimable	94	84
	<u>53526</u>	<u>45670</u>
Excess of Expenditure over Income	2074	(9042)
	<u>£51452</u>	<u>£54712</u>

Balance Sheet as at 30 June 1984

FUNDS OF THE CLUB	Year to 30/6/84	Year to 30/6/83
Accumulated surplus from previous year ...	£16209	£7167
Less deficit for year	2074	(9042)
	<u>14135</u>	<u>16209</u>
Life Membership Fund	5483	6093
"Scottish Birds" Appeal Fund	1019	1134
Library Fund	315	450
George Waterston Memorial Fund	2180	1917
	<u>£23132</u>	<u>£25803</u>
 REPRESENTED BY		
Cash in hand and at Bank	6590	1879
Dunfermline Building Society shares	5952	4429
Bookshop Stock	22939	23368
Sundries Stock	355	466
Club debtors	5537	7228
Investment at cost as below	508	2506
	<u>41881</u>	<u>39876</u>
<i>Less</i>		
Subscriptions paid in advance	£67	50
Club creditors	17203	13153
Due to Endowment Funds	1479	370
Grants allocated from George Waterston Memorial Fund not yet taken up	<u>—</u>	<u>500</u>
	<u>18749</u>	<u>14073</u>
TOTAL NET ASSETS	<u>£23132</u>	<u>£25803</u>

Investments as at 30 June 1984

	Market value	At cost	At cost
Safeguard Industrial Investments :			
875 shares of 25p each	£1452	£508	£508
£2100 10% Exchequer Stock 1983	<u>—</u>	<u>—</u>	<u>1998</u>
	<u>£1452</u>	<u>£508</u>	<u>£2506</u>

Endowment Fund

(The free income of which is available for the advancement
of ornithology)

Revenue Account for year ended 30 June 1984

INCOME		Year to 30/6/84	Year to 30/6/83
Interest and Dividends received (gross)	...	£1742	£1647
EXPENDITURE			
Grants as detailed in Report of Council	...	1450	1920
Excess of income for year	<u>£292</u>	<u>(£273)</u>

Balance Sheet as at 30 June 1984

Endowment Fund as at 30/6/83	£11811	£11811
Add Accumulated revenue as at 30/6/83	...	2291	2564
General No. 2 Account	10397	9972
Gain on redemption of investment	75	—
Grant refunded	40	—
Excess of Income for year	292	(273)
		<u>£24906</u>	<u>£24074</u>
Made up of :			
Investments at cost as below	£4368	£3063
Dunfermline Building Society :			
Capital Account	8557	6907
General No. 1 Account	724	4504
General No. 2 Account	10128	9520
Due by Club's General Funds	1479	470
		<u>25256</u>	<u>24464</u>
Less Grants allocated but not yet paid	350	390
		<u>£24906</u>	<u>£24074</u>

Investments as at 30 June 1984

	Market value	At cost	At cost
£1220 9½% Treasury Stock 1983	—	—	£1140
£352 British Printing & Communication 7½% Non Cumulative Preference Shares £1	£292	£353	353
500 St Andrew Trust Ordinary 25p	1190	570	570
1952 M & G Equity Investment for Charities	4644	1000	1000
£2500 10½% Treasury Stock 1989	2375	2445	—
	<u>£8501</u>	<u>£4368</u>	<u>£3063</u>

EDINBURGH, 18th October, 1984.—I have audited the foregoing Revenue Account for the year ended 30 June 1984 and the Balance Sheets at that date. I have accepted as correct subscriptions and other receipts shown as received in the books, the value placed on the bookshop stock and the amounts due by debtors and to creditors. Subject to the foregoing, I certify that in my opinion the accounts are correctly stated and sufficiently vouched.

(Signed) ROBERT CAVEN,
Chartered Accountant.

COUNCIL AND OFFICIALS OF THE CLUB FOR SESSION 48

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STAFF

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Membership Secretary Miss Pat J. Webster.

Bookshop Manager Mrs Jacquie Clark (from 21.8.84).

Bookshop Assistant Manager Peter T. Bell (from 15.10.84).

Bookshop Assistants Mrs Dorothy J. Ridley, Miss I. Ruth MacIennan (to 31.10.84), Mrs Annette Murchie (to 31.10.84), Mrs Helena Paterson (to 30.9.84), Mrs Isabelle Abu-lilish (from 1.11.84).

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- British Section, International Council for Bird Preservation** : F. D. Hamilton, Dr D. R. Langslow.
- Duck Working Group, International Wildfowl Research Bureau** : B. Pounder.

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- Sandy Anderson, Dr John Berry, Maxwell Hamilton, Charles Palmer, Major Alastair Peirse-Duncombe, Mrs Daphne Peirse-Duncombe, Dr Ian Pennie, Mrs Ruby Smillie, Donald Watson.

THE SCOTTISH BIRD REPORT 1983

The 1983 SBR is available, price £2.50 (including postage & packing), from The Scottish Ornithologists' Club (SBR), 21 Regent Terrace, Edinburgh EH7 5BT.

THE SCOTTISH BIRD REPORT 1984

Observers are reminded that all records for 1984 should be sent to the local recorders by the end of January 1985. This will enable the recorders, compilers and the editor of the *SBR* to publish the *SBR 1984* in October 1985. The editor invites the submission of black & white prints or colour transparencies of rare or uncommon birds taken in Scotland in 1984, together with any line drawings of Scottish birds. Remember, the *SBR* is your report; please give it your full support by being prompt with the submission of your records.—Angus Hogg, Editor *SBR*, Kirklea, Crosshill, Maybole, Ayrshire KA19 7RJ.

ENDOWMENT FUND GRANTS

The closing date for applications for 1985 grants is 31 December 1984. Application forms are obtainable from John C. Davies, Secretary, SOC, 21 Regent Terrace, Edinburgh EH7 5BT.

CHANGES IN BOOKSHOP STAFF

Jacque Clark, a biology graduate and keen amateur ornithologist, is the new Manager of the Bird Bookshop. Wading birds are her particular interest and she is a joint secretary with Nigel, her husband, of the Wader Study Group. She is an "A" permit ringer and has been a member of three ornithological expeditions in recent years.

As a result of staff reorganisation in the Bookshop, Miss Ruth MacLennan, Mrs Annette Murchie and Mrs Helena Paterson have left. Mrs Dorothy Ridley (Bookshop Assistant) is still with us.

Peter Bell, an ecology graduate and keen birder, is the new Assistant Manager in the Bookshop. Peter has spent several periods during the last two years working as a temporary Bookshop Assistant and so is very familiar with the Club and the Bookshop.

REPLUMBING NO. 21

Visitors to the Club in Regent Terrace during the summer and autumn will have been aware of the disruption caused by the replumbing, primarily to remove lead pipes and tanks, and the associated rebuilding work. The Bookshop staff, and in particular the Club Secretary and his family, have had to live under very trying conditions. Things are gradually returning to normal although it will be a long while yet before the redecoration is complete. We are very grateful to Frank Hamilton and the RSPB for allowing us to use their offices for Club meetings whilst the work was being carried out.

SUBSCRIPTIONS AND COVENANTS

Members who pay Income Tax can greatly increase the value of their subscriptions to the Club by covenanting. Completing a Covenant Form is such a simple thing to do and on the present adult subscription of £7.50, the Club can reclaim an extra £3.22 from the Inland Revenue. Please, if you do not do so already, make your subscription worth more by covenanting. Miss Pat Webster, the Membership Secretary, will send you a form and a reply paid envelope upon request.

DUMFRIES GOOSE WEEKEND

A Goose Weekend is arranged for 8th-10th March based at the Nith Hotel, Glencaple, and organised by the Dumfries Branch. There will be led excursions by car to the Wildfowl Trust at Caerlaverock and to South-

erness/Carsethorn on Saturday and to the Castle Douglas/Loch Ken area on Sunday. On Saturday evening a slide show will be arranged by Dumfries Branch members at the Nith Hotel.

Club members wishing to take part in the weekend should book directly with The Manager, The Nith Hotel, Glencaple, Dumfries (Tel. No. Glencaple 213). The all inclusive cost which includes bed and breakfast on Friday and Saturday nights, dinner on Saturday evening and packed lunches on Saturday and Sunday will be £36 per person. Further information is available from the Dumfries Branch Chairman, Dr Edmund C. Fellowes, West Isle, Islesteps, Dumfries DG2 8ES (Tel. No. 0387-62094).

BRANCH SECRETARY

Please note that the Dumfries Branch Secretary is now Tom Shannan, 146 Golf Avenue, Dumfries (telephone number ex-directory).

BTO/SOC ONE DAY CONFERENCE

A joint BTO/SOC one day conference is to be held on Saturday, 30 March 1985 at the Department of Forestry and Natural Resources, University of Edinburgh. The theme of the conference is surveys and censuses with talks on the Common Bird Census, birds of prey, waders and seabirds. Details of the programme and booking forms are available from John Davies at the SOC.

CORRECTIONS

We apologise to Carol Munro, the Inverness Branch Secretary, for spelling her name incorrectly and getting her telephone number wrong on the back of the lecture programme booklet. Her correct telephone number is Inverness (0463) 241359.

We also apologise to Alan Brown (Longniddry), who might still be looking for a second-hand 4 drawer filing cabinet, for getting his home telephone number wrong. His correct home tel. no. is Longniddry 52413.

Local Recorders

Shetland (except Fair Isle) Dennis Coutts, "Da Knowe", Twageos Road, Lerwick, Shetland.

Fair Isle N. Riddiford, Bird Observatory, Fair Isle, Shetland.

Orkney C. J. Booth, "Ronas", 34 High Street, Kirkwall, Orkney.

Outer Hebrides, St Kilda W. A. J. Cunningham, Aros, 10 Barony Square, Stornoway, Isle of Lewis PA87 7TQ.

Caithness Mrs P. M. Collett, Sandyquoy, East Gills, Scrabster, Caithness, KW14 7UH.

Sutherland A. R. Mainwood, 13 Ben Bhraggie Drive, Golspie, Sutherland KW10 6SX.

Ross-shire (except Black Isle), Inverness-shire (mainland over 18 miles from Inverness) R. H. Dennis, Landberg, North Kessock, Inverness IV1 4XD.

Inverness-shire (within 18 miles of Inverness) and Black Isle, Ross-shire M. I. Harvey, Clachbhan, Loaneckheim, Kiltarlity, Inverness-shire.

Nairnshire, Morayshire, Banffshire M. J. H. Cook, Rowanbrae, Clochan, Banffshire.

Aberdeen, North Kincardineshire Dr M. V. Bell, 20 West Mount Street, Aberdeen AB2 4RJ.

- South Kincardineshire**, Angus N. K. Atkinson, 5 Tolmount Crescent, Montrose, Angus DD10 9DQ.
- Perthshire** E. D. Cameron, Strathclyde, 14 Union Road, Scone, Perthshire PH2 6RZ.
- Isle of May** B. Zonfrillo, 28 Brodie Road, Balornock East, Glasgow G21 3SB.
- Fife (except Forth Islands)**, Kinross-shire I. G. Cumming, 11 Canongate, St Andrews, Fife.
- Clackmannanshire**, East Stirlingshire Dr C. J. Henty, 3 The Broich, Alva, Clackmannanshire.
- West Lothian, Forth Islands (except May)**, Midlothian A. W. & L. Brown, 232 Rullion Road, Penicuik, Midlothian EH26 9JL.
- East Lothian** A. Brown, 23 King's Court, Longniddry, East Lothian EH32 0QP.
- West Lothian, Peeblesshire, Roxburghshire, Selkirkshire** R. D. Murray, 143 Eskhill, Penicuik, Midlothian.
- Argyllshire, Inner Hebrides** R. F. Coomber, 4 Staffa Cottages, Tobermory, Isle of Mull, PA75 6PL.
- Dunbartonshire, West Stirlingshire, Renfrewshire, Arran and Bute** I. P. Gibson, Arcadia, The Glen, Howwood, Renfrewshire.
- Lanarkshire** Dr E. S. Alexander, 3 Lilac Hill, Hamilton, Lanarkshire.
- Ayrshire** R. H. Hogg, Kirklea, 11 Kirkmichael Road, Crosshill, Maybole, Ayrshire.
- Dumfriesshire** Dr E. Fellowes, West Isle, Islesteps, Dumfries DG2 8ES.
- Kirkcudbrightshire, Wigtownshire** A. D. Watson, Barone, 54 Main Street, Dalry, Castle Douglas, Kirkcudbrightshire DG8 3UW.

Recent Reports

These notes include unchecked reports and are not intended as a permanent record, nor will they be indexed. Please send reports to Pete Ellis, Houss, East Burra, Shetland, via local recorders, at the end of March, June, September and December. The period July to September is covered here.

Autumn migration was rather poor in many east coast areas though the Northern Isles received plenty of migrants, particularly in late September. Fair Isle fared best of all with arrivals of migrants on 15th-17th September, 20th, 22nd and 24th September which brought **Dunnocks**, **Robins**, **Pied Flycatchers** and **Scandinavian Thrushes** as well as a number of rarities. Sea passage was good in several areas during August and September, with **Cory's Shearwaters** off St Abbs, Orkney, Troon and Ardrossan, **Great Shearwaters** off Fair Isle and Fife Ness, and no fewer than 75 **Sooty Shearwaters** off St Abbs on 25th August. Birds of the distinctive west Mediterranean race of the **Manx Shearwater (Balearic Shearwater)** were seen off Barns Ness, St Abbs (5 in September), Orkney, Fife Ness and Peterhead. **Leach's Petrels** were more numerous than usual with singles off Fair Isle in July, 3 in the Pentland Firth in August, 7 there on 25th September and 1 inland in Glen Affric the same month.

A **Spoonbill** was at Strathbeg in July. The Carron Valley **Bean Geese** arrived early with 18 on 16th September later reaching 160, whilst 2 **Snow Geese** arrived with **Pinkfeet** at Meikle, and another at Aberlady in September. A **Brent Goose** moulted in Shetland and 2 were off Ayrshire in September. The **Blue-winged Teal** at Sandhaven in September may have been the bird shot at Strathbeg later, when another was in Orkney. A female **Red-crested Pochard** visited Musselburgh in August and a female **King Eider** summered in Shetland. A male **Common Scoter** of the American race was in Orkney on 17th July. Three broods of **Ruddy Ducks** were raised at Strathbeg. Single **Honey Buzzards** reached Shet-

land and St Abbs, and a female **Red-footed Falcon** was in Unst in July, when a **Hobby** was at Peterhead with another on Fair Isle in September. A **Spotted Crake** was caught on Out Skerries and a **Crane** graced Hule Moss in September.

Little Stints were generally scarce, the only high count being 22 at Virkie. The only American waders were 2 **Pectoral Sandpipers** at Hillend Loch, whilst singles were seen in Orkney and Shetland. **Curlew Sandpipers** were also scarce, the maximum reported being 7 in Orkney. Fair Isle had an unprecedented 3 **Great Snipe** in September and an arrival of **Black-tailed Godwits** in August resulted in 47 at Virkie and 21 at Inverness. Unusual records of **Spotted Redshank** were singles in Orkney and on Fair Isle and 2 on Fetlar. A **Wilson's Phalarope** spent 5 days at Cotehill Loch, Aberdeenshire, a **Red-necked Phalarope** was off Colsay, Shetland and a **Grey Phalarope** was off Irvine in September.

23 **Pomarine Skuas** were reported off Peterhead, with 8 others between there and St Abbs. Single **Long-tailed Skuas** were off Peterhead and Barns Ness. A **Franklin's Gull** passed Peterhead on 24th July and single **Sabine's Gulls** were seen at Musselburgh, off Orkney, in the Pentland Firth, off Peterhead and off the Isle of May. There were **Black Terns** off Skateraw, Doonfoot, and Barns Ness (3). A **Long-eared Owl** was in Shetland in September and a **Hoopoe** at Stenness, Orkney in August. Fair Isle had 2 **Wrynecks** in August and 6 in September, when 3 were in Shetland and 1 in Orkney.

There were 2 **Short-toed Larks** on Fair Isle and one on Out Skerries, 2 **Richard's Pipits** (the only ones reported) in Shetland, and an **Olive-backed Pipit** on Fair Isle in September. Fair Isle had 4 **Bluethroats** and 2 others were in Shetland. The bird of the autumn on Fair Isle was a **Red-flanked Bluetail** present on 21st September. The only reports of **Black Redstarts** were from Shetland. Fair Isle had 2 **Siberian Stonechats**, whilst Orkney's bird of the autumn, an **Eye-browed Thrush** present from 25th-26th September brought a number of **Twitchers** flying there—alas in vain.

One of the few **Lanceolated Warblers** to be seen off Fair Isle was on Out Skerries in September, but Fair Isle had 2 that month. In contrast to the spring only one **Marsh Warbler** was reported, from North Ronaldsay, 4 **Icterine Warblers** appeared on Fair Isle, the only other report being from Fife Ness. Fair Isle also had a **Barred Warbler**, whilst Shetland had 8 and the Isle of May one. Orkney and Shetland managed single **Arctic Warblers**, but Fair Isle had 3. **Yellow-browed Warblers** put in a good showing, with 8 on Out Skerries and 12 on Fair Isle on 22nd September, whilst the rest of Shetland had 9 and Orkney 10. A **Bonelli's Warbler** stayed for over a week on Fetlar.

In September **Red-breasted Flycatchers** were in good supply, with 15 in Shetland, 6 on Fair Isle, 4 in Orkney and 1 on the Isle of May. Most unusual was a report of a **Nuthatch** at Melrose on 11th August. 5 **Red-backed Shrikes** were in Shetland, 2 in Orkney and 1 at Barns Ness, and 3 **Great Grey Shrikes** were seen in Shetland. The Northern Isles had a monopoly of **Scarlet Rosefinches**, with 10 on Fair Isle, 16 in Shetland and 3 in Orkney, mainly in September. Fair Isle had a **Hawfinch** on 1st July. 20 **Lapland Buntings** were on Fair Isle on 22nd September and 10 in Orkney on 18th September. **Ortolan Buntings** were on Out Skerries and at Sumburgh as well as on Fair Isle, which had no less than 8 **Little Buntings** while Out Skerries produced 2 or 3. Shetland managed 1 **Yellow-breasted Bunting** and Orkney 3, but guess where beat them again, when 3 appeared on Fair Isle. I know where I'm going next September!

PETE ELLIS

WILDFOWL COUNTS IN SCOTLAND

THE National Wildfowl Counts, instigated in 1947 and organised by the Wildfowl Trust at Slimbridge, cover ducks, geese, swans, Great Crested Grebes and Coot. As many wetland localities—coastal or inland—as possible are visited by volunteer observers each month from September to March.

The counts in Scotland are organised through the SOC, formerly by a succession of dedicated individual members (Miss Rintoul and Miss Baxter, Miss Garden and Miss Valerie Thom) and latterly by a network of Regional Organisers who deal direct with David Salmon at the Wildfowl Trust. These are appointed by the SOC, who maintain a copy of all Scottish counts in the Club's Waterston Library in Edinburgh.

A current list of Regional Organisers is given below, and anyone who is interested in helping with the counts is asked to write to the Organiser for their area.

Shetland D. P. P. Eva, 6 Westerloch Brae, Lerwick.

Orkney P. Reynolds, Berrybank, Evie, Orkney.

Wester Ross and Skye A. Currie, Glaiseilean, Broadford, Isle of Skye, IV49 9AQ.

Outer Hebrides N. Buxton, 4 Sand Street, Coulregrein, Stornoway, Isle of Lewis, Western Isles.

Caithness S. Laybourne, Old Schoolhouse, Harpsdale, Halkirk, Caithness, KW12 6UN.

Inverness-shire, Easter Ross, Sutherland (East) C. G. Headlam, Dallachie, Fearn, Ross-shire IV20 1TN.

Banffshire, Morayshire, Nairnshire J. Edelsten, 12 Durn Avenue, Portsoy, Banffshire.

Aberdeenshire, Kincardineshire A. Duncan, 12 Cairncry Avenue, Aberdeen, AB2 5DS.

Angus B. Pounder, 64 Forfar Road, Dundee, Angus.

Perthshire (East) E. D. Cameron, Strathclyde, 14 Union Road, Scone, Perth, PH2 6RZ.

Argyllshire and Inner Hebrides (South) S. Newton, Benbraggie, School Street, Bowmore, Isle of Islay, Argyll.

Fife, Kinross-shire Mrs J. A. R. Grant, Brackmont, Crail, Fife.

Central Region D. Thorogood, 4 Archers Avenue, Stirling, FK7 7RJ.

Bute J. B. Simpson, Estate Office, Rothesay, Bute.

Dunbartonshire and Renfrewshire A. Young, 76 Liddel Road, Ravenswood, Cumbernauld, G67 1JE.

Strathclyde South East A. Wood, 47 Kilbowie Road, South Carbrain, Cumbernauld.

Lothians Miss J. Wilcox, 18 Howdenhall Gardens, Edinburgh, EH16 6UN.

Ayrshire A. G. Stewart, 31 St Andrews Avenue, Prestwick, Ayrshire, KA9 2DY.

Borders A. Bramhall, 28 Blakehope Court, Tweedbank, Galashiels, Selkirkshire, TD1 3RB.

Dumfriesshire, Kirkcudbright, Wigtownshire P. Shimmings, 5 Broom Road, Lockerbie, Dumfriesshire.

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Vol. 13 No. 5

Spring 1985



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Spring 1985

Edited by V. M. Thom, assisted by S. R. D. da Prato, R. W. Furness
and I. R. Taylor

Editorial

Looking ahead to Jubilee Year

One of the most important changes planned to mark the Club's Golden Jubilee—a 'new look' for *Scottish Birds*—was formally approved by Council at the end of January. Starting in February 1986 every member will receive a quarterly *SOC News*, carrying topical reports, short notes, reviews, Club and other notices and similar non-technical material, and a twice-yearly *Scottish Birds*, containing the more scientific papers and the *SBR*. Final details have yet to be worked out by the Editorial Committee, but the hope is that with these two complementary publications we will be able to cater for the varied needs of members more adequately than has been possible within the constraints of the present format of *SB*.

We at the Editorial end are keen to ensure that *SOC News* reflects the interests and activities of a wide spectrum of the Club's membership; whether or not it succeeds in doing so will be largely up to you, the members. So put your thinking caps on, both as individuals and within the Branches, and send us your suggestions. We would also welcome short articles about current surveys, good 'birding' places, summer 1985 expeditions and 'appetite whetters' describing projects planned for 1986. And of course we will be looking for line drawings (including cartoons) and photographs, so this is an appropriate moment to remind you that entries for the 1985 Photographic Competition must be in by the end of September. As before, photographs must be of wild birds in Scotland and be taken within two years of the closing date. There is no limit to the number of entries each photographer may submit.

The Scottish Mute Swan Census 1983

A. W. BROWN and L. M. BROWN

The first complete census of the Mute Swan in Britain for 28 years took place in 1983. This paper presents the census results for Scotland; a full analysis for the whole of Britain will be published separately (Ogilvie, in prep.). The census was carried out by the British Trust for Ornithology in co-operation with the Scottish Ornithologists' Club and the Wildfowl Trust. The last national census in 1978, also organised by the BTO (Ogilvie 1981), was based on a random sample of 10 km squares with only one or two areas in Scotland achieving full coverage (Brown and Brown 1984, Spray 1981). The need for another census was related to the increasing concern in some areas over the effects of lead poisoning on Mute Swan populations (Nature Conservancy Council 1981, Ogilvie 1983). Although there is no evidence that lead poisoning is a major problem in Scotland (C. J. Spray, pers. comm.), it was considered opportune to attempt full coverage, to allow comparison with previous surveys in 1955/6, 1961 and 1978 and to obtain a base line for future reference.

Methods

The recording unit was the 10 km square of the National Grid, now the basic unit used by the BTO in census work. Local organisers, usually the BTO Regional Representative or SOC recorder, were provided with a list of 10 km squares for which they were responsible, instruction sheets and recording forms, and a list of sites in their area which held breeding pairs of Mute Swans and/or non-breeding flocks in 1955/56 (Rawcliffe 1958), the sites found in the 1978 random sample, and sites recorded in the 1961 sample census (Eltringham 1963) where relevant.

As in 1978, the census period was 1 April to 31 May and the recording forms required two sets of information. One form related to breeding pairs and requested observers to note all territorial and breeding pairs located within their allocated 10 km square, together with a brief description of habitat. Observers were asked to restrict their observations to the survey period if possible, with additional visits to sites to determine if territorial pairs actually bred, i.e. a nest or young were seen. The difficulty of obtaining coverage in some parts of Scotland resulted in acceptance of breeding records outside the census period but late records of territorial pairs from July onwards have been discounted. The second form requested information on non-breeding flocks, the aim being to achieve full coverage between 1st and 30th April, when the non-breeding flocks are fairly stable. It was hoped that counts could take place on or around the 16th/17th; counts nearest that date have been used while observations in early March and after 15th May have been discounted. To enable easier comparison with previous surveys, observers were asked to note the grid reference of the observation and the new region or district and old county in which the relevant 10 km square was located.

In addition to the official observer network the census was advertised

in the press and the public, especially school children, were encouraged through a television programme to support the survey by adopting and reporting on their local swans or any they might see when on holiday in the remoter parts of Scotland. The latter produced an encouraging response although only a few additional breeding sites were recorded. Most of the survey data were returned by the end of the year and indicated that in general coverage was fairly thorough, though parts of the north and west were probably under-recorded.

Results

The numbers of breeding birds, territorial only birds and non-breeding flocks and the population totals for each of the former Scottish counties, are presented in Table 1, together with the corresponding figures for 1955/56.

Breeding and territorial birds Breeding birds represented 38.3% of the total population, while 11.2% were territorial only (Table 1). For 1983 territorial birds are shown separately, rather than being included in the non-breeding total as presented for the 1955-56 census (Rawcliffe 1958); this has been done to give some indication of the number of potential breeding pairs and sites in each county. When territorial only birds are added to the breeding population of 565 pairs (2 single nesting birds have been regarded as 2 separate pairs), this gives a potential breeding population of 729 pairs. The cold, wet spring of 1983 had a definite impact on breeding numbers and success, especially on the rivers where many nests were washed out or nesting prevented altogether (Brown and Brown, in press, Murray 1984, Spray 1984). If the only reports of breeding pairs were territorial records in May then earlier breeding attempts may have gone unnoticed. The census was not designed to determine breeding success therefore the outcome of nesting on rivers as opposed to inland waters cannot be determined.

Table 2 shows the distribution of breeding and territorial birds according to habitat. The small percentage (10.4%) nesting on rivers in 1983 is probably related to the high water levels in the spring. Ogilvie (1981) has shown that in Britain as a whole this habitat held 34.2% and 34.3% of the breeding population in 1961 and 1978 respectively. At a regional level variations are evident according to available habitats. Sea loch, coastal or brackish sites predominate in parts of the north and west, e.g. 54.5% of breeding sites in the Outer Hebrides and Argyll (Newton 1983, unpub. rep.), 48.9% in Orkney, 77.8% in Sutherland and 84.6% in Ross and Cromarty, whereas in the east and south freshwater lochs and ponds are of greater importance e.g. 66.1% of breeding sites in Aberdeen/Banff, 57.7% in Lothians, 45% in Angus, 89.4% in Perth, 57.6% in the Borders and 80.5% in the south west. The use of rivers for breeding is concentrated in central, east and south Scotland with 29.1% of breeding pairs in Aberdeen/Banff on this habitat, 26.9% in Lothians and 39.4% in the Borders. In general however, rivers appear to be less well used as a breeding habitat in Scotland compared with England. Brown and Brown (1984) have shown a reduction of 73.1% in the number of pairs breeding on rivers in the Lothians from 1961 to 1982 with increasing public access possibly a major factor in the decline. Unfortunately there are no comparable data for elsewhere in Scotland although Murray (1984) considers that there has been no significant change on the Borders rivers.

Non-territorial birds Non-territorial birds comprised 50.5% of the total population (Table 1); the addition of territorial only birds to this figure indicates that 61.7% of the Mute Swan population did not breed. As counts of non-breeding birds have not been accepted beyond 15th May

Table 1 Numbers of breeding, territorial and non-breeding Mute Swans and population totals for each Scottish county in 1983 and breeding and non-breeding totals in 1955/56

County	1983			1955/56			
	Breeding birds	Territorial only birds	Non-breeders	Total birds	Breeding birds	Non-breeders ⁴	Total birds
Shetland	0	0	0	0	0	1	1
Orkney	135 ¹	18	170	323	52	101	153
Outer Hebrides ²	224	40	428	692	44	330	374
Caithness	14	6	0	20	2	0	2
Sutherland	18	4	3	25	12	34	46
Ross & Cromarty	26	10	60	96	42	67	109
Inverness	24	10	33	67	4	0	4
Nairn	0	2	0	2	6	0	6
Moray	20	2	0	22	46	16	62
Aberdeen ³	118	62	144	324	72	112	184
Banff ³	6	2	4	12	10	7	17
Kincardine	8	2	2	12	8	8	16
Angus	40	2	136	178	22	152	174
Perth	38	12	56	106	28	30	58
Stirling	14	4	16	34	20	42	62
Clackmannan	4	0	4	8	0	0	0
Kinross	2	4	10	16	16	249	265
Fife	20	12	29	61	46	7	53
West Lothian	6	0	3	9	14	12	26
Mid Lothian	16	0	8	24	38	99	137
East Lothian	30	4	73	107	18	34	52
Ayr	28	16	38	82	64	149	213
Arran & Bute	8	2	0	10	4	14	18
Peebles	8	6	2	16	4	0	4
Selkirk	12	0	9	21	22	3	25
Roxburgh	20	10	24	54	34	27	61
Berwick	26	10	13	49	16	10	26
Argyll	88	36	18	142	48	180	228
Dunbarton	10	2	1	13	20	34	54
Renfrew	28	4	3	35	66	14	80
Lanark	24	10	34	68	44	200	244
Dumfries	42	6	25	73	72	130	202
Kirkcudbright	49 ¹	24	124	197	24	48	72
Wigtown	22	6	18	46	8	18	26
	1128	328	1488	2944	926	2128	3054

Explanatory notes to Table 1

- 1 Only single birds seen at one nest.
- 2 Counts in the Outer Hebrides were principally done from the air, with supplementary ground observations.
- 3 Counts in Aberdeen/Banff were supplemented by air surveys.
- 4 Territorial only birds included.

it is likely that the non-breeding counts are an underestimate of the actual total, with some sites overlooked especially in the north. Table 2 shows the distribution of non-breeding birds (excluding territorial only) according to habitat. These figures clearly demonstrate the importance of coastal or brackish waters for non-breeding birds. The availability of suitable habitats appears to determine the location of non-breeding flocks and the principal requirements are probably adequate feeding and safety. The proportion of non-breeding birds found on brackish/sea loch habitats was 86.5% in Orkney, 84.8% in Inverness, 100% in Ross and Cromarty, 99.3% in Angus, 69.2% in Fife/Kinross, 67.8% in Lothians and 100% in Ayrshire. Elsewhere freshwater lochs and ponds accounted for 51.4% in Aberdeen/Banff, 64.3% in Perth, 66.7% in Argyll, 97.1% in Lanarkshire and 62.9% in Kirkcudbright. Rivers were of importance in Perth (35.7%), Stirling/Clackmannan (80%), the Borders (77.1%) and Dumfries/Kirkcudbright (41.6%). All flocks of 30 birds and over are shown in Table 3, which suggests that in April about one-third of the non-breeding birds in Scotland are found in only 6 flocks (excluding Outer Hebrides birds for which flock details were not available.)

Table 2 Distribution of Mute Swans in Scotland in 1983 according to habitat type

Habitat	Breeding birds	%	Territorial only birds	%	Non-breeding birds ¹	%
Freshwater lochs, ponds	654	58.0	160	48.8	323	30.5
Reservoirs, flooded pits	42	3.7	14	4.2	10	0.9
Rivers, streams	118	10.4	80	24.4	150	14.2
Canals, ditches	12	1.1	0	0.0	0	0.0
Sea lochs, coastal, brackish	302	26.8	74	22.6	577	54.4
TOTAL	1128		328		1060	

¹ Outer Hebrides birds (428) are excluded, data not available.

Discussion

The 1983 Mute Swan census has shown that the total Scottish population has fallen by 3.6% since the last full census in 1955/56. This compares with an estimated decrease of 15% up to 1978 for the whole of Britain (Ogilvie 1981). The 1961 and 1978 figures have not been used here for comparison as they relate to sample censuses only. Even comparisons with the 1955/56 census must be treated with caution in view of the differences in coverage achieved in the two surveys.

Rawcliffe (1958) stated that the success of the 1955/56 survey was moderate, with some counties only partially covered, and Ogilvie (1981) has indicated county totals which he considered too low in 1955/56. With greatly improved coverage in most areas in 1983 (see Appendix for assessment of coverage) it is likely that the population figure, 2944 birds, is more realistic although it may still be an undercount. Comparison with 1955/56 is also complicated by the nature of the data collected with regard to non-breeding birds. Many of Rawcliffe's non-breeding counts refer to June, July or even later, at which time birds are very mobile and moving to moult sites and consequently may have been double-counted. Thus the totals he presented were probably an overcount. The non-breeding flocks shown in Table 3 are not comparable with those recorded in the previous census, which generally referred to gatherings at such sites as Loch of Strathbeg, Montrose Basin and Loch Leven, which are now known to hold moult flocks.

Table 3 Flocks of more than 30 non-breeding Mute Swans recorded in April 1983¹

Location	Habitat	Number	Date ²
Montrose Basin, Angus	Estuary	115	28 April
Loch of Stenness, Orkney	Brackish loch	83 ³	22 April
Tyne Estuary/Belhaven, E. Lothian	Estuary	52	17 April
Ythan Estuary, Aberdeen	Estuary	49	17 April
Loch Milton, Kirkcudbright	Freshwater loch	45	21 April
Loch of Strathbeg, Aberdeen	Freshwater loch	44	12 April

¹ Outer Hebrides flocks not included: data not available.

² Counts nearest the recommended date of 16/17 April were taken where more than one count was submitted for a site.

³ This total represents a cumulative flock total for the site on 22 April, the largest individual group being 64 birds.

Despite these difficulties, it is possible to identify apparent changes in the numbers and distribution of Mute Swans between counties and within the country as a whole. The 1983 census results support the view expressed by Ogilvie (1981) that the population in the north of Scotland may still be expanding its range in some areas. In Orkney there has been a 111.1% increase in the total population since 1955/56 and in north east Scotland (Aberdeen, Banff and Kincardine) an increase of 60.4%. Even allowing for improved coverage these figures must represent real increases. Those counties probably less well covered in both censuses (Caithness, Sutherland, Ross and Cromarty, Nairn, Moray and possibly Inverness) generally show a stable population, though distribution between them

may have altered especially with regard to non-breeding birds. In contrast there appear to have been major declines in central Scotland, confirming the findings from the adjusted totals for 1978 (Ogilvie 1981). Since 1955 the population has declined in Argyll by 37.7%, Ayr by 61.5%, Lanark by 72.1% and Kinross by 94%; indeed the decline for the latter county since 1961 is 95.4%. Much of this decline appears to relate to a decrease in the non-breeding flocks, though many of the counts for 1955/56 and 1961 are not directly comparable e.g. the counts for those years at Loch Leven, Kinross, were made in July and June respectively. Nevertheless, it does seem that there has been a decline in these areas. In the south west the population has remained fairly stable but redistribution, of non-breeding birds in particular, has occurred from Dumfries to Kirkcudbright. The Borders population appears to have increased but it seems likely that the 1955/56 coverage was incomplete and that the population may in fact have declined (Murray, 1984).

The only detailed studies of Mute Swans in Scotland have taken place in the Outer Hebrides and the Lothians where full censuses were initiated in 1978; the results of these studies indicate how populations can change. Between 1955/56 and 1978 Mute Swans in the Outer Hebrides apparently increased by 185%; the first count probably under-recorded the population but the 1978 census was a complete one. Since 1978 this population has declined by 29.2%, the decline mainly relating to a reduction in the non-breeding population, with the loss of over 300 birds between 1978 and 1983. This population is considered to be an isolated and closed community (Spray 1981) and population changes presumably relate to variation in breeding success and the effects of hard winters. The Lothians population is thought to have been fairly stable between 1955 and 1961 but has since declined by about 55% (Brown and Brown 1984). The reduction in the non-breeding population there has been attributed to the current unsuitability of a former non-breeding flock site, but a reduction of about 50% in the breeding population has proved more difficult to explain. Similar studies elsewhere in Scotland would be helpful in assessing the significance of and reasons behind local changes and their relationship to the national trend. The East Scotland Mute Swan Study which commenced in 1982 may be valuable in this respect (Spray 1983).

In conclusion, therefore, and allowing for variation of coverage between 1955/56 and 1983, it is suggested that the Mute Swan population of Scotland has either remained stable with some redistribution or has declined slightly. Rawcliffe (1958) suggested that the total of 3054 birds recorded by

the 1955/56 census could be increased to 3500-4000 birds to allow for the poor coverage of some counties, and the 1978 estimate of 3680 birds (Ogilvie 1981) fits closely with this assessment. As the coverage in 1983 was generally considered to be good, with the timing of some flock counts the main problem, it is believed that no more than 60 breeding birds and 250 non-breeding birds were overlooked, mainly in some of the northern counties. This would give a total population of about 3250 birds, indicating a possible 10% reduction on Rawcliffe's 1955/56 estimate.

Acknowledgments

We wish to record our thanks to all observers who submitted census forms and helped to make the census a success. In particular we thank the following local organisers: Dr E. S. Alexander, N. K. Atkinson, R. A. Broad, E. D. Cameron, D. Carstairs, P. M. Collett, Dr E. Fellowes, I. P. Gibson, C. G. Headlam, R. H. Hogg, J. E. Howie, D. Macdonald, Dr B. Marshall, W. Mattingley, S. F. Newton, Dr I. D. Pennie, P. Reynolds, Dr R. Richter, H. Robb, R. J. Robertson, G. Sheppard and Dr C. J. Spray. We are especially indebted to those who summarised or provided a report on their local census results. Coverage of the Outer Hebrides was principally by means of airflights on 8 April and 2 May 1983 which were grant aided by the British Ornithologists' Union; on behalf of the observers concerned (Dr C. J. Spray and W. Neill) we offer grateful thanks for this support. Similarly, the Nuffield Foundation supported airflights over Aberdeen/Banff on 27 April and 5 May 1983 undertaken by Dr C. J. Spray as part of the East of Scotland Mute Swan Study to supplement ground census work; this grant aid too is also gratefully acknowledged. Coverage of the census was advertised in the press but we are especially grateful to Scottish Television for publicising the survey on their 'Action Line' programme on 6th April 1983. This resulted in 59 forms being returned from about 50 observers, mainly school children, and this supplemented data gathered from the official recording network; we thank these observers for their interest and support. We also thank the British Trust for Ornithology for the organisational costs involved in the census. Finally, we are grateful to the national organiser Dr M. A. Ogilvie for helpful comments in the preparation of this paper and Mrs D. Welander for typing the manuscript.

Summary

The first full census of the Mute Swan in Scotland since 1955/56 took place in 1983 and showed a decline of 3.6% in the total population from 3054 to 2944 birds. 1128 breeding birds, 328 territorial only birds and 1488 non-breeding birds were recorded, representing respectively 38.3% 11.2% and 50.5% of the population. While 58.0% of breeding birds were found on freshwater lochs and ponds and 26.8% on sea lochs, coastal and brackish waters, the reverse was the case with non-breeding birds (excluding territorial only birds) in which only 30.5% were found on freshwater habitats as opposed to 54.4% on brackish sites. These percentages vary at a regional level according to the availability of suitable habitats. In April only 6 sites held flocks of over 30 birds. Taking into account variations in coverage between the two census years 1955/56 and 1983, and inadequacies in the timing of data submitted, especially for non-breeding birds, it is suggested that an upwards adjustment can be made in the total population by 60 breeding birds and

250 non-breeding birds. This brings the estimated population to about 3250 birds, representing a possible 10% decline on the estimate of 3500-4000 birds in 1955-56. In the absence of detailed local studies the reasons for population fluctuations are difficult to assess.

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Appendix

Assessment of coverage in each county Comments by local organisers have been noted where given but in general coverage has been assessed on the criteria of good, moderate or poor, with additional comments where appropriate.

Shetland Area coverage was not attempted as the local organiser commented that "the Mute Swan remains a scarce and irregular visitor to Shetland... the last attempted breeding occurred about 40 years ago". "Attempts at introduction in earlier years" had "all met with failure". No breeding or non-breeding data were submitted for 1983.

Orkney Good. Full coverage was obtained and the local organiser suggested "little change" since 1978 in the breeding population.

Outer Hebrides Good. Excellent coverage reported by the local organiser, with the census primarily covered by air survey. A detailed breakdown of the non-breeding birds was not supplied.

Caithness Poor. Local organiser commented on difficulty of obtaining coverage. Non-breeding birds possibly overlooked.

Sutherland Moderate. Local organiser for Sutherland (west) commented that no records were submitted and that "from published records it seems never to have been recorded". Sutherland (east) organiser considered that "nearly all the areas of Sutherland" which hold Mute Swans were covered. Submitted counts for non-breeding birds were for July and August and these have been discounted; the organiser, however, was "fairly certain" that the sites concerned do not hold flocks in April.

Ross and Cromarty Poor.

Inverness Good. Local organiser considered that only "the odd pair on the west coast of the mainland" may have been missed.

Nairn Moderate.

Moray Moderate. Submitted non-breeding flock counts were outside census period and have not been accepted.

Aberdeen Good. Local organiser considered coverage was excellent and the ground survey was supplemented by aerial census.

Banff Good. Local organiser considered coverage was excellent and the ground survey was supplemented by aerial census.

Kincardine Good. Ground survey supplemented by aerial census.

Angus Good. Full coverage obtained.

Perth Moderate.

Stirling Moderate.

Clackmannan Moderate.

Kinross Moderate.

Fife Moderate.

West, Mid- and East Lothian Good. Full coverage as part of a census commenced in 1978.

Ayr Good. Local organiser considered that most breeding pairs were found.

Arran and Bute Good. Local organiser considered that most breeding pairs were found.

Peebles, Selkirk, Roxburgh and Berwick Moderate. Difficult to separate Scottish and English birds along the River Tweed.

Argyll Moderate. Local organiser considered coverage was "reasonable" with "all the important areas covered with the exception of Kintyre/Campbeltown".

Dunbarton Moderate.

Renfrew Moderate.

Lanark Moderate.

Dumfries Good. Local organiser considered that "the county has been quite carefully covered".

Kirkcudbright Good.

Wigtown Moderate. Local organiser commented that observations were "rather late in the spring".



RED-THROATED DIVER *John Busby*

Divers in the Moray Firth, Scotland

J. BARRETT and CATRINA F. BARRETT

The Moray Firth is not only of major importance for wintering seaducks. It also holds important concentrations of divers, especially Red-throats in early winter.

Introduction

Large numbers of divers are thought to winter in coastal waters around Britain and Ireland, though estimates of total numbers are difficult to obtain due to their habit of feeding offshore (Prater, 1981). Red-throated Divers *Gavia stellata* predominate, particularly during autumn migration (eg. 776 off the Aberdeenshire coast on 16 September, SBR 1978) and many winter further south to the English Channel (eg. 700 off the Kent coast on 24 January, Kent Bird Report 1980). There are large concentrations of Great Northern Divers *Gavia immer* in the Outer Hebrides (Hammond 1975), and—as shown by casualties from the 'Esso Bernicia' oil spill—in Yell Sound, Shetland (Heubeck and Richardson 1980), while Lea (1980) considered that up to 500 might winter around the Orkney coast. Only small numbers of Black-throated Divers *Gavia arctica* were thought to winter, though casualties from the 'Amoco Cadiz' wreck in March 1978, many of which were in wing moult, (Hope Jones *et al.* 1978) may indicate that larger numbers winter. The importance of the Moray Firth for seaduck is well documented (Mudge and Allen, 1980) and large numbers of divers were thought to frequent this area.

Methods

During the winters of 1981-82 and 1982-83 detailed observations of divers were made during routine monitoring of seaduck in the Moray Firth (as part of a bird-related environmental research programme, commissioned by Britoil). Aerial and ship-based surveys augmented observations from the shore. Where possible all divers were identified to species (83.3% of all records) and in 1982-83 the body plumage characteristics (based on descriptions in Cramp and Simmons 1977) of each individual were noted ie. whether the birds were in summer, winter or transition plumage. Monthly counts of the whole area (Fig. 1), from Kintradwell in the north to Spey Bay in the south, but excluding the inner firths, were undertaken, usually over a period of 4 to 5 days, to ascertain overall numbers. Regular observations of the main sites were made to determine fluctuations and peak numbers.

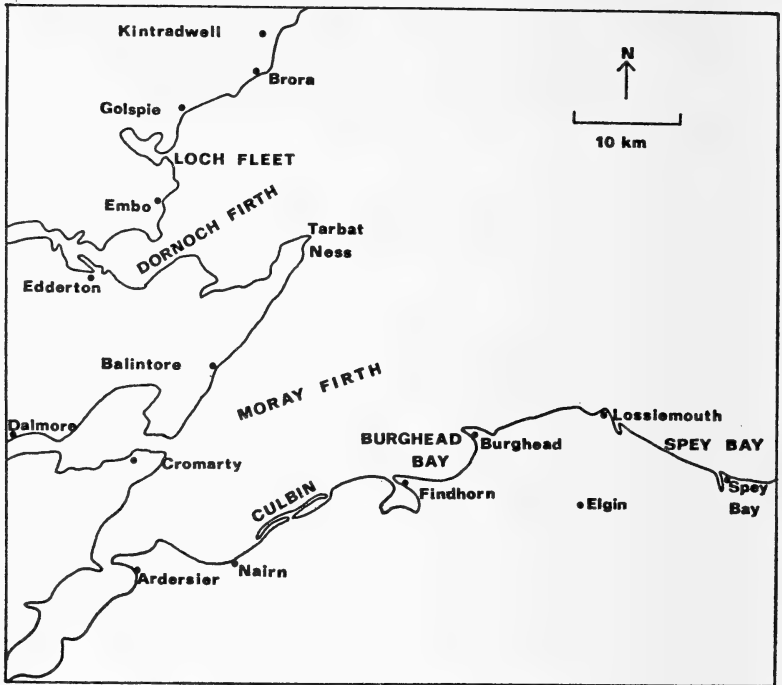


Figure 1. The study area.

Results and discussion

Numbers In the Moray Firth Red-throated Divers were the most numerous species during the winter and only small numbers of Black-throated and Great Northern Divers were present. In April and early May, when most Scottish Red-throated and Black-throated Divers are back on their breeding grounds, small numbers of Great Northern Divers were present (Table 1). The much smaller numbers of Red-throated and Black-throated Divers recorded in March 1982-83 may have indicated an early departure towards the breeding grounds. Considering the large numbers of divers present the occurrence of White-billed Divers *Gavia adamsii* was not unexpected and single birds were observed on three occasions (7.3.82; 30.10.82; and 24.11.82)—(subject to approval by BBRC). There have been occasional sightings of this species in the Moray Firth in the past (Lees, 1959, Pennie, 1963) and more recently at Golspie (SBR 1978) and Banff Bay (SBR 1979).

From the 1969-75 Birds of Estuaries Enquiry, Prater (1981)

Table 1. Monthly counts of all divers in the Moray Firth, 1981-82 and 1982-83

	Oct.		Nov.		Dec.		Jan.		Feb.		Mar.	
	1982	1981	1982	1981	1982	1981	1982	1983	1982	1983	1982	1983
Red-throated Diver	1532	191	260	29	59	25	89	26	53	60	16	
Black-throated Diver	19	5	15	1	1	2	5	2	23	3	0	
Great Northern Diver	12	6	15	7	3	1	8	13	19	27	6	
White-billed Diver	1	0	1	0	0	0	0	0	0	1	0	
Diver sp.	7	214	0	9	0	58	3	75	28	109	6	
TOTAL (all divers)	1571	416	291	46	63	86	105	116	123	200	28	

estimated a minimum of 140 Red-throated Divers, 65 Great Northern Divers and 35 Black-throated Divers in the Moray Firth. However Mudge and Allen (1980) thought it likely that between 500 and 1000 divers were present in the area during the winter. The present study shows that diver numbers are higher (estimated 1500+) in the early winter, when many would be passage birds, with smaller numbers in mid and late winter (estimated 200-650). A flock of nearly a thousand Red-throated Divers in October off Culbin Forest is one of the largest concentrations of that species so far recorded in the Western Palearctic. In North America flocks of up to 1200 Red-throated Divers have been recorded on Lake Ontario in October (Palmer 1962).

In both years divers showed a preference for areas of shallow water over a sandy substrate, as in the Dornoch Firth, off Culbin Forest and in Burghead and Spey Bays (Table 2). Divers were seen only in very small numbers off the rocky shorelines. Red-throated and Black-throated Divers generally occurred within 2 km of the shore and few were observed further offshore during aerial and boat surveys. Shore-based

Table 2. Peak monthly area counts of all divers, 1982-1983

	Oct.	Nov.	Dec.	Jan.	Feb.	March
Kintradwell - Golspie	11	9	4	5	13	15
Dornoch Firth	230	45	20	9	33	13
Tarbat Ness - Chanonry	4	2	5	12	17	6
Ardersier - Nairn	0	4	2	4	5	0
Culbin Forest	993	98	38	38	53	2
Burghead Bay	111	71	19	25	19	4
Burghead - Lossiemouth	0	8	1	8	15	5
Spey Bay	310	348	390	56	50	10
TOTAL	1659	585	479	157	205	55

observations therefore probably gave a reasonable assessment of overall numbers and no significant concentrations are likely to have been overlooked. However aerial and boat surveys indicated that Great Northern Divers regularly occurred further offshore (but within 10 km) and in greater numbers than land-based observations suggested. In November 1982, for example, 15 Great Northern Divers were recorded from the shore and 52 from a boat (G. P. Mudge pers. comm.) over the same period. On only one occasion was a diver observed at a distance greater than 10 km from the shore in the Moray Firth. This appears to be the case throughout the North Sea with the exception of a concentration of Red-throated Divers observed over 50 km from the west coast of Denmark (B. Blake pers. comm.).

Moult Divers have distinct winter and summer plumages. In the field the areas where moult can be most easily assessed are the neck, throat and mantle. As most divers were within 1 km of the shore the plumage characteristics of each individual could be observed. Unidentified divers and divers at distances too great for the plumage characteristics to be ascertained with any degree of certainty were omitted from the results (21.6% of all birds were in this category).

Red-throated Diver (Fig. 2a). A complete post-breeding moult takes place from late September to December (Cramp and Simmons, 1977). In late October 73% of all Red-throated Divers ($n=1879$) were in body moult and none was in summer plumage. By early December birds had attained winter plumage. A partial pre-breeding moult of body, tail and some lesser wing coverts takes place from February to early April and the first birds are in full breeding dress by mid-April (Cramp and Simmons, 1977). No concentrations of moulting Red-throated Divers occurred over this period in the Moray Firth. This may in part be explained by some Scottish birds being back in the breeding areas from late February onwards and completing their moult there (pers. obs.), or different areas may be used for the spring moult. Individuals in full summer plumage were noted as early as the third week in February.

Black-throated Diver (Fig. 2b). Unlike Red-throated Divers only a partial post breeding moult takes place in the autumn and a complete pre-breeding moult from January onwards (Cramp and Simmons, 1977). This accounts for the high percentage of summer plumaged and moulting birds observed during October and November. Few birds were observed in late winter, suggesting the use of alternative sites for the spring moult eg. the Brittany coast (Hope Jones *et al* 1978).

Great Northern Diver (Fig. 2c). The pattern of moult is

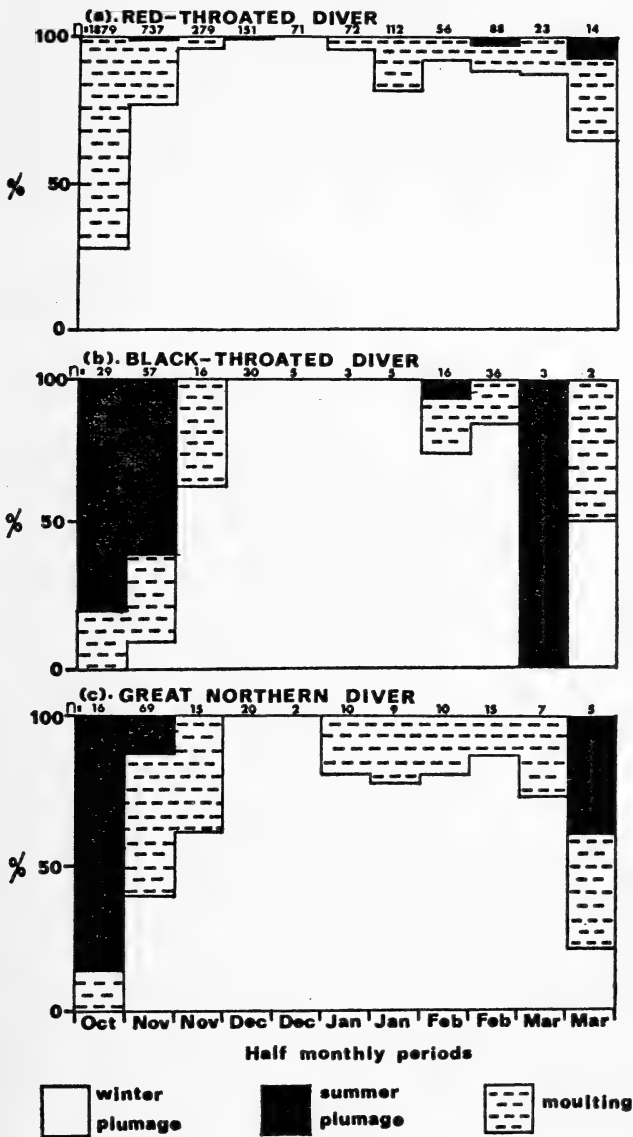


Figure 2. Proportions of Moulting, Winter and Summer Plumaged Divers in the Moray Firth, October 1982 to March 1983.

similar to that of the Black-throated Diver, though the complete pre-breeding moult takes place slightly later, between February and May (Cramp and Simmons, 1977). Observations in the Moray Firth confirmed this pattern with summer plumaged and moulting birds present into May when the other divers had departed.

About 700 pairs of Red-throated Divers breed in Shetland (Gomersall *et al* 1984) and probably several hundred pairs in Orkney, the Western Isles and mainland Scotland. Ringing recoveries of birds from Orkney and Shetland (few are ringed elsewhere in Britain) indicate that at least some birds from the Scottish breeding population frequent the Moray Firth (Spencer and Hudson, 1982). Significant oil reserves are now being exploited in the Moray Firth. Such a large concentration of Red-throated Divers (particularly moulting birds) would be especially susceptible to an oiling incident and the impact on the British breeding population could be serious. The 'Amoco Cadiz' incident emphasized the vulnerability of moulting divers to oil pollution (Hope Jones *et al* 1978).

Acknowledgments

We should like to thank Drs James Cadbury and Lennox Campbell for making helpful comments on the text and Drs B. Blake and G. P. Mudge for providing unpublished data on diver numbers at sea. We are grateful to Britoil for funding the research.

Summary

Regular counts of divers in the Moray Firth in the winters of 1981-82 and 1981-82 showed peak numbers (1500+) of Red-throated Divers to be present in October.

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PLATE 20. Sir Arthur Duncan, first Chairman of the SOC and an outstanding contributor towards conservation in Britain (see p. 160).

The Field



PLATE 21. Collaboration between Glasgow University and the Northumbrian Ringing Group:
a successful catch of Goosanders (p.155).

R. W. Furness

PLATE 22. A round-up of Mute Swans from the large moulting flock on Montrose Basin.

Dundee Courier

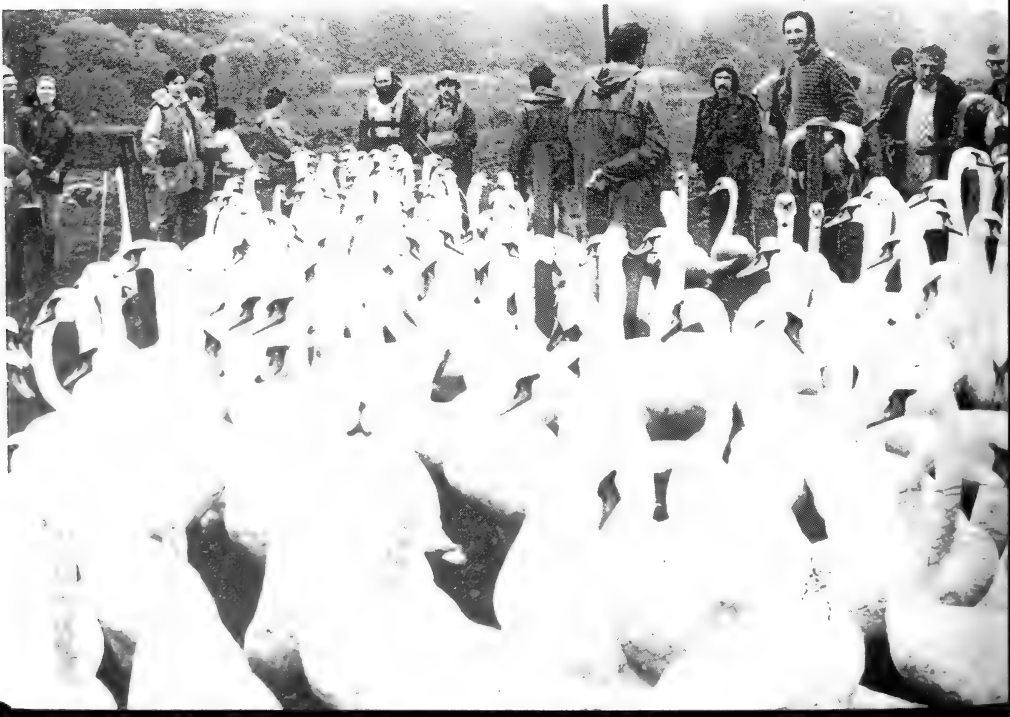




PLATE 23. The work of the Raptor Study Groups (p. 162) gives a valuable record of breeding success. Many new Merlin nesting sites (above) were located in 1984, while Peregrines responded to the warm dry summer with a high rate of breeding success.

Upper — *R. T. Smith*

Lower — *W. S. Paton*



PLATE 24. Golden Eagles did not do so well in 1984, with some deserting during the late-March snowfall and regrettably high numbers of egg and chick losses.

B. S. Turner



Bird research at the University of Glasgow

R. W. FURNESS

Much of the ornithological research undertaken in Scotland is little known to most SOC members. This article is the first in a series which will provide a resumé of current work by the universities and other professional bodies.

Reputations, like elephants, take years and years to grow, so many people may not yet be aware that Glasgow University has recently become a centre for ornithological research. We have rapidly gathered one of the largest groups of ornithologists at any British university. This has been a swift development, and it is not really clear why it has taken place; my own appointment for example was to teach Human Biology, and not specifically to study birds! Professor Newth, who was until recently head of the Zoology Department was also on the Nature Conservancy Council and probably deserves the credit.

A common theme to most of our bird research is the relationship between birds and man, from conservation at one end of the spectrum to the control of bird pests at the other. This theme ranges from studies of the influence of changing patterns of farmland use on the population biology of the Lapwing, to the role of gulls as vectors of human pathogenic bacteria. The distinction often made between professional and amateur ornithology is an artificial one; there is, for example, clear overlap between university and Clyde Ringing Group interests in the waders of the Clyde, and in studies of seabirds by Bernie Zonfrillo, Sheila Russell and Tom Daniels. However, since most university research projects are funded for only a two or three year period, there is less scope for integration with amateur studies than one might wish, since the latter tend to be low-input but long-term. Our university research projects have provided some expenses-paid trips to Shetland or St Kilda in return for field assistance. The other major activity where amateur assistance has been valuable is cannon netting. This conjures up images among the uninitiated of nets full of 1000 or more waders, whereas in reality we put in a great deal of effort and usually catch either 100 gulls on a smelly refuse tip, a dozen Turnstones on a rocky shore, 50 Lapwings on the estuary, or (too often) nothing. The birds caught have to be laboriously measured in some detail. We

have had catches of 1000 or more, but these are less valuable than might be imagined because it is impossible to process such large catches to obtain detailed biometric information. Consequently, most amateurs find cannon netting less exciting than they expected, and only a dedicated few maintain enthusiasm. However, ringing is an important tool in our work. Last year our combined studies resulted in ringing of over 20,000 seabirds alone, including several thousand Kittiwakes in arctic Norway and hundreds of albatrosses in the south Atlantic. Such large data sets and the subsequent recoveries or sightings of individually colour ringed birds could not be handled without a computer, and we are fortunate to have an excellent technician, Kenny Ensor, who spends much of his time organising computer storage, updating and analysis of these records.

A good example of the value of collaboration between professional and amateur is to be found in our Manx Shearwater studies. Laughton Johnston, NCC Chief Warden on Rhum, stimulated our interest in these birds because he felt that there was a need for conservation-related work at this, the largest colony of the species in Europe. Peter Wormell described the colony in *Scottish Birds* and estimated, from aerial photographs taken in the 1940s and quadrat counts of burrows made in the 1960s, that there were 119,000+ Shearwater burrows on the island. Little else is known about the population, except that numbers on the adjacent Small Isles seem to have declined considerably due in part, it would appear, to predation by rats.

While Kate Thompson is engaged on a three year study of shearwater breeding biology on Rhum, a complementary study by teams of American volunteers (through the auspices of "Earthwatch") will map the present colony locations and count burrows in a proportion of these. Earthwatch volunteers are reputedly keen and hard-working; they will need to be since the 100,000 or so burrows are mainly over 600m above sea level on the Rhum summits ! This study should give a firm baseline from which to monitor changes in shearwater numbers in future.

Seasonal changes in weight, moult and mortality in the Herring Gull have been investigated, providing evidence that, while Herring Gulls seem to have no problems with food supplies in winter, breeding appears to be a major stress. Herring Gulls from north Norway, which can be identified by measurements and plumage details in the hand, visit the east coast of Scotland in large numbers, but hardly any cross over to the west. Do they dislike flying across Scotland ? Is Strathclyde

already full of Scottish Herring Gulls? Herring Gulls often carry *Salmonellae*, though there is as yet no evidence to suggest that these infections harm the gulls. Interestingly, Herring Gulls from the east coast are less contaminated than those on the west of Scotland. Is this because gulls in east Scotland spend a higher proportion of their time feeding around fishing boats whereas those on the west of Scotland are more dependent on refuse tips? Such questions are obviously of interest in relation to our understanding of gull ecology but they also have important applications. Shortly after an outbreak of food poisoning on Islay the causative strain of *Salmonella* was also found in gulls on the island. Are gulls important as vectors of such disease? Undoubtedly they can cause serious contamination of drinking water supplies through their habit of roosting on reservoirs. By establishing a successful programme of gull-scaring, using taped gull distress calls, the huge winter flocks of gulls have been moved away from the main Glasgow reservoirs to the Clyde estuary and Loch Lomond, where the excrement and bacteria they defecate do no damage. This achievement has saved Strathclyde Region millions of pounds in capital costs (the cost of building a purification plant capable of dealing with the extra load of suspended solids and bacteria produced by the gulls) and an annual sum of thousands of pounds for the extra chlorine needed to treat the water before the gulls were dispersed.

Among birds, Wigeon are probably the smallest species that feed on grass. Recent studies on the Solway have investigated how such a comparatively small bird is able to get enough energy to survive the Scottish winter. There seems to be unlimited grassland around the Solway, but Wigeon feed only in tight flocks and confine their grazing to a few small areas near water. They are rather like tiny lawnmowers, concentrating on a few patches where they cut the grass close to the ground, then leave the area for a few days to allow it to regrow, and then return again to the same patch. The advantages of this feeding method are being investigated with a view to understanding what type of grassland community is best for these ducks and how their winter feeding sites can be improved. Similar work is now starting on Islay, where we hope to persuade the Barnacle Geese to graze in areas where they are welcome, and deter them from other sites. So, on your next trip to Islay watch out for fields of plastic geese—decoys which may help to encourage birds to land, or other models which might scare them away.

Both mercury and cadmium are highly toxic to man but although there have been serious local instances of pollution

by discharge or misuse of these elements, little is known about the degree of contamination in the seas and oceans and the proportions of mercury and cadmium in marine animals which are there due to man and due to natural processes respectively. Recent work by Sandra Muirhead has shown that Great Skuas, Fulmars, Storm Petrels and Leach's Petrels have very high levels of these elements. We are about to start measuring the concentrations of mercury in the feathers of seabirds collected last century and placed in museums. Birds put mercury into growing feathers in proportion to the amount of mercury in their blood at the time, and this has been used by Scandinavian researchers to measure the increase in mercury pollution of Baltic seabirds. We hope that similar measurements from our Scottish seabirds will allow us to detect any long-term changes that may have taken place in Scotland.

The threats to seabirds presented by oil developments in the North Sea, and now to the west of Scotland as well, are much publicised and often exaggerated. The possible effects of changing patterns of fishing are less widely known, and are not well understood. I developed a computer model to estimate the quantity of fish eaten each year by seabirds around Foula and my calculations show that seabirds consume a much higher proportion of fish stocks than is generally realised. Similar results have been obtained by a number of American ecologists. These, and some recent theoretical studies, imply that overfishing by man is likely to have an important influence on seabird populations. The overfishing of predatory cod and haddock, and of herring and mackerel, has allowed the population of sandeels in the North Sea to increase. Since these are the staple diet of most breeding seabirds, this is one important factor contributing to the seabird population expansions which have recently been taking place. Now greater effort is being put into fishing for sandeels, and it is likely that an unchecked increase in sandeel fishing would have an adverse effect on seabirds. Making clear statements about this interaction is difficult, since we know rather little about sandeel biology. Surprisingly, we also do not know what actually limits the size of most seabird populations, although this has long been a subject of speculation by ecologists. Most ecologists believe that seabird numbers are held in check by density-dependent competition for food or for nest sites. However, this has yet to be proved, and recently models of the impact of oil pollution on seabird populations have assumed that no such density-dependent processes occur. It is important that we sort this question out. If seabird popula-

tions are regulated by food supplies then losses caused by oil spills may not cause any reduction in the breeding population. If seabird populations are not regulated, then every bird killed by oil will bring the population one closer to extinction. Similarly, while we can (with difficulty) monitor changes in sizes of seabird populations, we need to understand the way in which the populations are regulated before sensible conservation measures can be applied.

Current ornithological projects within the Zoology Department are: Barnacle Goose management on Islay (Stephen Percival); Lapwing breeding in relation to agricultural land-use (Hector Galbraith); Manx Shearwater ecology in relation to rats on Rhum (Katherine Thompson); The role of fish offal and discards in seabird ecology (Anne Hudson); Audouin's Gull biology and conservation on the Chafarinas Islands (Patricia Bradley); Grazing ecology of Wigeon (Peter Mayhew); Heavy metal accumulation by seabirds and fish (Sandra Muirhead, Malou Cuvin); Vulture ecology (David Houston); Herring Gull ecology (Patricia Monaghan, Colin Shedden, Kenneth Ensor, Heather Wright, Kevin Bayes, Colin Fricker, Cheryl Whelan); Great Skua ecology (Robert Furness); Chough biology on Islay (Patricia Monaghan); Vigilance and foraging in wader flocks on rocky shores (Neil Metcalfe); Ecology of South American Vultures (David Kirk); Feather development (Roger Downie); Early embryology of birds (Donald Ede).

Scientific accounts of some of our work may be found in the following selected references:

- COULSON, J. C., MONAGHAN, P., BUTTERFIELD, J., DUNCAN, N., ENSOR, K., SHEDDEN, C. & THOMAS, C. 1984. Scandinavian Herring Gulls wintering in Britain. *Ornis Scand.* 15: 79-88 ■ FURNESS, R. W. 1984. Influences of adult age and experience, nest location, clutch size and laying sequence on the breeding success of the Great Skua. *J. Zool. Lond.*, 202: 565-576 ■ FURNESS, R. W. 1984. Seabird-fisheries relationships in the northeast Atlantic and North Sea. pp 162-169 in Nettleship, D. N., Sanger, G. A. & Springer, P. F. (eds.) Marine birds: their feeding ecology and commercial fisheries relationships. Canadian Wildlife Service, Ottawa ■ FURNESS, R. W. & BIRKHEAD, T. R. 1984. Seabird colony distributions suggest competition for food supplies during the breeding season. *Nature* 311: 655-656 ■ GALBRAITH, H. 1984. The diet and feeding ecology of breeding Kittiwakes *Rissa tridactyla*. *Bird Study* 30: 109-120 ■ MONAGHAN, P., COULSON, J. C., DUNCAN, N., FURNESS, R. W., SHEDDEN, C. B. & THOMAS, C. 1983. The geographical variation of the Herring Gull within Britain and northern Europe: a biometrical approach. *Ibis* 125: 412-417 ■ METCALFE, N. B. 1984. The effects of mixed species flocking on the vigilance of shorebirds: who do they trust? *Anim. Behav.* 32: 930-937 ■ METCALFE, N. B. & FURNESS, R. W. 1984. Changing priorities: the effect of pre-migratory fattening on the trade-off between foraging and vigilance. *Behavioural Ecology and Sociobiology* 15: 203-206.

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Sir Arthur Duncan 1909-1984

By the death of Sir Arthur Duncan, Scotland has lost an outstanding personality and one of its ablest and most influential naturalists. The SOC has lost an Hon. President whose far-sighted guidance dated from the Club's foundation. I can remember George Waterston saying in 1936 that Arthur Duncan (then aged only 27) was the man to be chairman. He held that office with distinction throughout the pre-war years and again after the war until 1952.

Born and brought up in rural Dumfriesshire, Arthur Bryce Duncan farmed at Gilchristland for much of his life. He was at school at Rugby and took a first-class degree in Agriculture at Cambridge, where David Lack, Peter Scott and Freddy Spencer Chapman were among his contemporaries. He joined with these and others to found the Cambridge Bird Club (originally the Cambridge Ornithological Society), which pioneered new techniques of field ornithology. In those days holidays were often spent exploring the natural history of the Hebrides from his father's yacht, and in July 1929 he landed on North Rona with his brother John and the Rev. J. McWilliam. When the BTO was founded in 1933 Arthur was one of the few ornithologists in Scotland with the vision to see its great potential.

His grandfather had founded tea gardens in Assam and Arthur was for long a Director of the family firm. His marriage in 1936 to Isabel Kennedy Moffat, whom he had known since childhood, began a happy and enduring partnership. After their much-loved house at Gilchristland was destroyed by fire in 1942, they lived for 15 years at Tynron where his old friend the Rev. J. McWilliam was minister. As a young bird artist I was invited into the warmth of the Duncan home and I have unforgettable memories of fascinating and often hilarious evenings when he and "The Minister" argued, reminisced and planned the future of Scottish ornithology.

At the height of his career, in the post-war years, Arthur Duncan assumed a remarkable range of voluntary responsibilities, in addition to being a busy farmer. Some thought he might have looked to Westminster but he chose local government. A lifelong Conservative, he was for many years Con- vener of the Dumfries County Council and became Lord Lieutenant of the county from 1967-69. He had a strong Christian belief, firmly anchored to the Church of Scotland, and for many years was Chairman of the Board of Management of the Crichton Royal Hospital at Dumfries. From 1939-1965

he was Chairman of the Galloway Cattle Society, working tirelessly to raise the Galloway breed from local to national status, and in 1965 was elected President of the Smithfield Fatstock Club.

Perhaps nothing gave him more satisfaction than his long and fruitful Chairmanship of the Nature Conservancy. He took over from Sir Arthur Tansley in 1953 and retired in 1961, when he was knighted for his services. He personally persuaded Max Nicholson to come into the Conservancy as Director-General. In after years he liked to recall the heady days when together "they saw things through", including the establishment of many National Nature Reserves. In these formative years his far-sighted initiative established Conservancy support for the BTO and the Wildfowl Trust and in the international field for the IUCN and the ICBP. Fair Isle was another demanding interest. He was Chairman of FIBOT from its foundation in 1948 right up to 1984. Without his and Ian Pitman's support George Waterston's dream might never have been fulfilled. It was natural that he should also be made a Council member of the Scottish Wildlife Trust from its establishment in 1964. As President of the Dumfries and Galloway branch his personal contact with landowners and, above all, his detailed knowledge of sites were invaluable in the acquisition of reserves.

Arthur Duncan will be remembered by his friends as a marvellously stimulating companion, learned, witty, often provocative in talk. He never lost a youthful enthusiasm and curiosity about every facet of nature, especially the lives of birds, mammals and insects. It was particularly fascinating to hear him talking with great knowledge about Rooks, Crows and game birds. He said that he took up a new group of insects every year. In late years he made an intensive entomological study of Torrs Warren on the Wigtownshire coast and was greatly delighted when in 1984 he found there the parasitic bee *Epealus variegatus*, new to Scotland. In younger days he had made a large collection of bird skins; both this and his beautifully arranged and documented collection of insects are now in the Royal Scottish Museum. He was intensely interested in how land was used and increasingly deplored what he saw as excessive conifer afforestation in South-west Scotland. His attitude to wildlife was without sentimentality. Shooting pheasants or grouse (he was a first-class shot) was as much part of his outdoor life as collecting moths or tipulids. On the day of George Waterston's funeral he and I arrived early and leant over the old bridge at Humbie. In a flash he spotted some interesting flies below. *Sotto voce* and smiling almost

shyly he said "George wouldn't mind if I fetched my net from the car, would he?"

He liked to think of himself as an amateur naturalist, but from his youth he had absorbed scientific methods of study, which enabled him to have easy discussion with professionals. His great strength as a Chairman was his ability to concentrate on essentials and make swift, firm decisions. He was usually sure he was right and did not hesitate to mortify a troublesome opponent with a barbed response, though often with a mischievous twinkle in his eye. Some will regret that his full life left too little time and energy for synthesising his great knowledge of wildlife in South-west Scotland in published form, but he was happy to go on exploring new fields of study for his own satisfaction. This large, generous and brilliant man will be remembered for himself and particularly for his major contribution to the Conservation of Nature in our time.

DONALD WATSON



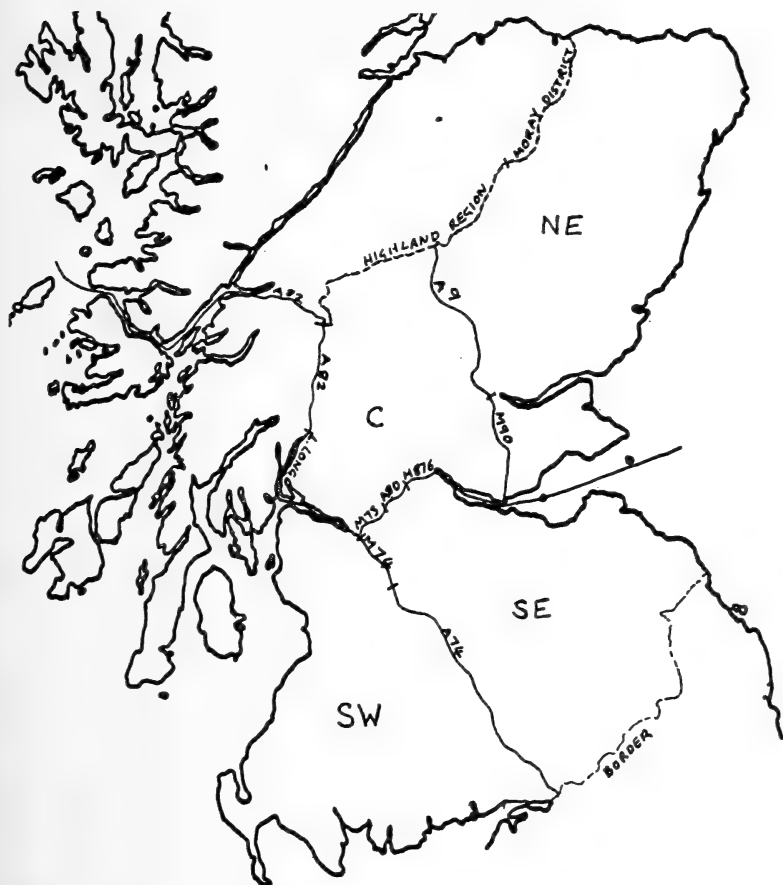
PEREGRINE R. A. Richardson

Raptor Study Group Reports

Introduction

This report summarises the main activities of the four Raptor Study Groups now active in Scotland. The map shows the area covered by each group—North-east Scotland (NE), Central Scotland (C), South-east Scotland (SE) and South-west Scotland (SW) (which includes the islands of Bute and Arran). This is the fourth annual summary for NE but the first for the other three.

Species studied include Golden Eagle, Peregrine and Merlin, with some members specialising in other raptors such as Hen Harrier and Kestrel. Although Merlins have attracted a great deal of interest, particularly in the North-east, the most comprehensive survey and census work has been confined to Peregrine and Golden Eagle; this report is therefore mainly concerned with these latter two species.



Golden Eagle

North-east At least 26 pairs were located of which 10, probably 12, were successful, an identical figure to 1983. A spectacular snowfall towards the end of March undoubtedly caused some early desertions—one pair re-laid after this, however, and the single young bird fledged successfully. Other failures were, on two separate occasions, due to nests falling off cliffs; one clutch was stolen and 2 half-grown chicks were taken from one nest by 'persons unknown'.

Other items of interest were a pair which laid 3 eggs, successfully raising 2 young, and the sighting of a pair of Eagles, a pair of Peregrines and an Osprey 'interacting' with one another, witnessed by a delighted group member. Prey items included the usual quantity of hares and Grouse, with Ptarmigan taken by high ground pairs. Four eaglets were ringed.

Central Within this large area a wide range of habitat is utilised by

Golden Eagles. Some home ranges are centred on "good heather" hills supporting large numbers of Grouse, hares and other potential prey, while others consist of poor sheep-walk where red deer and sheep carrion form the main food items although occasionally supplemented by more unusual prey.

Although not all territories were intensively studied in 1984, those which were examined included the majority of historically successful sites. A total of only 4 fledged young was disappointing, to say the least. The fact that at least 8 pairs laid eggs only to fail (one chick died and one 'disappeared' at 5+ weeks) must give rise for concern. At 2 sites, possibly 3, eggs were stolen by persons unknown. An eyrie in the Loch Tay area produced this year's most unusual prey item—an immature Gannet!

Table 1 Golden Eagle breeding success in 1984

	North-east	Central
Home ranges/sites with bird(s) present	39	17
Home ranges/sites with adult pairs	24?	
Home ranges/sites in which eggs laid (probably)	21†-?	12(1)
Home ranges/sites in which eggs hatched (probably)		6
Home ranges/sites in which eggs failed to hatch eggs or small young disappeared naturally	5(2)*	
Home ranges/sites at which young fledged (large young seen but fledging not proved)	10(2)	4
Total young fledged (probably fledged)		4

†One pair re-laid; their first clutch is not included in these totals.

*One clutch considered stolen; another brood of 2 chicks was stolen. A clutch and a brood were lost when the two nests fell off cliff.

Peregrine

North-east Warm, dry weather during the critical late April/early May period undoubtedly helped this species, with fledged young seen at 37 sites and at least 86 young birds recorded—a vast improvement on 1983. Failures were again caused by interference, with 2 definite and 4 probable clutches stolen (2 pairs successfully re-laid but another pair lost its repeat clutch also); and 4 definite and 1 probable broods stolen. Coastal pairs fared poorly again in 1984, with only 1 pair successful out of 5 checked.

Prey items are always worth a second glance—unusual items this year included Goldcrest and 2 Turnstones, but the prize must go to Keith Brockie's Rose-ringed Parakeet found at an inland eyrie!

Central Over much of the area Peregrines responded to the warm dry weather and success rates were very high, with around 100 young successfully fledged. To balance this, however, breeding success was very poor in Dunbartonshire, several eyries being unoccupied or with a single bird only. (J. Mitchell)

Robberies are still occurring, with 7 definite and 4 probable thefts of eggs or young; also disturbing was evidence of failure due to interference by gamekeepers at two sites. An early ringing recovery was of a young female which was shot approximately 40 km to the NE of its nest site 2 months after fledging. After treatment the bird was released back into the wild—an unusual happy ending!

South-east To start on a cheerful note, 1984 was by far the most successful breeding year on record with 34 fledged young from 11 successful sites, including 6 broods of 4 young. Numbers are building up again after the 'crash', with the only worrying area being the continuing failure of coastal birds (see also NE report); one Fulmar-oiled adult was seen at a failed site but the inaccessibility of sea cliff eyries limits a full study.

Three sites failed this year due to what one member calls "game-keeperitis"—it is sad to think that in 1984 there are still a minority who persist in persecuting these magnificent birds.

South-west Despite the many problems Peregrines face in this area they managed to produce a total of over 105 fledged young in 1984—a source of great delight for, and tribute to, those 'Peregrine workers' who have been monitoring this population since 'the bad old days' of the pesticide crash.

With at least 14 eyries robbed (3 of these robbed twice by thieves who returned for repeat clutches) despite increased surveillance by RSPB staff and raptor workers, I would like to make a plea for any members of the public to report suspicious activity at or near nest sites to the RSPB in Edinburgh and/or local police. As the table shows production from successful nests was high—the majority of birds had access to a regular supply of high quality food and no reports were received of unusual prey items.

Table 2 Peregrine breeding success in 1984

	NE	C	SE	SW
Home ranges/sites with bird(s) present	86	71	16	74
Home ranges/sites with eggs laid (probably laid)	63(+3)	51(8)	12(2)	58(+3)
Home ranges/sites with eggs hatched (probably hatched)	43	42(3)	11	43(+2)
Home ranges/sites with young fledged (probably fledged)	37	41(3)	11	40(+2)
Total young fledged (probably fledged)	86+	99+(5)	34	105+

Kestrel

South-west Gordon Riddle has made a special study of Kestrels over a large section of the group's area over the last ten years. This year's figures show a very high rate of success—55 territories were monitored, 94% of all eggs laid hatched and 88% of chicks fledged. Laying dates were earlier than previous years and this, allied to favourable weather conditions, appeared to be significant in contributing to these birds' phenomenal success this year.

Hen Harrier

South-west This species is having very mixed success in SW Scotland—very much depending on which area they choose to attempt to breed. Those which chose to breed in Ayrshire were unfortunate this year. Of 9 sites monitored in one large area 7 failed, with eggs or chicks deliberately destroyed at 6 of them. When it comes to Hen Harriers we are still living in the 19th century so far as some keepers are concerned, and this is by no means confined to SW Scotland. Areas without keeping pressure, in particular areas of young forestry, are supporting healthy and apparently, in some areas, growing populations but there is an obvious limit to this if they are persecuted as soon as they try to move out.

Conclusion

A total of 50 occupied Golden Eagle ranges and 247 Peregrine sites were monitored. In addition many Merlin sites were monitored and many new ones 'discovered' in 1984. Other raptors such as Hen Harriers were also studied and work on these latter species will hopefully be intensified throughout all four areas in the future.

These figures represent a massive contribution in time and effort by a large number of raptor workers, the great majority of whom are voluntary and do this in their spare time. These notes are presented on behalf of all four Groups.

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Reviews

The Puffin by M. P. Harris; Poyser, Calton; 1984; 224 pp; many illustrations; £12.60.

In the early 1970s it became generally known that the Atlantic Puffin had undergone widespread declines in numbers: its future seemed gloomy. It is hard to imagine that just fifteen years ago we knew so little about the population biology of puffins and other auks. The limited information then available suggested that auks like the Puffin which produce a single-egg clutch had very slow rates of population turn-over, and may take 50 years to double their population size. One wonders whether the Puffin would have received as much attention and research funding as it has if it had been as ugly as the Shag. Anyway the outcome has been over ten years of Puffin research by Mike Harris, beautifully summarised in *The Puffin*. The topics and organisation of this monograph are fairly standard: taxonomy, distribution, breeding, behaviour and population dynamics. But the presentation, content and production are all excellent. Mike Harris's clear, economic text is accompanied by graphs, tables, photographs and sketches, which together provide a comprehensive account of what makes Puffins tick. For many bird artists (including many of the 'big names') Puffins seem to pose particular problems, but not for Keith Brockie—his illustrations for this book are among the best there are. Harris's studies have revealed a great deal about Puffin biology, including the capacity of their populations to increase much more rapidly (up to 7% p.a.) than previously thought. In fact at many British colonies Puffin numbers have increased in the last few years—not because of anything Mike Harris has done, but probably as a result of changes in the marine environment. Harris is an optimist about the Puffin's future, but adds that we cannot be complacent. Simply because a once-threatened species is now doing well is not sufficient reason to stop studying it. Indeed, the recent increase in the commercial fishing of prey species (eg sandeels, sprats etc), could, in the not too distant future, have serious consequences for Puffins in Britain, as it has elsewhere (eg. Rost). However, I am not re-kindling the old Puffin death-wish, but emphasizing that if we are to understand the population dynamics of long-lived seabirds, then we need more long-term studies and more biologists who continue to be active and productive well into middle age!

T. R. BIRKHEAD

The Birds of Orkney by C. J. Booth, M. F. Cuthbert and P. Reynolds; The Orkney Press, 1984; 299 pp; 8 colour plates, 12 monochrome illus., 2 maps and many line drawings; £12.00.

This is the second book in a series of four entitled *Aspects of Orkney*. Since the publication of Eddie Balfour's small, but very useful, "Orkney Birds, Status and Guide" in 1972 there has been a considerably increased interest in the rich bird-life of Orkney due, in part, to the developing oil industry in these islands. "The Birds of Orkney" therefore draws a wealth of information from the several sources that have become available over recent years; wildfowl and wader counts, the cliff-nesting seabird monitoring programme and the annual "Orkney Bird Report". Thus the authors are able to show monthly or yearly changes in numbers for several species in their systematic list, as well as giving the likely location of most birds that a visiting birdwatcher in Orkney may wish to see.

Bird-ringing recoveries have been made use of where appropriate and there is a small section on the birds of Orcadian prehistory (it is interesting that the Fulmar, not known to breed in Orkney until 1900, is listed in this section).

Some inconsistency in the pagination at the beginning and end of the book, also an omission which leaves the reader guessing that Appendix 1 refers to Wildfowl Counts, detract little from this otherwise well-produced and important work on Orkney Birds.

SANDY ANDERSON

ITEMS OF SCOTTISH INTEREST Articles and reports on birds in Scotland, mainly on status and distribution, are listed here. Some biological studies are excluded, as are references from the widely available journals *British Birds*, *Bird Study* and *Ringing and Migration*. Most of these items are available in the Waterston Library. The librarian would be glad to receive reprints or papers on any aspect of ornithology.

Maternal nutrition, egg quality and breeding success of Scottish Ptarmigan. R. Moss & A. Watson 1984. *Ibis* 126: 212-220.

Wick High School Bird Report for 1982. I. Mackay (ed) 1984. (32 pp). This is the last edition of this report. In future records will be submitted for entry in the *Caithness Bird Report*.

Caithness Bird Report for 1983. (31 pp). Available from Bird Bookshop £1.50 post free to SOC members.

North-East Scotland Bird Report for 1983. (60 pp). M. V. Bell (ed) 1984. Includes articles on wintering waders and on the Mute Swan in northeast Scotland. £2 post free to SOC members from the Bird Bookshop.

Seabird 7. (80 pp). Seabird Group. P. G. H. Evans & T. R. Birkhead (eds) 1984. Formerly called *Seabird Report*. Includes articles on Gannets, Auks and Petrels.

A guide to Little Tern Conservation. (114 pp). R. Knight & P. Haddon 1983, published by R.S.P.B.

Hill farming and birds—a survival plan. (68 pp). R.S.P.B. 1984.

Broadleaves in Britain—the RSPB view. (49 pp). R.S.P.B. 1984.

Solway winter shorebird survey 1982-84. (174 pp). M. Moser 1984. A report to the NCC and RSPB.

Seabird distribution in the North Sea—Final report. (438 pp). B. F. Blake, M. L. Tasker, P. Hope Jones, T. J. Dixon, R. Mitchell & D. R. Langslow 1984. Nature Conservancy Council, Huntingdon.

The structure and behaviour of the Whooper Swan population wintering at Caerlaverock, Dumfries and Galloway, Scotland—an introductory study. J. M. Black & E. C. Rees 1984. *Wildfowl* 35: 21-36.

Fife and Kinross Bird Report for 1983. (34 pp). Available from the Bird

Bookshop, £1.20 post free to SOC members.

Shetland Bird Report for 1983. (71 pp). I. S. Robertson (ed) 1984. Includes articles on the distribution and breeding of Ravens in Shetland, and breeding birds of Fetlar. Available from the Bird Bookshop, £2.00 post free to SOC members.

Tay Ringing Group Report for 1982-83. (79 pp). R. Summers & M. Martin (eds) 1984. Available from the Bird Bookshop, £1.50 post free to SOC members.

North Sea Bird Club Report for 1983. (83 pp). S. Anderson (ed) 1984. This is the 4th annual report of the North Sea Bird Club.

Seabird colony distributions suggest competition for food supplies during the breeding season. R. W. Furness & T. R. Birkhead 1984. *Nature* 311: 655-656.

Wildfowl and Wader counts 1983-84. (48 pp). D. G. Salmon & M. E. Moser 1984. Published by the Wildfowl Trust, Slimbridge. Contains much of Scottish interest.

W. G. HARPER

NOTICES AND REQUESTS FOR INFORMATION

Conference The joint 9th International Conference on Bird Census Work and the 7th meeting of the European Ornithological Atlas Committee will be held at the University of Dijon, Cote d'Or, France, 2-6 September 1985. The IBCC Conference will be mainly devoted to a special theme: "The influence of man on forest bird communities". The European Atlas Committee will be reviewing the progress on fieldwork for the European Atlas, which is due to start in the spring of 1985. An optional excursion will be organised in the Camargue and Provence, just after the Conference. For further information contact **Dr B. Frochot, Laboratoire d'Ecologie, Bâtiment Mirande, Université, 21000 Dijon, France.**

Colonsay & Oronsay, Argyll Recent private investigations of the bird life of these two islands are being used as the basis of a comprehensive account of the islands' avifauna by D. C. Jardine and J. & P. Clarke. This is being supplemented by the little published information available. Any records for inclusion (with due acknowledgment) would be gratefully received by **D. C. Jardine, 22 Bute Crescent, Bearsden, Glasgow G61 1BS.**

Greenland White-fronted Geese In 1984 88 geese were marked with white Darvic rings carrying a black engraved letter-digit-digit code reading up the leg. Sightings in autumn include 2 shot on passage in SE Iceland, 2 in Wexford and at least 8 on Islay. Information is sought on any further sightings—which can be expected in any Scottish Greenland White-front flock. Details wanted include location, date and if possible whether or not the bird was paired or with a family. If the code cannot be read, the leg on which the ring is placed will show if ringing took place in 1979 (right) or 1984 (left). Please send information to **David A. Stroud, Greenland White-fronted Goose Study, Kindrochid, Sanaig, Bruichladdich, Islay, Argyll.**

Colour marked/wing-tagged Eiders The Shetland Oil Terminal Environmental Advisory Group is interested in the movement of Eider ducks both within Shetland and between Shetland and neighbouring areas. On 19 November 1984 119 Eider were caught in Bluemull Sound, Shetland; the 63 drakes had their white plumage dyed yellow and were fitted with a darvic tag on the right wing, on which is a code of either one or

two black letters. The yellow dye should persist until the birds commence moulting in June. I would be most grateful if anybody seeing a "yellow" Eider could note the location, date, time of day, the number and sex of any accompanying Eiders, the letter code on the right wing and, if applicable, the direction of flight taken. Information should be sent to Martin Heubeck, 3 Lighthouse Buildings, Breiwick Road, Lerwick, Shetland (Tel. 0595 4028).

Birds of Sea-lochs Author writing review. Do you have published or unpublished research results which might be included? Contact Dr J. C. A. Craik, SMBA, P.O. Box 3, Oban, Argyll by early April.

The Scottish Ornithologists' Club

CHANGE IN LOCAL RECORDERS

Caithness Mrs Pam Collett has now handed over to Mr Sinclair Manson, 7 Duncan Street, Thurso, Caithness, tel no Thurso 62379.

Fife & Kinross Mr Ian Cumming has now handed over to Mr Douglas Dickson, 133 Duddingston Drive, Kirkcaldy, Fife.

West Lothian/Forth Islands Allan and Lindsay Brown have now handed over to Mr Ian Andrews, 36 Lutton Place, Edinburgh EH8 9PG.

THE GILMAN TRUST

The Club is very grateful to have recently received a grant of £1,000 from the Gilman Trust. £500 of this grant is to support the production of regional checklists and has already been allocated to the Borders and Lothians checklists which are now nearing completion. The remainder of the grant is being put towards the cost of updating the Club's office equipment and in particular a new electronic typewriter.

BTO/SOC ONE DAY CONFERENCE

A joint BTO/SOC one day conference is being held on Saturday, 30 March 1985 at the Department of Forestry and Natural Resources, University of Edinburgh. The theme of the conference is breeding surveys and censuses and the speakers include Mike Harris on seabirds, Roy Dennis on Highland raptors, John Marchant and Phil Shaw on the CBC and its use in Scotland, and Rob Fuller on Hebridean waders. The BTO Shop and the SOC Bird Bookshop will be at the Conference. The Conference charge is £7.00 per person including lunch. Further details of the programme and booking are available from John Davies at the SOC.

SOC ANNUAL CONFERENCE

The annual Conference and AGM will be held the week-end 1-2 November 1985 at the Marine Hotel, North Berwick, East Lothian. The Conference Programme and Booking Form will be distributed in early September with the autumn issue of *Scottish Birds*.

1984 RAFFLE

This year the sale of raffle tickets produced a net profit of £519, compared with £771 in 1983. A total of £974 worth of tickets were sold. The cost of printing 3,000 books of tickets was £280 and the cost of cash prizes was £175. We are very grateful to all those who bought and sold tickets. We would particularly like to thank the individuals and companies who donated prizes.

SUMMER FIELD TRIPS

Details of the summer field trips organised by the branches are printed on a separate sheet enclosed with this issue of *Scottish Birds*.

Recent Reports

These notes include unchecked reports and are not intended as a permanent record, nor will they be indexed. Please send reports to Pete Ellis Houss, East Burra, Shetland, via local recorders at the end of March, June, September and December. The period October to December is covered here.

Autumn migration brought a last flush of drifted summer migrants to the northern isles and parts of the east coast as late as mid-November, though by then winter visitors were arriving in considerable numbers. There were unusual influxes of some species, while the mild first half of the winter encouraged some birds which normally leave the islands to winter there.

There were late records of **Sooty Shearwater** (5 Oct.), **Storm Petrel** (28 Nov.) and **Leach's Petrel** (11 Oct.)—all in the northern isles. Among wildfowl the most notable reports were a record 20,000 **Pinkfeet** at Strathbeg, 35 **European Whitefronts** at Loch Spiggie, large parties of Svalbard **Barnacle Geese** at Fair Isle, Girdleness and Aberlady, and small groups of **Brent Geese** in several areas. Raptors visiting Fair Isle included a **Honey Buzzard**, a **Red Kite** and the wing-tagged **White-tailed Eagle** which has spent two summers in Shetland; elsewhere there were scattered records of **Rough-legged Buzzards**.

An elusive **Black-winged Stilt** on the Ythan in October was eventually found dead. Other noteworthy waders included **Lesser Golden Plovers** on Fair Isle and at Fife Ness in October, 12 **Jack Snipe** at Loch Spiggie in November, **Great Snipe** on Fair Isle and Lewis, a **Long-billed Dowitcher** at Kirkwall, 400 **Woodcock** on Fair Isle in mid-November, a very late **Greenshank** on Whalsay on 13 November, and an even later **Whimbrel** at Spiggie in early December. A **Wilson's Phalarope** at Hillend Reservoir in October was the best of a good autumn run of waders there. **Pomarine Skuas** appeared in various places eg 14 off Peterhead in October and 28 at Barns Ness on 3 November, when an immature **Long-tailed Skua** spent the day—dangerously—at the Beltonford roundabout at Dunbar! There were **Mediterranean Gulls** on the Ayr coast, an immature **Sabine's** at Peterhead, a **Ring-billed** at Aberlady, and a **Ross's Gull** still at Thurso in December. **Iceland** and **Glaucous Gulls** were scarce. **Sandwich Terns** again wintered in the Forth, where **Black Terns** were also seen. Over 500 emaciated **Guillemots** were found dead in Shetland, where increasing numbers have wintered recently. An influx of **Little Auks** in November brought 432 past Peterhead.

Fair Isle and Shetland had many of the unusual passerines, among them **Short-toed Larks**, a **Red-rumped Swallow**, **Richard's** and **Olive-backed Pipits**. A **Desert Wheatear** was at John O' Groats in December—but the bird of the period was a male **Siberian Thrush** seen by one lucky observer on S. Ronaldsay on 13 November. The largest counts of Scandinavian thrushes were 600 **Blackbirds**, 4500 **Fieldfares** and 4000 **Redwings** on Fair Isle on 13 October. Late warblers included an **Icterine** in Orkney, **Barred** and **Bonelli's** in Shetland, a **Lesser Whitethroat** on Fair Isle, and a good scatter of **Yellow-browed Warblers**. A big influx of **Mealy Redpolls** occurred from early October, with flocks of up to 75 in Shetland, where a few **Arctic Redpolls** were also recorded. **Scarlet Rosefinches**, northern **Bullfinches**, **Lapland Buntings** and **Little Buntings** were reported in the north, and good numbers of **Snow Buntings** on the east coast. A **Yellow-breasted Bunting** on Fair Isle on 4 October was the latest ever.

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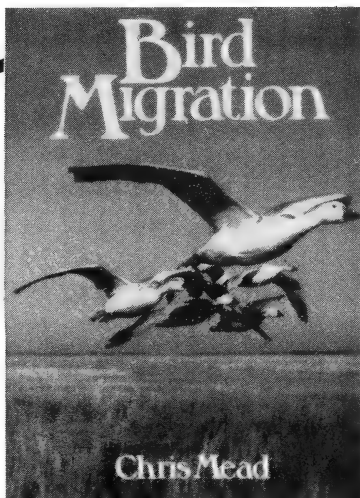
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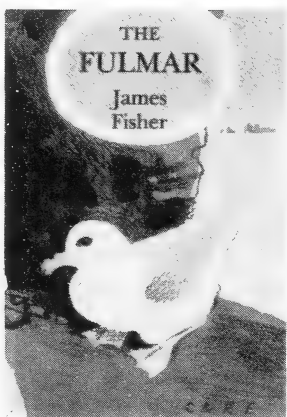
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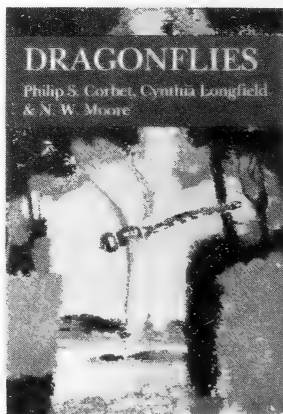
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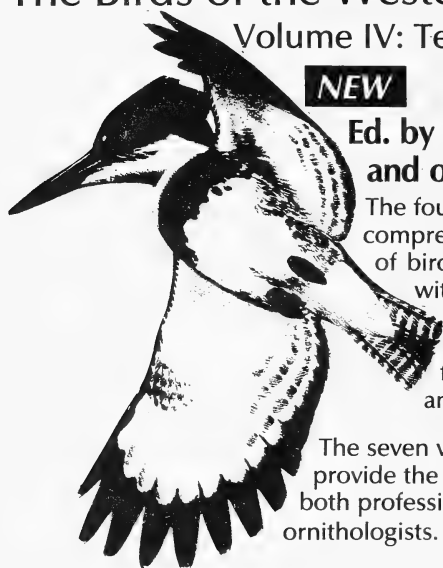
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SCOTTISH BIRDS

THE JOURNAL OF THE SCOTTISH ORNITHOLOGISTS' CLUB



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Edited by V. M. Thom, assisted by S. R. D. da Prato
and R. W. Furness

Editorial

WE offer our congratulations to The Scottish Wildlife Trust on the occasion of its 21st Anniversary, and hope that its work for conservation in Scotland will continue to expand and flourish. The recent death of Sir Charles Connell (see p. 185), who was the driving force behind the Trust for so many of its formative years, adds a touch of sadness to this otherwise happy occasion.

Inflation !

On p. 200 there is an important announcement, reminding members of the increase in subscription rates which comes into force shortly. Please read this carefully and **ACT NOW**, so that the need for subsequent reminders to individuals—with consequent administrative costs—is kept to a minimum.

For your subscription you will receive in future the two separate publications referred to in the last number of this Journal. Members will also be entitled to a pre-publication offer of "Birds in Scotland", now in the hands of the publisher (to the very considerable relief of the writer !) The official launch of the book, exactly 50 years since half a dozen keen birdwatchers got together and decided to form a club for Scottish ornithologists, will be the first major event in our Golden Jubilee programme. Watch this column for news of other plans, which will include Branch events, conferences and a variety of smaller innovations.

Remember—entries for the Photographic Competition must be in by the end of September.

The Current Status and Distribution of Terns in the Outer Hebrides

NIGEL E. BUXTON

The survey reported here shows that, although average colony size is small, many more terns than previously realised breed in the Western Isles.

Terns form an important component of the seabird fauna of the Outer Hebrides, especially on the main islands. Whilst the Arctic Tern has long been considered to be the most numerous tern in the Outer Hebrides, the relative distribution and numbers of Arctic Terns, Common Terns and Little Terns has been the subject of debate (Harvie Brown and Buckley 1888, Harvie Brown 1902-03, Lloyd *et al* 1975, Sharrock 1976, Bourne and Harris 1979, J. W. Campbell *in litt.*). The most complete previous survey was that carried out during "Operation Seafarer" (Cramp *et al* 1974), but casual observations ten years later suggested that numbers of all three species were far greater than estimated at that time. A census of the tern colonies in the Outer Hebrides was therefore made throughout June 1980.

Methods

Most known colonies, including offshore islands, were visited at least once during the census period. New colonies were traced by following the flight lines of feeding birds. Only a few colonies, mainly on small islands in Lewis and Harris, were accessible or discrete enough to be assessed by counting the nests; the sizes of the remainder had to be estimated from the number of flying birds (n). In colonies where nests were counted it appeared that flying birds corresponded to approximately two thirds of all nesting birds. A similar situation occurred in Orkney colonies (Bullock and Gomersall 1981). Consequently, in these colonies the numbers of pairs present were estimated as between $n/2$ and $3/2 \times n/2$. In the few colonies where it was not possible to differentiate between Arctic and Common Terns, the birds were referred to as "Commic" Terns.

Results

Arctic Tern About 2,000 pairs were estimated to be nesting at the colonies visited, with the majority in Lewis, North Uist and the Sound of Harris (Fig 1, Table 1). The total in the Sound

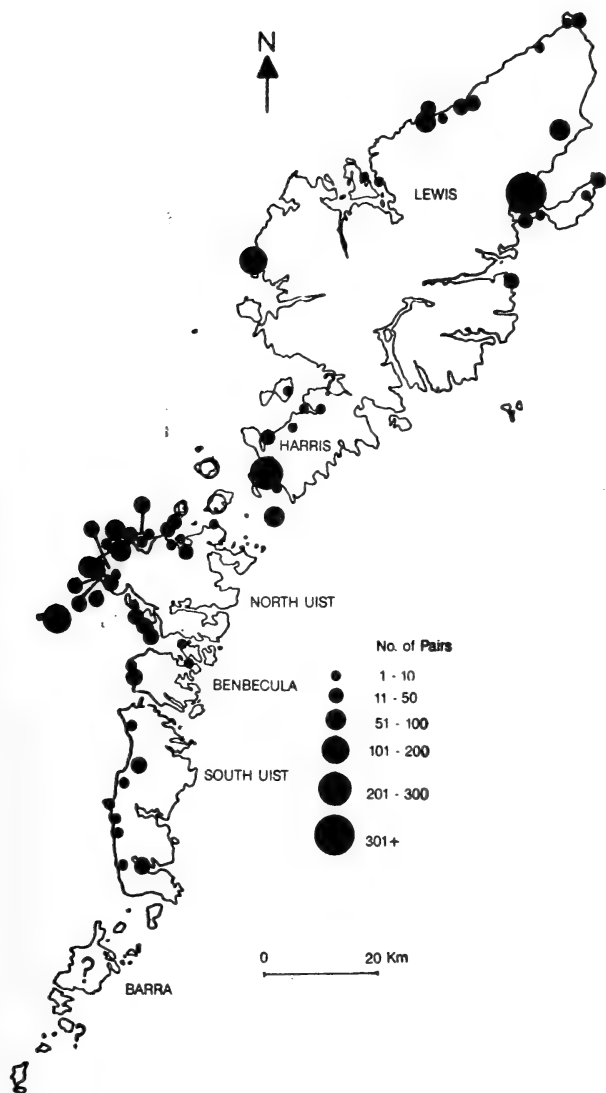


Fig. 1. Localities where Arctic Terns were known to breed in 1980. (Several colonies undoubtedly remain undiscovered). Open circles refer to known colonies which were not visited in 1980.

of Harris was almost certainly underestimated since Berneray, Boreray and Pabbay were not visited. These islands have all supported good-sized colonies in previous years; over 50 pairs on Berneray and 40 pairs on Boreray in 1979 (C. Spray, pers. comm.) and 75 on Pabbay in 1974 (Coxon *in litt.*). With others in Barra and its islands e.g. Sandray, the total for the Outer Hebrides is probably in excess of 2,300 pairs.

Except in Lewis and the Sound of Harris, colony size was small, generally less than 20 pairs and often only 1-4 pairs. In the Southern Isles the colonies were distributed mainly along the west coast, but in Lewis, where the west coast colonies were not as numerous as further south, substantial numbers occurred on the east coast. Even the largest colonies in Lewis were small in comparison to those of Orkney (Lloyd *et al* 1975, Sharrock 1976, Bullock and Gomersall 1981). The biggest colony, comprising almost 450 pairs, was at Melbost Sands in eastern Lewis, whilst the only other colony of over 200 pairs was on the island of Suem in the Sound of Harris.

Arctic Terns generally nested close to the sea (normally within 0.5 km), usually amongst the low dunes or on shingle beaches. A notable exception was the colony of almost 100 pairs nesting on islands in Loch Sgeireach Mor and adjacent moorland in north Lewis, about 4 km from the sea. This was a most atypical site, resembling those used by many Common Terns in Lewis. In west Lewis some birds also nested on the short maritime heath of cliff tops, whilst in the Uists small colonies bred well into the machair.

Common Tern This species was far more abundant than suggested by Operation Seafarer (Cramp *et al* 1974) with almost 600 pairs counted (Fig 2, Table 1). Most birds occurred in Lewis, with five colonies of at least 40 pairs. In South Uist this was the most abundant tern, although the colonies were not as large as further north, most being less than 15 pairs. Colonies in the Southern Isles tended to be either coastal or on islands in machair lochs close to the coast; few (3) were on islands in moorland lochs. In contrast, the last was the main habitat in Lewis, often at a considerable distance from the sea (2.0 - 5.0 km). Thus four of the eight colonies in Lewis (85% of the pairs) were nesting on stone or peat islands covered with either grass or thick tussocky heather.

Since most colonies were small, it was normally possible to determine whether a colony was a single species one or not. Of those identified to species, only 16 (15%) were observed to contain both Arctic and Common Terns, probably because of the preference of the latter for nesting by freshwater. Throughout most of the main centres of distribution in the

Table 1 Estimated numbers of terns breeding in Outer Hebrides in 1980

	Arctic Tern			Common Tern			"Commic" Tern			Little Tern		
	No. of pairs	No. of colonies	Range in colony size	No. of pairs	No. of colonies	Range in colony size	No. of pairs	No. of colonies	Range in colony size	No. of pairs	No. of colonies	Range in colony size
Lewis Harris Sound of Harris North Uist Monach Isles Benbecula South Uist Barra North Rona Shiant Isles Flannan Isles St Kilda	830-949 50-67 336 434-537 94-126+ 19-26 73-75 3 0 0	18 5 4 39 3* 4 9 3 3	1-448 2-45 2-225 1-76 2-15 1-43 no data	299-301+ 15-20 75 20-24 2-3+ 8 156-157 0 0	8 1 1 8 1* 4 15 ? ?	1-96 — — 1-5 1-3 2-39	9-17 5-7 ? 25-33 0 0 3+ 170+ 0 0	2 3	5-15 1-4	1-10 1* 2 4* 1 12	—	
Total	1839-2119	85	1-448	575-588	38	1-96	189-192	103-131	20	—		

*Incomplete data

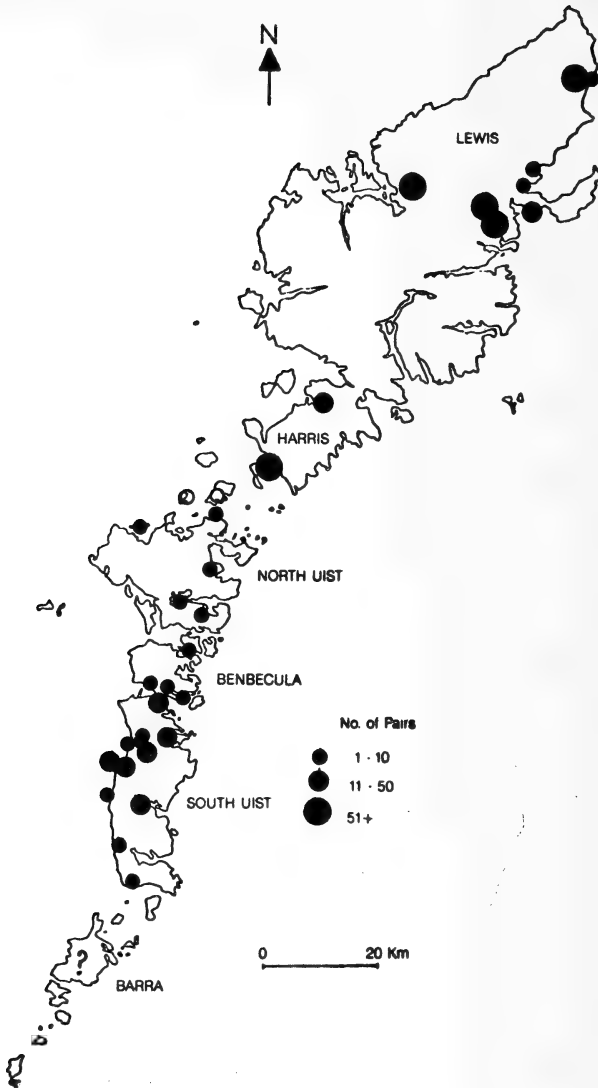


Fig. 2. Localities where Common Terns were known to breed in 1980. Open circles refer to known colonies not visited in 1980.

Outer Hebrides the ratio of Arctic to Common Terns was about 3:1, except in North Uist where Arctic Terns dominated (22:1) and South Uist where Common Terns dominated (0.5:1).

Little Tern Most colonies were small (less than 10 pairs) and scattered in suitable localities down the west coasts, although

pairs occurred on both sand and shingle in eastern Lewis and birds were seen flying off eastern South Uist. The population was estimated at approximately 100-130 pairs, but since Pabbay and Berneray almost certainly held uncounted pairs the total may be nearer 150 pairs. On the main islands the largest numbers occurred in North Uist, but the largest single colony of 40-50 pairs was on the Monach Isles National Nature Reserve. In many cases the Little Terns nested amongst Arctic Terns, either on sandy beaches or on grassy shingle, but several nests were on cultivated machair.

Discussion

The Outer Hebrides were estimated to support in excess of 2,800 pairs of terns, comprising at least 2,000 pairs of Arctic Terns, 600 pairs of Common Terns and about 130 pairs of Little Terns. The considerable difference between the totals of Operation Seafarer (1,200 pairs Arctic Terns, 76 pairs Common Terns, 66 pairs Little Terns) and this survey is probably related to both the rapid fluctuations in numbers undergone by tern colonies (Bullock and Gomersall 1981) and, more importantly, the greater coverage of this survey. Throughout Britain Arctic Terns tend to be northerly species and Common Terns the southern one (Sharrock 1976), but no clear trend was apparent in the Outer Hebrides. Arctic Terns were most numerous in Lewis and relatively most abundant in North Uist, but whilst Common Terns too were most numerous in Lewis, they were relatively most abundant in South Uist. Common Terns tended to have less of a westerly component in their distribution and nested further from the sea around fresh water. Inland nesting by Arctic Terns is generally infrequent in Britain, but further north where this the only species it will nest by freshwater lochs, up rivers and in luxuriant vegetation (Cramp *et al* 1974).

None of the terns are under overall threat at present in the Outer Hebrides; the pressures tend to be local. The largest Arctic Tern colony at Melbost may suffer from the present work on the extension to Stornoway Airport, although the main breeding area has been separated from the work site by a purpose-built fence. This colony has already suffered badly from holidaymakers and motorbike "scrambling" in the dunes over the past few years. Over the last 20-30 years it built up to its 1980 level of 450 pairs, but in 1981 it suffered such severe disturbance that an initial 75% of the colony was rapidly abandoned, to be followed eventually by the remainder. Inland colonies of Common Terns are disturbed by fishermen and, if water levels are low enough to allow access, by vandals.

One colony in 1980 lost about 50% of the eggs to vandals who piled them in a heap in the centre. Thus, in these accessible colonies chick production tends to be low.

Many of the tern colonies are in close proximity to gulleries. Often pairs of Common Gulls and Black-headed Gulls nest amongst the terns, but it is the larger gulls, which have apparently increased over the past few decades (Bourne and Harris 1974), that probably take a severe toll of eggs and chicks, especially in disturbed areas.

Experience in other places, such as the Isle of May off the east coast of Scotland (Eggeling 1974), has shown how easy it is for an increasing population of gulls to displace terns from their traditional nesting sites. Even though the present population estimates show tern numbers in the Outer Hebrides to be considerably higher than previously thought, it is important that the situation should not be viewed with complacency.

Acknowledgments

I would like to thank the following for their invaluable help during the survey: C. Brown, D. Counsell, W. A. J. Cunningham, K. Fairclough, L. M. Gardiner, J. Gordon, M. P. Harris, P. Hill, M. Hodges, E. MacRae, D. A. MacCushie, P. S. Read, J. H. Roberts, C. Spray.

Summary

Over 2,800 pairs of terns nested in the Outer Hebrides in 1980. This total included about 2,000 pairs of Arctic Terns, 600 pairs of Common Terns and over 100 pairs of Little Terns. Colonies tended to be small, few comprising more than 50 pairs. The Arctic Terns were mainly distributed on the west coasts although the largest colony was on the east coast of Lewis. Common Terns, in contrast, were more easterly and often nested away from the sea around freshwater although mixed coastal colonies did occur.

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Scavenging of salmon carcasses by birds

R. HEWSON

An insight into the 'peck order' among riverside scavengers.

Many salmon die in autumn after spawning in the headwaters of Scottish rivers, and it has been estimated that several thousand salmon carcasses are washed up along the river Dee in north-east Scotland. This represents a large supply of carrion for scavengers. To what extent is salmon carrion used by scavenging birds?

Study area and methods

Between 13 Nov. 1979 and 27 Jan. 1980 37 visits were made to a 2.4 km stretch of the right bank of the Dee 4 km above Banchory. On each visit salmon newly washed up were measured and weighed. Details were recorded of the extent of scavenging, of birds flushed at or near the carcass, and of tracks, droppings, pellets or feathers nearby. Carcasses were re-weighed subsequently and further scavenging described. A record was also kept of scavenging birds along the river.

Results

Available carrion Seventeen dead salmon were found on or near the river bank and 15 of these, which were accessible, were more closely examined. Some carcasses had been scavenged when first found and had probably been fed upon upstream before being washed down. The three carcasses found on 4 Dec. (Table 1) arrived after a considerable spate. Most carcasses were soon removed by a rise in the level of the river. Apart from a carcass present for 32 days (No. 8), and covered by ice and snow for part of that time, dead salmon were available to scavengers for about five days.

The average salmon carcass weighed 4.7 kg before scavenging and was 82 cm long. Three partly scavenged carcasses weighed 1.3 kg, 2.4 kg, and 2.7 kg respectively when first found.

Feeding on carrion Scavenging birds first removed the upper or both eyes from a salmon carcass. Next they fed upon the most accessible part, the gills, and then exploited holes made at the gills and extended those backwards along the spine. Carcass No. 3 lost 0.4 kg to scavengers, probably Great Black-backed Gulls *Larus marinus* in two days, mostly

Table 1. Scavenging of salmon carcasses

Serial no.	Date found	Weight (kg)	Length (cm)	Days av. to scavengers (max.)	Scavengers at carcase	Details amount scavenged
1	13 Nov. 79	1.3*	70	13	GBBG, crow	moderate
2	16 „ 79	3.4	78	10		
3	26 „ 79	5.2	89	10	GBBG	none when found; 0.4 kg by 28 Nov.
4	4 Dec. 79	2.4*	74	3	GBBG	
5	4 „ 79	5.3	95	3	GBBG	slight
6	4 „ 79	—	—	3	GBBG	moderate
7	7 „ 79	2.7*	73	3		one eye, gills
8	21 „ 79	5.0	96	32		eyes, gills—later more
9	27 „ 79	—	c.70	10	crow	mammal scavenged, fully scav. by 7.1.80
10	27 „ 79	—	—	3	GBBG, crow	almost fully scav.
11	31 „ 79	5.0	c.90	7	GBBG	much
12	9 Jan. 80	—	80-90	3	GBBG, crow	much
13	12 „ 80	—	—	2	GBBG	fully scavenged
14	27 „ 80	4.0	74	3	GBBG	eye, behind eye, spine
15	27 „ 80		89	3		moderate—gills on one side, 10 cm cavity backwards from head

*part scavenged when found

from a cavity 8-10 cm deep behind the gills. There was no further scavenging before the carcase was removed by a spate on 6 Dec. Carcasses Nos. 3, 6, 7, 8, 14 and 15 were scavenged in this way; No. 5 lost only an eye. Carcase No. 2 was the only one intact when found, and it was washed away before it could be examined.

Carcase No. 9 had been dragged 5 m from the water's edge by a mammal scavenger, probably Fox, which had removed the head. It was found, much rotted, when a Crow *Corvus corone* was flushed nearby and subsequent scavenging by shallow pits in the carcase was probably the work of crows. Crow tracks were found in the snow at the carcase which, after 10 days, was substantially scavenged, with the gut and all flesh removed and only the spine and skin remaining.

Six other carcasses were heavily scavenged. No. 1 weighed 1.3 kg when found, No. 4 had a cavity 10 cm in diameter behind the gills and through this, when further extended, the gut was removed, probably by Great Black-backed Gulls. Nos. 10, 12 and 13 were almost fully scavenged when they arrived but were further scavenged by Great Black-backed Gulls and Crows before being carried downstream within three days.

The scavengers Great Black-backed Gulls were seen at nine carcasses, Crows only at three (Table 1). Elsewhere on the Dee a Grey Heron *Ardea cinerea* was twice seen at a salmon carcass. Black-backs were the most frequently seen scavenger along the river (57 times) with Crows seen nine and Herons ten times. Herons may however have been fishing rather than scavenging.

There was a clear pecking order at the carcasses with adult Black-backs, which fed singly, dominant over sub-adults and immatures. Crows, subordinate to gulls, sometimes waited 1-2 m from scavenging gulls. Carcass No. 9 was scavenged largely by Crows, perhaps because gulls did not care to forage among the surrounding trees; perhaps also because the carcass was well rotted and easy to break into.

A Heron was twice dominant over Great Black-backed Gulls at a salmon carcass. On another occasion a Heron appeared to be trying to rob a Black-back of a piece of salmon carrion 20-25 cm long on which it was feeding at the water's edge. The Heron, perched 15 m downstream, flew up and landed within 2 m. As it did so the gull flew with its carrion to a boulder 4 m away and began to feed. The Heron then flew onto the boulder and as it did so the gull slipped into the water and swam or floated 10 m downstream into shallow water. It was again followed by the Heron which perched on a boulder nearby. The gull again set off downstream with the carrion drifting in front of it but after 50-60 m disturbance caused both birds to leave. Great Black-backed Gulls often perched alongside or just below rapids; at other times they flew along the river at 20-25 m in what might have been a search for salmon carcasses.

Discussion

Scavenging of salmon carcasses resembled in some ways the scavenging of lamb carcasses by birds in west Scotland. The most easily available food was taken first; eye and gills of salmon, eye and tongue of lambs (Hewson 1981a). Two-thirds of lamb carcasses were not scavenged beyond this. Lamb carcasses were plentiful and the supply was constantly replen-

ished during the peak of lambing. Salmon carcasses filled much the same role on the river bank. In both cases scavengers appeared to find it profitable to visit several carcasses for easily obtained food rather than to make inroads into the more solid flesh.

Great Black-backed Gulls fed alone upon sheep as upon salmon, often with crows in attendance at 1-2 m. They flew regularly over lambing areas at 20-25 m as if searching for carcasses. Buzzards *Buteo buteo* were dominant at mammal carcasses (in the absence of Golden Eagles *Aquila chrysaetos*) (Hewson 1981b) but were not seen at salmon carcasses. However Jenkins (1984) saw a Buzzard scavenging a salmon carcass on the Dee, and Mitchell (1984) refers to Buzzards feeding on salmon and other fish carrion at Loch Lomond.

Crows featured less as scavengers of salmon than of lambs and sheep, although the density of Crows in the Banchory area (Picozzi 1975) is similar to that in west Scotland (Hewson & Leitch 1982). The likeliest explanation lies in the wide range of food available to Crows in north-east compared with west Scotland. Also competition between Crows and gulls along the banks of a river occurs in a more restricted area than on the open hillside and Crows are therefore less likely to be able to feed undisturbed.

On the Tweed between October and December, Cuthbert (1973) saw salmon carcasses being scavenged by Herring Gulls *Larus argentatus*, Lesser Black-backed Gulls *L. fuscus*, Black-headed Gulls *L. ridibundus*, Crows, and Rooks *C. frugilegus*. Surprisingly Great Black-backed Gulls were not seen scavenging.

Acknowledgments

I am grateful to Dr David Jenkins for his comments on the manuscript.

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Ornithological studies at Dundee University

J. J. D. GREENWOOD

The establishment in Dundee of an integrated Department of Biological Sciences, bringing together zoologists, botanists, and microbiologists, has provided great opportunities to ecologists and others whose interests span the traditional divisions of biology. Unfortunately, these opportunities have been simultaneously diminished by the steady reduction in university funding and the tendency for molecular biology to soak up more and more of the funds available for biological research. However, since 1978 we have maintained a small ornithological research programme, which has recently expanded, and which we plan to expand even further.

The core of the bird research in Dundee is a study of Blue and Great Tits in a small deciduous wood in the Carse of Gowrie. With 120 nest-boxes in the wood providing the breeding sites for almost all the tits in the wood, we have been able to monitor changes in numbers, immigration and reproductive rates, and a variety of aspects of breeding biology. Because they are by far the commoner, we have concentrated on the Blue Tits, a species about which less is known than about the Great Tit. However, there is no doubt that even our Great Tits do not behave in the same way as those in the well-studied populations in Oxford and The Netherlands. This is perhaps one good reason for our study. It is also valuable in ensuring that the participants, who otherwise have a tendency to do most of their research in the laboratory and computer-room, keep in touch with reality. But the main reason for the study is to provide a known population which we can use for experimental studies in evolutionary ecology.

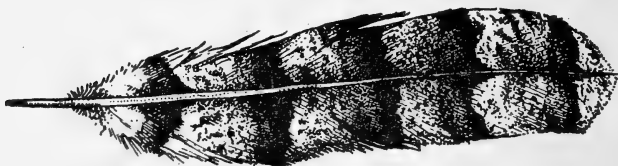
One study that we have just begun is into the inheritance of behavioural and morphological characteristics of Blue Tits. Theories in evolutionary ecology usually rest fundamentally on assumptions about the degree of heritability of various characters. However, there have been few measurements of heritability in wild populations and most of them may have been biased by the inclusion of non-genetic components in the estimates. We aim to remove some of the biases by exchanging chicks between nests: this will allow us to compare the degree of resemblance between offspring and their true parents with that between offspring and their foster parents,

the difference being a measure of the genetic relatedness of the offspring and their true parents. We also intend probing the genetic structure of the population more deeply by studying biochemical characteristics of the birds.

The other main area of bird research in Dundee is into feeding behaviour. It is generally true that the preference shown by birds and other animals for a particular type of food depends on how common that type is: if brown and green caterpillars are both available, the birds may take a disproportionate excess of the brown ones when they are commoner but a similarly disproportionate excess of the green ones when it is they that are the commoner. We have investigated this behaviour by exposing artificial pastry caterpillars on lawns to a variety of garden birds and have shown that both the absolute abundance of the prey and the relative frequencies of the two forms are important: if the prey are very abundant, for example, the effect of relative numbers is reversed—it is then the less common of the colours that tends to be preferred. By using artificial grass of various colours, we have been able to study the influence of background colour on preference, which is important in understanding the evolution of crypsis in prey populations. And by making some of the 'caterpillars' distasteful we have been able to carry out experiments relevant to the evolution of those insects that avoid predation by being distasteful and warningly-coloured. We plan to extend these experiments, using aviary birds to provide information on the detailed behaviour of the predators.

What of the future? If the funds are available—and that is a big 'if' for all scientists at present—we hope to carry out more experiments on the Blue Tit populations and more work on feeding behaviour, plus studies in applied ornithology, on the ecology of endangered species and on the effects of farming and forestry practices on bird populations.

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tail F.*

Sir Charles Gibson Connell

J.P., F.R.S.E., W.S.

11 March 1899 - 16 February 1985

One of the many achievements that Charles Connell could have looked back on with quiet satisfaction was the fact that the first two pages of *Scottish Birds* (published in Autumn 1958) carried his foreword and his message of confidence in its future. Twenty-seven years later *Scottish Birds* is still very much alive, though we must sadly record his death and give thanks to the man who was so largely responsible for its birth.

As a young man Charles Connell was an active ornithologist and between 1924 and 1935 he published over a dozen notes in the *Scottish Naturalist* and other journals, of which the most memorable was the first breeding record for Black-necked Grebe in Scotland (at Cobbinshaw Reservoir in 1930). He was also one of the earliest observers to draw attention to the prevalence of grain in pellets cast by Herring Gulls in late summer, with the additional comment (which even now may merit further investigation) that the grain appeared to be quite undigested.

The First World War was still in progress when he left school, and the years 1917-19 were spent with the Royal Field Artillery, including active service in Salonika. After that it was natural and inevitable that he should join in partnership with his father, Sir Isaac Connell, who was the acknowledged expert in Scotland on agricultural law and with whom he collaborated in editing later editions of the standard textbook on this subject. Even an office in central Edinburgh can provide its distractions—especially one with windows looking out onto the east end of Queen Street Gardens—and in 1928 he published in the *Scottish Naturalist* a short note entitled "Bird Life in an Office Garden" which included records of Redstart, Cuckoo and Sandwich Tern. But for the next thirty years even Charles Connell's exceptional energies were absorbed totally by his Law practice and by his political activities. From 1938 to 1954 he was a joint Hon. Secretary of the Scottish Unionist Association, and from 1944 to 1945 he was its President. For these services he was knighted in 1952.

Now approaching his sixties, he found time to turn his undiminished energies back to his earlier interests. With the enormous post-war expansion of interest in all aspects of

natural history, the Scottish Ornithologists' Club had embarked on a rather anxious development programme, and it was the combination of George Waterston's enthusiasm and Charles Connell's business acumen that saw the Club through a difficult period, which included the establishment of the Scottish Centre for Ornithology at 21 Regent Terrace. There were many bold and far-reaching decisions to be taken. Charles took the full brunt of these during the years 1957-60, when he served as President of the Club, and those connected with him at the time will remember with admiration and gratitude how much the Club owes to his clear-sighted guidance.

But already this clear-sightedness was alerting Charles to broader and more pressing problems. In 1964 he was the moving spirit responsible for the formation of the Scottish Wildlife Trust, whose 21st anniversary year this is, and his remaining years were primarily devoted to the promotion of nature conservation in Scotland. We may hope that for many years to come this will remain as the finest possible monument to a man who was blessed with many talents and who never spared himself in putting these to the best use for the causes in which he believed.

If this makes Charles Connell sound a formidable man, it does not tell the whole story. He was fortunate, not merely in his talents but also, as so often is the case, in the retention of his full faculties until the very end of a long life. He was totally devoid of any conceit; he could make instant and easy contact with people of any age; his sense of humour, even in his eighties, was positively boyish and always ready to bubble over; to be with him was always stimulating and enormous fun. It is not only as a source of ever-reliable advice that he will be sorely missed.

DOUGAL G. ANDREW

Short Notes

Breeding by an Orkney Hen Harrier on the Scottish mainland

On 15th July 1984, JW found a Hen Harrier nest with two well-grown nestlings in a young conifer plantation at Ariundle near Strontian. The nest was attended by an aggressive hen with a tag in the right wing. NP was able to identify her from colour transparencies of the bird in flight because only one hen was marked with tags on which a particularly bright lime-green adhesive film, long since unavailable commercially,



PLATE 25. Sir Charles Connell, who was President of the SOC when the Scottish Centre for Ornithology was established in 1959 (see p. 185).
Scottish Wildlife Trust



PLATE 26. Arctic Tern: the most numerous tern in the Outer Hebrides. *W. S. Paton*

PLATE 27. Blue Tits: a major study species at Dundee University. *B. McKechnie*





PLATE 28. Peregrine at nest: a note on prey is on p. 191.

Dr E. C. Fellowes

PLATE 29. Carrion Crow nest on ground: see note on p. 188.

G. Rebecca





PLATE 30. A fine study of a male Merlin:
see note on p. 188.

Dr F. C. Yellowey

had been applied to a white plastic background. She was ringed by Eddie Balfour in Orkney as a nestling in 1974, caught and wing tagged by NP in Orkney in 1975 and found nesting there every year to the end of his study in 1981. The tag in the left wing had been lost by 1976. The hen reared young (3) only once, as a yearling in 1975 when she was paired with a yearling male 750 m from her natal territory. In the seven years 1975-81, the nest was never more than 3.5 km from the natal site. This fitted the general pattern of marked Orkney females breeding in Orkney, of first nesting within an average of 5.7 km ($n = 68$ hens) of the natal site. Subsequently, known hens which had nested one year did so the next within an average of 1.03 km ($n = 163$ hens) of the previous year's nest (Picozzi, 1984). JW's observation is interesting because it is the first recorded case of a bird known to have bred in Orkney which later left the islands and nested elsewhere (1300 km SW). It is of further interest because the hen was 10 years old in 1984, an age at which few hens reared young in Orkney (17% of 30 aged as 9 or more years old). We would be pleased to hear of any other sightings of wing tagged harriers on the mainland in the breeding season.

N. PICOZZI and J. WATSON

Reference

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A new breeding site for the Atlantic Gannet

The Atlantic Gannet is currently both increasing in numbers at established colonies (Nelson 1978, 1980) and founding new ones (Nelson 1978, Furness 1981). In the Western Isles gannetries are known on St Kilda (40,000+ pairs, Murray 1981), Sula Sgeir (9000 pairs in 1972, P. G. H. Evans *in litt.*) and the Flannan Isles. This latter colony was first noted in 1969 when 16 birds were present and breeding confirmed with 17 pairs (Dr P. G. Hopkins *in litt.*). In 1980 over 100 birds were estimated to be present (N. E. Buxton unpublished). In the main archipelago of the Western Isles Gannets continuously pass through the Sound of Harris during the breeding season, but only appear frequently inshore on the east coasts of the islands in late summer. Thus, although birds feed extensively in the Minch, there are no records of breeding there.

In 1982 a Gannet was noted sitting on a suitable nesting site on Eilean Mhuire, one of the Shiant Isles 8 km east of Lewis (R. V. Collier *in litt.*). Then in late April 1984 a Gannet was again seen on a ledge on the east coast of Eilean Mhuire (A. Miller Mundy pers. comm.). On the 9th May 1984 I visited the Shiants and confirmed that a Gannet was occupying a ledge on a vertical cliff amongst a colony of Guillemots. There were no other Gannets in the vicinity, either on the land or at sea. By landing on the island and getting above the bird I was able to confirm, with the aid of binoculars, that it was sitting on a nest. Unfortunately it was not possible to see if the nest contained an egg, nor did it prove possible to return later in the season. This is the first confirmed record of Gannets nesting on the Shiant Isles.

N. E. BUXTON

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High density breeding and ground nesting of Carrion Crows

On 11 May 1982 J. A. Chapman and I found six occupied Carrion Crow nests on a 25ha heather-covered moss, with scattered birch scrub and Scots pines, near Newmachar, Aberdeenshire. The moss was surrounded partly by unimproved rough grazing and partly by cultivated fields. All the nests were in Scots pines and the contents ranged from eggs to half-grown young. Carrion Crows normally breed as solitary territory-holding pairs (eg Coombs 1978) and such close nesting appears to be rarely recorded, as the national average in 1972 was estimated to be 250 pairs per occupied 10km square (Sharrock 1976). Coombs (1978) considered the defended nesting territory within the home range to be 14-49ha per pair. At least six pairs in 25ha would therefore seem to be very unusual.

In early May 1984 I was informed by Mr R. Ingram, a local farmer, that he had found an unusual nest being built in a field of wheat c15cm high; the nest was subsequently completed and contained three eggs. I visited the site (near Newmachar) with Messrs R., A. & K. Ingram on 17 May, when two adult Carrion Crows were seen flying away from the area of the nest (confirming that neither bird was 'pricked'). The nest, that of a Carrion Crow, was situated c20m from a farm road and c80m from an unclassified road. It was sunk into the ground, had a few pieces of broom around the cup and a lining of sheep's wool, and contained two warm eggs. When next visited, on 4 June, it was empty. Ground nesting has been recorded occasionally in treeless areas (eg Bannerman 1953, Harrison 1975, Coombs 1978), the nest being in heather on islands or, rarely, in dunes. There has also been a recent case of ground nesting in a hayfield in Cheshire (Linn 1984).

There were unoccupied potential tree sites near the moss and the field. A possible explanation for this atypical nesting behaviour may be that local farmers regularly shoot crows and their nests. The moss was relatively undisturbed and a field of growing wheat would undoubtedly provide good cover.

GRAHAM W. REBECCA

References

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Merlin calling in autumn

On 16 October 1984, at 1500 GMT, my attention was drawn to a high-pitched, drawn-out, double-call "kee:kee" over the built-up area of Tynecastle, Edinburgh. I looked up to see a single Merlin of indeterminate sex flying at some height (30-40m), using winning wing-beats interspersed with glides. The bird repeated the double-call four or five

times as it gained height towards the north by flying in incomplete circles linked by gentle straight climbs. I saw no other birds in the vicinity to which the calling Merlin could have been reacting.

BWP describes as rare calls by this species outside the breeding season, and cites as the only example aerial displays and calling near a winter communal roost site. The Tynecastle bird was not at a roost site, nor is it likely that one was in the immediate neighbourhood; further, the bird was on its own so far as could be ascertained.

I thank Alan Heavisides for commenting on a draft of this note.

TOM DOUGALL

Disappearance of the Corn Bunting from South-east Sutherland

I refer to the interesting article by A. W. Brown et al (13: 107-111) regarding the status of the Corn Bunting in the Lothians. In my study of the species in the vicinity of Dornoch, SE Sutherland from 1957 to 1969 (1965) and (1970) the estimated population was about 30 pairs. The birds were restricted to a narrow coastal strip extending to about six miles and within that area they were confined to arable farmland mainly devoid of trees. Fifty one nests were found during that period.

The first indication of a decrease occurred in 1966 when only 15 singing males were located. There appeared to be little change until the early 1970s and single nests were found in 1970 and 1971. In 1972 the final crash came with startling suddenness when only a solitary male appeared. Single males were recorded again in 1973, 1974 and 1976 but from the last mentioned year I have no record of a Corn Bunting being recorded anywhere in east Sutherland.

The authors are mistaken in stating that the Corn Bunting has been relatively little studied by ornithologists. Numerous ornithologists have written about the species including particularly detailed studies by Walpole-Bond (1932), Ryves & Ryves (1934) and Robertson (1954), the last named stating, "... that its domestic life has been more deeply and skilfully probed than most."

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D. MACDONALD

Kittiwake movements in the Forth

On the 4th November 1984 I recorded a movement of Kittiwakes in the Forth similar to those reported in November 1973 and October 1974 (SB 8: 77-78 and 8: 324-325). The birds were observed at Inverkeithing Bay and were arriving in parties of c.100 to settle on the water for some five minutes before taking off again and rising to such a height that they were lost to sight over the railway bridge, making up river. The birds were silent on arriving but started calling on taking off again. Altogether

some 600-700 birds were seen in the space of an hour, after which no more birds arrived.

I was at the same spot on both the previous day and the following day but although a few Kittiwake were present no similar movement was taking place. The total number of birds appears to be substantially less than reported 10 years ago (estimated at 3000 to 4000), but it would be interesting to find out if other such movements have been seen, either this year or in other years. The weather on 4th November was dull with some drizzle and fairly low clouds—the Kittiwakes were rising to the height of the clouds so that they became invisible against them. During the observation at least 2 Little Gulls were associating with the Kittiwakes and an Arctic Skua was also in attendance.

A. D. INGLIS

Woodcock with abnormal bill

A Woodcock shot in South Uist in December 1984 was found to have an unusually short bill—48 mm long and some 22 mm shorter than the norm. *The Handbook of the Birds of Europe* states "Abnormally short bills recorded in several countries". This specimen, although normal in every other respect, may therefore be of interest to morphologists. William Neill of Askernish, South Uist, made the accompanying drawing of the bird alongside a normal Woodcock.

PETER CUNNINGHAM



Peregrine prey

On 16 July 1983, near a Peregrine nesting crag from which four young had flown between two and three weeks before, I saw the adult female bring in what turned out to be a live, recently-fledged Carrion Crow. When first seen by me, the crow was hanging limp and apparently lifeless from the Peregrine's talons. It was dumped on a knoll to which, a short time before, one of the young Peregrines had taken a pigeon received in a food pass from the adult female. First one and then a second young Peregrine landed on the knoll but seemed to pay the crow no attention, possibly because at that stage the Peregrines (adult and young) became aware of my presence. The crow then crawled out of sight into

the bracken but on my approach it flew off, apparently none the worse for wear.

On 26 May 1984 I checked a Peregrine eyrie which contained three chicks about 3-weeks old, an intact Red Grouse egg and a number of prey remains and feathers, none of which were grouse. Presumably a hen grouse on the point of laying had been brought to the eyrie and the egg came out when an adult Peregrine was cutting up the carcass. A less likely explanation is that one of the Peregrines had picked up a grouse egg from the ground.

PATRICK STIRLING-AIRD

Fieldwork Reports

Establishment of a cannon-netting operation in Orkney During 1984 the Orkney Ringing Group has been involved in assembling all the necessary equipment to set up a cannon-netting operation in Orkney. Initial difficulties were experienced in obtaining suitable netting and other items but these have been overcome and a mini-net (15m x 5m) is now ready for operation. The early part of 1985 will see the Group making a determined effort to catch a sample of the immensely important wader populations which winter in the islands (see 'The Shore-birds of Orkney' by the Tay and Orkney Ringing Groups), as well as a sample of wintering ducks and gulls.

E. R. MEEK

Status and breeding ecology of Merlin in Grampian This study was continued during 1984 mainly by ten SOC members. 24 pairs were located breeding, less than half of the 54 known or suspected breeding territories that were checked. At least 44 young reached the ringing stage, at approximately three weeks. The number of young and the number of pairs found breeding were the largest recorded in one season during the study. Known breeding failures were mainly caused by ground and avian predators; fox, Carrion Crow and Short-eared Owl were all suspected. The young in 4 broods were weighed and measured until they left the nest, as a continuation of previous work in attempting to establish reliable sexing of the young. Prey remains, pellets and unhatched eggs were collected for analysis. Interesting prey items found were ringed individuals of Domestic Pigeon and young Golden Plover, both rarely recorded previously, and two Small Tortoiseshell butterflies and a Brambling which had never been found in earlier years. The study will be continued during 1985, when it is hoped that every known and suspected breeding territory will be checked.

GRAHAM W. REBECCA

Survey of the shore-birds of the Orkney Islands In the winters of 1982/83 and 1983/84 the Tay and Orkney Ringing Groups carried out a survey of the shore-birds of the Orkney Islands. The birds on 650 km of the total Orkney shoreline of 800 km were counted, excluding cliff sections. The methods and results of the counts have been published in a report (Tay and Orkney Ringing Group, 1984) and an analysis of the factors

affecting the distribution of the waders within Orkney is under way. The counts have permitted a comparison with published results of the Birds of the Estuaries enquiry (Prater, 1981), and indicate the importance of the Orkney Islands, on a national and international scale, for a number of duck and wader species :

Species for which Orkney contains over 1% of W. European wintering population or over 1% of the British wintering populations.

Provisional figures in brackets

	1% W. European Wintering Pop.	1% British Wintering Pop.	Wintering Pop. on Orkney coast
Wigeon	4,000- 5,000	2,000	4,800
Oystercatcher	5,600- 7,500	2,300- 3,000	2,800
Ringed Plover	250- 400	120	1,600
Golden Plover	8,000-10,000	2,000	2,500
Turnstone	(500)	250	6,000
Purple Sandpiper	(500+)	180	5,600
Sanderling	150	100	860
Redshank	1,250- 2,000	1,000	8,900
Bar-t. Godwit	900-(5,000)	450	770
Curlew	2,000- 3,000	1,000	18,000

PRATER, A. J. 1981. *Estuary Birds of Britain and Ireland*. Poyser, Tay and Orkney Ringing Groups, 1984 ■ *The Shore-birds of the Orkney Islands*. Tay Ringing Ringing Group (copies at £2.50, available from M. Y. A. Martin, Flat 9, Upper Springland, Isla Road, Perth, Tayside).

M. W. A. MARTIN

Seabird ringing in the Firth of Forth 1984 During the 1984 breeding season visits were made by members of the Edinburgh Ringing Group to the Forth islands of Craigleith and Inchkeith to ring seabirds. Three visits in June, two to Craigleith and one to Inchkeith, resulted in 283 Puffins (83 adults, 200 nestlings), 151 Kittiwakes (29, 123), 227 Shags (63, 164), 30 Razorbills (15, 15) and 2 Guillemot chicks being ringed. In August, 122 Fulmars (120 nestlings) were ringed on Inchkeith. In total 816 seabirds were ringed and 48 birds that had been ringed during the previous 10 years were retrapped as breeding adults. Throughout the year we have continued to receive reports of birds ringed in earlier years. Of particular interest this year were six Shags ringed as nestlings in 1983 on Craigleith and found dead or dying in late January at inland sites: four were in the English Midlands, one in Cambridgeshire and one in Hertfordshire at Tring! We plan to continue to ring seabirds in the Forth, and, based on a pilot survey this year, we plan to begin to census certain species, in particular the Puffin.

IAN R. POXTON

(on behalf of Edinburgh Ringing Group)

Study of Merlins in the Lammermuirs, Pentlands and Moorfoots This was the first year of a co-ordinated study of breeding Merlins in the Lammermuirs, Pentlands and Moorfoots. The first year of such a study is always particularly difficult with few participants and potentially a very large area of ground to cover. Fortunately the RSPB survey of the previous year provided some very useful site and contacts information. Much time was spent talking to Keepers and Landowners particularly

in the Lammermuirs where the most complete coverage was achieved. The generally excellent weather made the task easier than it might have been and was certainly the cause of early egg laying at most sites. It is hoped to continue to monitor the breeding population of these upland areas in succeeding years.

Lammermuirs A total of 22 known, possible and 'new' sites were checked, most on several occasions. In addition several other likely ones were surveyed but no sign found. Some signs of early occupation were found at 15 sites of which 13 were known or strongly suspected to have young and 2 failed at the egg stage. 3 nests not found fledged 11 or 12 between them.

Pentlands A total of 8 known, possible or 'new' sites were checked, most on several occasions. In addition several other areas were surveyed but no sign found. Some signs of occupation were found at 6 sites but only 2 definitely reached the egg stage and only one of them reared 3 young.

Moorfoots 11 known sites were visited at least once. 2 nests were found and fledged respectively 2 and 3 young, 2 others almost certainly fledged an unknown number of young. Another site occupied mid April but not revisited, no signs of occupation were found at the other 6 sites. Several known sites within this area were not checked during the season.

A. HEAVISIDES

Raptor breeding performance in Morayshire 1984 was the ninth continuous year of this long-term study, which involves checking all known raptor nesting territories (presently over 140) in west Morayshire each spring for occupation, and completing nest record cards, ringing broods of young, collecting unhatched and deserted eggs for chemical analysis, and recording prey remains at those where breeding is attempted. The three species monitored are :

Buzzard New nests built at 21 territories, but one pair was poisoned with alpha chloralose and at another the nest tree was felled. However, 19 clutches were laid (av. clutch 3.11), and though one was later deserted, 18 broods totalling 54 young (av. brood 3.00) successfully fledged. This included a remarkable total of 6 broods each of 4 young.

Sparrowhawk 26 nests were built but failure to lay eggs (6) or desertion of incomplete clutch (2) resulted in only 18 full clutches being laid and incubated (av. completed clutch 4.69). Two nests failed during incubation; the remaining 16 were all successful and fledged 55 young (av. brood 3.44).

Merlin All sites are severely threatened by rapidly encroaching forestry operations. Eight territories checked but one found destroyed by over-winter ploughing and tree planting, and another unoccupied. Breeding occurred at 5 of the 6 occupied sites (av. clutch 4.75). All 5 were successful, rearing 18 young (av. brood 3.60).

Unhatched eggs collected under licence for the NCC included 1 Buzzard, 12 Sparrowhawks' and 3 Merlins'.

B. ETHERIDGE

Breeding Barn Owls in the Cree Valley During the 1984 breeding season, a survey was carried out to locate the numbers of Barn Owls breeding in an area surrounding the River Cree in South West Scotland. A total of 103 buildings (farms/ruins) were searched, and 20 breeding pairs were located: clutch size was obtained from 13 sites (mean clutch size

being 4.92), two nests being deserted at the egg stage. A total of 59 young were reared from 18 sites with two actual nest sites being inaccessible. 49 young and 2 adults were ringed and most were weighed and measured. Human predation and disturbance were luckily at a very low level; some sites could be helped by the erection of a nest-box and it is hoped to do this by the onset of the next breeding season. Notes of habitat, and the condition of the buildings were also taken at all sites. It is my intention to carry on this study during 1985 and possibly to extend the study area slightly. My thanks must go to A. Tiffen for help with transport, and Geoff Shaw for help at certain sites, and to Dr Iain Taylor for advice concerning Barn Owls in general.

A. DOWELL

Status of Yellow Wagtails in Clyde Monitoring of the Ayrshire breeding population continued, revealing a dramatic decrease since 1984. Within the main study area, an intensive census produced only 6 pairs where there were 15 in 1983 (in an area of 4 km²). The whole Ayrshire census area held 12 pairs compared to 27 in 1983. Yellow Wagtails are said to have declined throughout Britain in 1984, presumably an effect of the continuing Sahelian drought which also seriously reduced the Sand Martin population. At the time of writing CBC figures are not yet available, but this population change may be most marked here in Scotland, at the limit of the species' range. Of 10 full-grown birds and 126 nestlings colour-ringed in 1982-83, only 4 were located in 1984, perhaps indicating a very high rate of mortality amongst young birds. The known breeding areas of Lanarkshire were not accurately surveyed this year; the impression gained during pulli-ringing visits was of a decrease but less severe than in Ayrshire. Extensive areas of river valley in central and south Lanarkshire were surveyed for the first time, and an additional 12 pairs were discovered, all in the Libberton area. Breeding performance was not accurately recorded in 1984. In Ayrshire, low roost counts implied a rather poor season, and a maximum roost count of 41 in Lanarkshire implied only average breeding success, despite the very clement summer. Climate in the winter range is obviously a very significant factor limiting population, and one may speculate that previous droughts may have been the cause of large decreases reported earlier this century. The present study is continuing, and it is hoped to survey new areas of Lanarkshire in 1985.

IAIN GIBSON

Long term seabird studies on Canna Three visits were made to the island in 1984 during May, July and August, in order to cover the breeding season of most of the seabird species for our monitoring and ringing programme. Manx Shearwater numbers appeared stable (based on our observation burrows) though only 0.59 chicks fledged per egg laid. This was due to poor fledging success possibly related to food shortage. Fulmar numbers remained stable at 498 sites, though still well below the former peak count of 669 in 1977. Shags increased by 17% to a peak count of 1753 nests. Breeding success was also good with 2.02 chicks fledging per pair from our 52 study nests Gulls remained fairly stable with 17 pairs Common Gull, 39 pairs Lesser Black-backed Gull, 72 pairs Great Black-backed Gull and 1089 pairs Herring Gull. The latter had a good breeding season with 81% of nests in study areas producing large chicks. Kittiwakes decreased by over 7% to 914 nests (peak 1982=991 nests). Of the auks, Black Guillemot remained stable with 105 birds counted, but Razorbills and Guillemots showed decreases of 17.6% and 9% in our sample areas. (For Guillemots this decrease followed nine

years of continued increase of between 10 and 16% per annum on average).

During our ringing programme 4461 birds were handled including 2627 Guillemots, 688 Shags, 452 Herring Gulls, 252 Razorbills and 135 Manx Shearwaters. In addition 225 Guillemots and 200 Herring Gulls were colour ringed. Many interesting recoveries were received as a result of the ringing programme. The oiling incident off Tiree in October 1983 resulted in 11 of our Guillemots being recovered (including 5 adults). This is the largest number of recoveries we have had from any one single incident. Sightings of colour ringed birds continued to come in and included one 2 year-old Guillemot and one 3 year-old visiting a breeding colony on Canna, and a 4 year-old bird was found breeding. Five 4 year-old and two 5 year-old Herring Gulls were located in breeding colonies on the island.

Food samples were again collected from adult Guillemots entering breeding colonies and showed a wide variety of fish being brought in. Data from 91 fish collected between 1981 and 1984 showed that Sprats formed 46% of the diet, Sandeels 33% and others (Herring, Pout, Saithe, Whiting and Blue Whiting) 21%.

Finally our Corncrake survey continued. The island's population has dropped from 15 pairs in 1980, 13 1981, 10 1982, 5 1983 to only 2 pairs in 1984. Although a decrease in the amount of actively worked croftland may be partly responsible for this decline, the island would still appear to be capable of holding up to 10 pairs, suggesting that other outside factors may well be responsible.

R. L. SWANN

Breeding Greenland White-fronted Geese In 1979 a four month expedition called Eqalungmiut Nunaat was mounted by the Greenland White-fronted Goose Study from Aberystwyth. This expedition undertook preliminary studies of the feeding ecology, behaviour, numbers and distribution of geese in this area, as well as catching and ringing 96 geese during their flightless period in mid-summer. To date, 63 of these birds have been either seen or shot subsequently, a recovery rate which has given much valuable information on winter site fidelity.

Another four month expedition to the same area was mounted during May-August 1984 with financial support from a large number of conservation and ornithological bodies, including the SOC. With a total of 16 participants, we aimed to carry out a series of integrated botanical, ecological and ornithological projects working from our previous knowledge of the geese in this area. The aims included a thorough census during moult, catching and ringing a further sample of geese, and an investigation of the reasons for the continued poor breeding success of this race of geese. It has been estimated that, on average, only c810 pairs breed successfully each year from a population of c15,000.

1984 was one of the latest springs on record and in late April both Geese and expedition faced deep snow and temperatures down to -20°C . This contrasted strongly with the mild conditions in the same area in 1979. These wintry conditions persisted until 4 June when a warm föhn wind blowing down from the ice-cap brought the thaw and heralded summer. The first geese were seen on 10 May, but feeding flocks were not seen until almost ten days later. A build-up to 180 geese was watched at one, early thawing, lowland site and this flock included a pair of geese marked in Wexford, Ireland the previous February. One of this pair was subsequently shot later in the summer further north, indicating that this flock had included more northerly breeding birds 'staging' until conditions improved. The first nest was found on 6 June and a continuous

study of the incubation behaviour of a pair of breeding geese was started. The nest was watched continuously from a distant hide for a total of 719 hours until the goslings were led away from the nest on 7 July. Already, we have found interesting comparisons with a similar study undertaken in 1979. Arctic Foxes were responsible for the predation of five of the seven nests found; two were caught and radio-tracked to study their movements and activity in relation to goose behaviour. Fox numbers in this area seem to have markedly increased over the last five years, perhaps as a result of the recent decline in Caribou providing abundant carrion.

In July, 88 geese (58 adults, 30 young) were captured whilst flightless and marked with white Darvic rings on their left leg. Several thorough censuses of the 750 km² area led to an estimate of 220-250 birds present. A large number of other birds were ringed by the expedition with significant additions to the national totals of Lapland Buntings, Redpolls, Wheatears and Snow Buntings.

Much botanical work was undertaken throughout the summer, concentrating particularly on food plants important to the geese. An extensive herbarium was collected as an aid to faecal analysis and many vegetation samples taken for nutrient analysis. With nearly 3½ man-years of field work undertaken, a vast amount of information on the ecology of Eqaungmiut Nunaat has been gathered and this is now being analysed by expedition members and others. A full report of this work will be published in due course.

D. A. STROUD

Loch of the Lowes Hide The new hide was completed in late April 1984 and formally opened by His Grace the Duke of Atholl. Despite the fact that the Ospreys failed to nest, some 26,000 visitors made use of the new hide during the summer season. The Scottish Wildlife Trust is most grateful to the SOC for its contribution of £300 towards the overall cost of £12,117.

V. M. THOM

Reviews

The Birdwatcher's Yearbook and Diary 1985 ed. John E. Pemberton; Buckingham Press 1984; 320 pp; £6.95

This latest edition contains the usual assortment of topical articles, reviews and addresses for reserves, observatories, bird recorders and ornithological organisations. It even incorporates foreign information and such valuable extras as tide tables. For the first time it includes a list of Wildfowl Trust count organisers, but also a rather wasteful series of blank pages intended as a diary. It is a pity that the list of previous year's bird journal articles has been omitted. Information can change quickly however, and regularly purchasing this volume is a real time saver. It is also still reasonably priced and remains a good read—Nick Riddiford's article may tempt me to return to Fair Isle soon!

PETER T. BELL

The Oxford Book of British Bird Names by W. B. Lockwood; Oxford University Press; 174 pp; £7.95.

This book, written by a retired professor of philology, is made up in dictionary form, and is much more than a simple listing of provincial bird names. In a few places slightly more cross-references would have been helpful. For example the half-column under *Bittern* makes no

reference to almost a column written under *Bumble*, or to a further half-column under *Mire Drumble*, two more of the many names for this mysterious bird. But this is a minor quibble, and it is a quite fascinating book to browse through.

W. G. HARPER

Bird Island: Pictures from a Shoal of Sand by Lars Jonsson. Translated by David Christie; Croom Helm; 1984; £16.95

Lars Jonsson's work first came to notice here with the publication of four "Penguin Field Guides", now sadly out of print, and "Birds of the Mediterranean" published by Croom Helm. These guides set a new standard in both the accuracy and perceptiveness of their illustrations, drawn from first-hand observation. Now, in "Bird Island" we can see the breadth and vision of this fine artist. His paintings record the brief summer life of a spit of sand in the Baltic—a resting place for migrants, where Avocets and Ringed Plovers raised young and where plants held on to life between wind and waves.

It is a beautiful book, printed with a spaciousness in keeping with the pictures and text. It is infused with subtleties of relationship—between birds and this elemental island; between colour and light; between moments of calm and migratory journeys; and the almost mystical link between nature and the artist himself. Lars Jonsson asks us to see with imagination beyond the base of scientific data. He writes: "let your eye wander over the sand and play over its gentle transitions, from the dry sunlit ivory-white to the brownish-mauve newly wave-washed sand. Different strings of senses are touched; different tones resound and form harmonies". Yes indeed! For the paintings to convey this with such economy and beauty is a touch of genius.

JOHN BUSBY

Robins by Chris Mead, illustrations by Kevin Baker; Whittet Books, 1984; 128 pp; many b & w drawings; £4.95

This is a readable, and unashamedly popular account of one of our best known songbirds. Robins have been the subject of several detailed studies, the results of which are presented here, along with a selection of Robin folklore, including such bizarre events as the nest found in a hanged criminal's skull in 1820. Those who know the author will not be surprised to see extensive use of BTO data, spiced with some more personal experiences, such as the danger to bearded ringers from louse-flies! This is a nice little book, which will be particularly welcomed by those keen to learn more about our common birds without ploughing through the original literature.

STANLEY DA PRATO

The Herons Handbook by James Hancock & James Kushlan, illustrated by Robert Gillmor & Peter Hayman; Croom Helm, 1984; 288 pp; 64 col. pl.; 21 line drawings; 60 maps; £16.95.

The Birds of the Wetlands by James Hancock; Croom Helm, 1984; 152 pp; 116 col photos; 1 map; £13.95.

The Herons Handbook details all 60 known species of Ardeidae. Short reviews of taxonomy, display, feeding and identification are included but most of the book comprises individual species accounts, each with a coloured illustration and distribution map. The book is based on *The Herons of the World* (1978) but the text is updated, revised and substantially improved. The reviews are brief and succinct and the individual accounts are a fair compromise considering so much is published about some species and so little about others. The bibliography, though

comprehensive and up to date, fails because the titles of articles are omitted and one has to deduce the subject by the context of its quotation. The species plates are from the 'Herons of the World', reduced and trimmed. As a handbook I think this book serves its purpose well and is very good value, though useful to few people in Scotland.

The 'Birds of the Wetlands', which describes nine major wetlands of the world including Everglades and Baratpur, is also of limited appeal for Scottish readers. The text is largely travelogue; its merit lies in its sympathies but unfortunately the conservation problems that are the author's concern are mentioned rather than expounded. Moreover the areas themselves are poorly described, there are no maps of individual wetlands and few landscape or habitat photographs. My impression was one of a good picture book, very poorly produced and poor value for money.

MICK MARQUISS

The Atlas of Australian birds by Blakers, M., Davies, S. J. J. F. & Reilly, P. N.; 1984; 738 pp; 767 maps; £45.00.

In recent years many atlases have been produced; this one covers most of a continent and maps all records (between 1977 and 1981) in 1 degree blocks. Each species has a page devoted to it, with a pleasant vignette, text about its distribution and abundance, and with a map showing the squares in which it was seen (open circles) and those in which it was proved breeding (filled circles). Unfortunately the open circles do not distinguish between winter visitors and birds present in summer but not proved breeding, though this is normally referred to in the texts, the latter are, however, a little short to give a clear picture of the distribution of the species. For 38 species separate maps show the distribution before 1901, between 1901 and 1950, and between 1951 and 1977. I wonder how many note books there are gathering dust on shelves, which could be used in such a way to give more quantitative information about changes in bird distribution in Britain? This book is a major achievement in ornithology and I would recommend it to anyone who is interested in bird distribution, Australian birds or fine books.

NIGEL A. CLARK

Coastal waders and wildfowl in winter Edited by Evans, P. R., Goss-Custard, J. D., & Hale, W. G.; Cambridge University Press, 1984; 331 pp; 110 diags; £27.50.

The title is misleading as only two of the 19 papers are about wildfowl and they do not fit easily with the rest of the book, which is a mixture of reviews and papers on individual studies. The three sections deal with: the influence of food resources and of social behaviour on the use of feeding areas and the significance of specific areas in the Palearctic-African flyway populations.

Most of the results reported have already been published in scientific journals and this together with the price (8.3 pence per page!) means that the book is likely to have a very limited market.

If you are interested in waders it is well worth reading—especially if you can borrow a copy from a rich friend.

NIGEL A. CLARK

ITEMS OF SCOTTISH INTEREST Articles and reports on birds in Scotland, mainly on status and distribution. Some biological studies are excluded, as are references from the widely available journals **British Birds**, **Bird Study** and **Ringing and Migration**. Most of these items are available in the Waterston Library for reference. The librarian would

- be glad to receive reprints or copies of papers on any aspect of ornithology.
- Large passage of Skuas off Scotland and Ireland in May 1982 and 1983. D. L. Davenport 1984. *Irish Birds* 2 : 515-520.
- Natural history of Coionsay and Oronsay (in 1984). (15 pp). John and Pamela Clarke.
- Birds and birdwatching on the Uists. Major D. J. R. Counsell RA 1984. *Adjutant* 13 : 58-63. Journal of the Army Bird-watching Society.
- Royal Air Force Ornithological Society visits to the Isle of May in 1983. K. Earnshaw (ed) 1985. *RAFOS Journal* 15 : 45-67.
- Ecology. C. H. Gimingham, D. H. N. Spence & A. Watson 1983. *Proc. Roy. Soc. Edinburgh* 84B, 85-118. In "Two Hundred Years of the Biological Sciences in Scotland". We regret that this paper was not listed earlier.
- Demographic causes and predictive models of population fluctuations in Red Grouse. A. Watson, R. Moss & R. Parr 1984. *J. Anim. Ecol.* 53 : 639-662.
- Effects of food enrichment on numbers and spacing behaviour of Red Grouse. A. Watson, R. Moss & R. Parr 1984. *J. Anim. Ecol.* 53 : 663-678.
- Population studies and conservation of Ospreys in Scotland. R. H. Dennis 1983. In *Biology and Management of Bald Eagles and Ospreys*. David M. Bird (ed) 1983 : 207-214.
- Recruitment of young Rooks *Corvus frugilegus* into breeding populations. I. J. Patterson & E. S. Grace 1984. *J. Anim. Ecol.* 53 : 559-572. A study in Scotland
- Censusing Robins in winter: a test using colour ringed birds. S. R. D. da Prato & E. S. da Prato 1984. *Ornis Scand.* 15 : 248-252. Based on studies at Cousland, East Lothian, Scotland.
- Fourth Islands bird counts in 1984. R. W. J. Smith 1985. *Edin. Nat. Hist. Soc. J.* 1984, 31-32.
- Canna Bird Report* no. 11 (for 1983 and 1984). (18 pp). R. L. Swann & A. D. K. Ramsay 1985. Includes seabird studies, ringing recoveries, and Corn-crake studies
- Grampian Ringing Group Report* no. 4 (covering 1981-83). (116 pp). J. Hardey (ed). 1984. Includes articles on wintering Starlings, the prey of Osprey, the population of breeding Whitethroats, Tawny Owl study, recoveries of Aberdeenshire Guillemots, etc.
- Central and south-west Perthshire Peregrines in 1984. P. Stirling-Aird 1985. (3 pp).
- Argyll Bird Report* no. 1 (including records for 1980-83). (111 pp). C. A. Galbraith (ed) 1985. We welcome this first ever Argyll Bird Report, which includes a 75 pp systematic list, a 27 pp ringing report, and 6 pp about current projects. It is available from Colin Galbraith, 4 Achagoll, Minard, Inveraray, Argyll for £2 plus £1 postage.
- Factors affecting duckling survival of Eiders in northeast Scotland. V. M. Mendenhall & H. Milne 1985. *Ibis* 127 : 148-158.
- Recent changes in the food of young Puffins on the Isle of May in relation to fish stocks. J. R. G. Hislop & M. P. Harris 1985. *Ibis* 127 : 234-239.
- The post-fledging survival of young Puffins in relation to hatching date and growth. M. P. Harris & P. Rothery 1985. *Ibis* 127 : 243-250.

Notices & Requests for Information

Sightings of White-tailed Eagles The number of White-tailed Eagles released from the Isle of Rhum in the Inner Hebrides has now reached 72, with a final ten to be freed in 1985. Each bird is individually marked with a BTO ring and colour rings (although some of these may now have been lost). The last thirty to be liberated were fitted with large patagial wing tags of coloured plastic, and numbered 0-9. Some of the

eagles have now dispersed from Rhum, a few as far as Shetland. Both NCC and RSPB carefully monitor the birds after release but we realise that many birdwatchers may not feel it worth reporting sightings of these birds. Casual records are extremely useful in building up a detailed picture of the White-tailed Eagles' dispersal and survival. We would be pleased to receive any records—place, date, number and approximate age of the birds, what they were doing and any colour marks identified. Please send details to: **John A. Love, NCC, 9 Culduthel Road, Inverness; Roy H. Dennis, RSPB, Landberg, North Kessock, Ross-shire; or Roger A. Broad, RSPB, 6 Birch Road, Killearn, Glasgow.**

John Harrison Memorial Fund This fund was set up to help young people to visit Fair Isle by giving financial assistance towards the cost of travel to the island and accommodation at the Fair Isle Bird Observatory. Applications for a grant are considered by the fund's committee in December, and must be submitted by 31 October. If you will be aged between 15 and 21 during April to October 1986, and are interested in visiting Fair Isle, write for an application form to the **Hon. Secretary, John Harrison Memorial Fund, 21 Regent Terrace, Edinburgh EH7 5BT.**

The Oriental Bird Club has been formed in response to an increased interest in the birds of the region. The Club aims to encourage interest in the birds of the Oriental region and their conservation, to liaise with and promote the work of existing regional societies, and to collate and publish material on Oriental birds. Membership costs £6.00 and members will receive annually two bulletins and a journal, *The Forktail*. Further details and membership application forms are available from **The Secretary, The Oriental Bird Club, c/o The Lodge, Sandy, Beds. SG19 2DL.**

Meeting on angling and wildlife A joint Scottish Freshwater Group and British Ecological Society (Freshwater Ecology Group) meeting, concerned with the impact of freshwater angling on wildlife, will be held at the University of Stirling on the 31st October 1985. Papers will be presented by invited speakers. The number attending the meeting will be limited to 250; places will be allocated on a first come, first served basis. Details are available from Dr Angela K. Turner, Dept. of Zoology, Glasgow University, Glasgow G12 8QQ.

The Scottish Ornithologists' Club

SUBSCRIPTIONS

Increases in subscription rates were approved at the 48th AGM of the Club on 3 November 1984. The new rates, which apply to new members from 1 July 1985 and to existing members from 1 October 1985, are as follows:

Adult	£10.00
Junior	£4.00
Family	£14.50
Life	single £200.00; family £300.00
Pensioner	single £6.00; family £8.50

A new subscription renewal form is enclosed with this issue of the journal. Club members will greatly help Pat Webster, our membership secretary, by completing and returning the form now.

Banker's Order It is also a great help if subscriptions are paid by bank standing order. Club members who already pay by Banker's Order are asked to complete the form with the new subscription rate and return it as soon as possible.

Covenant The Club is recognised as a charity by the Inland Revenue. Members who pay income tax can greatly increase the value of their subscriptions to the Club by covenanting. On the new adult membership subscription of £10.00, the Club can reclaim £4.29 from the Inland Revenue! Please, if you do not do so already, make your subscription worth more by covenanting. Club members who already covenant their subscriptions do not need to sign a new form.

Important request All those members who pay by Banker's Order will find a letter enclosed with this issue of the journal. Do please read the letter and complete the banker's order form as requested and return it in the reply paid envelope as soon as possible. This will be a tremendous help to Pat Webster in tackling the considerable administrative work involved with the subscription increase.

BRANCH MEETINGS

The dates for the first meetings of Branches next winter are as follows :

- September 16—Aberdeen, Borders, Glasgow
- 17—Edinburgh, Inverness, Stranraer
- 18—Dumfries, St Andrews, Thurso
- 19—Dundee, Stirling
- 25—Ayr
- 26—New Galloway

The Dundee and St Andrews Branches have new venues—Dundee members will be meeting in the Chaplaincy Centre, University of Dundee and St Andrews members will be meeting in Rusack's Hotel, St Andrews.

ANNUAL CONFERENCE & AGM

The 38th annual conference and 49th AGM of the Club will be held during the weekend 1-3 November 1985 in the Marine Hotel, North Berwick, East Lothian. The conference theme is "Scottish Forestry & Birds" with its implications for conservation. The conference programme, booking form and AGM agenda will be sent to members with *Scottish Birds* 13(7) early in September.

THE SOC BIRD BOOKSHOP

The new Spring Supplement with details of new titles, special reductions, sale books and news of forthcoming books is available free from the Bookshop. Remember, all books are sent post free to Club members, however large or small the order and however far away you live.

BOOKSHOP STAFF

Peter Bell left in March to take up a post with the National Trust as an assistant warden on the Farne Islands. Isabelle Abu-lilish moved to Bristol in April when her husband got a new job. We were very sorry to see them go, but we wish them all the very best in their new homes. David Hunter, whose family home is in Perth, joined the Bookshop staff in April as bookshop assistant.

LOCAL RECORDER

We apologise to Ian Andrews for omitting Midlothian from his area of responsibility in the last issue of *Scottish Birds* 13(5). The correct entry should read :

West Lothian, Midlothian, Forth Islands (except the Isle of May) Ian Andrews, 36 Lutton Place, Edinburgh EH8 9PG.

Recent Reports

These notes include unchecked reports and are not intended as a permanent record, nor will they be indexed. Please send reports to Pete Ellis, Houss, East Burra, Shetland, via local recorders at the end of March, June, September and December. The period January to March is covered here.

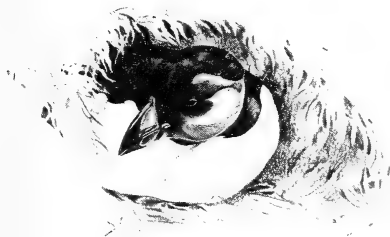
The winter was relatively mild, particularly in the northern isles, in sharp contrast to England and continental Europe. This resulted in influxes of a number of species, especially wildfowl.

The Whalsay **White-billed Diver** was still in residence, but 2 **Great Crested Grebes** in Shetland were more unusual. A single **Red-necked Grebe** was on the Ythan, whilst 3 were off the Ayrshire coast. The **Black-browed Albatross** returned to Unst on 10th March and a **Sooty Shearwater** was found dead in Orkney in January. A **Bittern** in Shetland in January was later found dead; another was at Loch Spynie. Fifteen **Bewick's Swans** were at Tynninghame where there were also 4 **Bean Geese**, with 2 at Loch of Strathbeg, 3 on the Ythan and one on Whalsay. An influx of European **White-fronted Geese** brought 8 to Shetland, at least 120 to Aberdeenshire and 24 to Tynninghame. A **Snow Goose** was at Tain and 2 were in Aberdeenshire and East Lothian. **Brent Geese** were seen from Shetland to Fife, most were pale-bellied with totals of 19 in Aberdeenshire and 16 on the Eden Estuary. A **Green-winged Teal** was in Orkney where the female **Red-crested Pochard** was still present. Drake **Ring-necked Ducks** were in Shetland, at Loch Insh and in Ayrshire. The usual **King Eider** was at Golspie and 3 **Surf Scoters** were in Spey Bay, with another at Gosford. A drake hybrid **Goldeneye x Smew** was at Inverness with a drake **Smew**; there was quite an influx of this species with 4 in Shetland, 3 in Orkney, 12 at the Loch of Strathbeg, plus 10 others in Aberdeenshire and 4 in East Lothian. **Goosanders** were also in good numbers, Shetland had 15, Orkney 7 and 197 were on the Loch of Skene. Two **Buzzards** wintered in Shetland along with 2 **Rough-legged Buzzards**, with two more in Orkney. The first **Osprey** was back in the Highlands on 31st March. 10 **Jack Snipe** were at Fraserburgh in January. Single **Mediterranean Gulls** appeared at Aberdeen, Prestwick, Irvine and Musselburgh. Three **Little Gulls** were off Girdle Ness in January. **Ring-billed Gulls** turned up in Shetland, Orkney and Musselburgh, with 2 in Ayrshire. **Iceland Gulls** were very scarce, with only 3 in Shetland, 2 in Orkney and 4 in Aberdeen, whilst Shetland had 13 **Glaucous Gulls**, Orkney only had 2 and Fraserburgh a maximum of 4. The **Thurso Ross's Gull** remained until early February when another visited Ayr. Single **Sandwich Terns** again wintered on the Forth. A dead **Brünnich's Guillemot** was found in Shetland, in a plastic bag full of ordinary ones. The bag had been sent up from Orkney for the birds to be measured. One up to us, I think! Twenty three **Little Auks** were seen in Yell Sound in mid January. Ten **Long-eared Owls** wintered in Shetland.

A **Woodlark** was on Fair Isle and a **Water Pipit** at Barns Ness in March. Aberdeenshire had a total of 77 **Waxwings**, but 7 in Dingwall mostly ended up on the wrong side of a **Sparrowhawk**. **Black Redstarts** were in Holyrood Park and at West Barns, with 2 at Troon and another at Turnberry. The first **Wheatear** was at Achnasheen on 12th March, whilst the **Desert Wheatear** stayed at John O' Groats until 17th January before briefly visiting Orkney. An **Arctic Redpoll** was in the Lammermuirs and a Northern **Bullfinch** in Shetland in January, whilst 6 **Lapland Buntings** wintered at Musselburgh.

PETE ELLIS

12th October 1984



THE PUFFIN

by M. P. HARRIS

illustrated by Keith Brockie

Dr Mike Harris is an international authority on *Fratercula arctica*, the Atlantic or Common Puffin, and the book reflects his great knowledge of the species. His enthusiasm for this most appealing of seabirds is equally evident and he succeeds in that difficult task of combining readability with scientific accuracy and detail.

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- Cramp (S.) et al (eds) **Handbook of the Birds of Europe, the Middle East & North Africa** 1985; B.W.P. vol IV - Terns to Woodpeckers 968 pp, 58 col pi, over 500 line illus, 78 maps, 26 x 21 **£60**
- Eggeling (W. J.) **The Isle of May** 1960 (1985); 280 pp, b/w photos & drgs, map, checklist, 22 x 15 **£13.50**
- Fisher (D.) & Gantlett (S.) **Checklist of the Birds of... Great Britain; Greece; Isles of Scilly; Israel; Majorca; Morocco; Spain; The Gambia**: all 1985; 21 x 14 **each 75p(s)**
- Freethy (R.) **British Birds in their Habitats** 1985; 224 pp, 124 photos, 60 line drgs, 23 x 16 **£9.95**
- Heath (J.) et al **Atlas of Butterflies in Britain & Ireland** 1985; 158 pp, many maps **£17.95**
- Hosking (E.) & Kear (J.) **Eric Hosking's Wildfowl** 1985; 160 pp, 120 col & 25 b/w photos, 28 x 21 **£14.95**
- Howarth (T. G.) **Colour Identification Guide to Butterflies of the British Isles** 1985; 151 pp, many col pl, 24 x 19 **£14.95**
- Rogers (A.) & Curry (N.) (eds) **The Countryside Handbook** 1985; 128 pp, 25 x 19 **£5.95(s)**
- Sinclair (I.) **Ian Sinclair's Field Guide to the Birds of Southern Africa** 1984; 368 pp, maps, 900 col photos, 21 x 15 **£9.95(s)**
- Skinner (B.) **Colour Identification Guide to Moths of the British Isles** 1985; 267 pp, many col pl, over 1600 specimens illus, 24 x 19 **£20**
- Smithers (R.) **The Mammals of the Southern African Subregion** 1983; 736 pp, 30 col pl, over 300 b/w illus, over 300 maps, 30 x 22 **£45**

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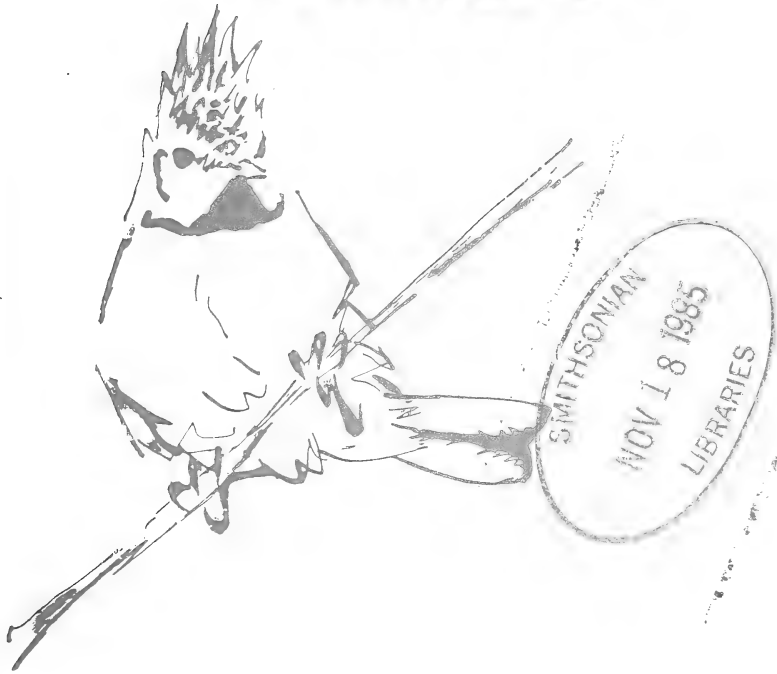
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Vol 13 No. 7

Autumn 1985



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Autumn 1985

Edited by V. M. Thom, assisted by S. R. D. da Prato
and R. W. Furness

The breeding birds of agricultural land in south-east Scotland

S. R. D. da PRATO

Most assessments of farmland bird populations are based on rather small study areas, and most of the published data relate to England, where farming conditions are very different from those in Scotland. The study reported here is of particular value on account of the large area covered and the fact that it was carried out in one of the most intensively farmed arable districts. What is needed now is a comparable study from the more pastoral west, where hedges remain a significant feature of the landscape.

Farmland covers by far the largest proportion of lowland Britain. Despite increasing concern over the effects of hedge-row removal and field drainage, data on the wildlife actually existing on farmland are remarkably sparse for many parts of Britain. Most work on farmland bird populations has been carried out in southern England (eg Moore *et al* 1967, Williamson 1967, Wyllie 1976) though recently the wader populations of various types of agricultural land in Scotland have been surveyed (Galbraith *et al* 1984) and a study aimed at quantifying the effects of changes in land use on birds in lowland Scotland has been commissioned by the Nature Conservancy Council (Dr P. Shaw pers. comm.).

Since most British passerines are of woodland origin, hedges and shelterbelts are often regarded as refuges for species which could not survive on farmland without them (Pollard *et al* 1974). However bird numbers on farms do not simply reflect the length of hedgerow; for example the removal of a third of the internal hedges from a farm in Norfolk resulted in no significant reduction in overall bird numbers, though species composition did change, suggesting that some hedgerows may be of little value to many species (Bull *et al* 1976).

Studies of Great Tits (Krebs 1971) and Wrens (Williamson 1969) indicate that hedges are colonised by these species only when territories are not available in nearby woods. Furthermore, past and present regional differences in agricultural practice in Britain mean that farmland does not necessarily provide the same habitat for birds throughout the country. In Scotland the enclosure movement came much later than further south, being largely the work of "improving" landowners in the 18th and early 19th centuries, with the result that fields tend to be larger and hedges less varied in composition than in southern England, where many hedges are of greater antiquity, sometimes dating back to the original native woodland (Millman 1975, Pollard *et al* 1974).

Earlier work in Midlothian had cast doubt on the value of most hedges in the area, at least to insectivorous species (da Prato & da Prato 1977 and in prep.); between 1979-82 census work on 1622ha (4008 acres) in East and Midlothian confirmed that warblers were scarce or absent in hedgerows, though relatively common in other habitats including woodland and, rather more surprisingly, former railway lines and colliery tips. In 1982 other songbirds were also censused in parts of the study area. Although this work confirmed that warblers were useful indicator species of habitat quality for songbirds, it also emphasised that a census of all bird species over a large area would be much more time consuming than a census limited to warblers which sing vigorously after arrival in spring and readily respond to tape recordings of their song (da Prato unpubl.). However a large scale census is particularly valuable since the problems of territories which overlap site boundaries are minimized and the densities obtained are much more likely to reflect the true status of a species than those extrapolated from small plots (Marchant 1981).

In 1984 I carried out a survey of 1735ha (4287 acres) of predominantly agricultural land in East and Midlothian. This paper reports the results and discusses the relative conservation value of the different habitats found within the study area, one of the largest ever surveyed by a mapping method.

The study area

The study area lies on the boundary of East and Midlothian at an altitude of 50 to 160m above sea level (Fig. 1). Most (91%) of its 1735ha is farmland of which 1414ha was arable land in 1984, principally devoted to cereal production, with smaller areas of temporary (29ha) and permanent (83ha) grass. The study area contains three small woods totalling 27ha and made up of a variety of native and exotic tree species, four shelterbelts and a variety of hedges and tree lines totalling 61.9km. At least 18.3km of field boundary, probably mostly of hedge, shown

on older (pre-1945) OS maps have been removed. As a result many of the arable fields are large (up to ca 30ha). The area also contains several abandoned collieries with associated bings (spoil heaps) and sidings and 9km of disused railway line, closed for at least 20 years, which served the collieries as well as carrying passenger traffic. Some 22.5km of class B and minor roads run through the area as well as 13.2km of farm track and footpath. One village and 16 farm steadings lie within the study area but were excluded from the census.

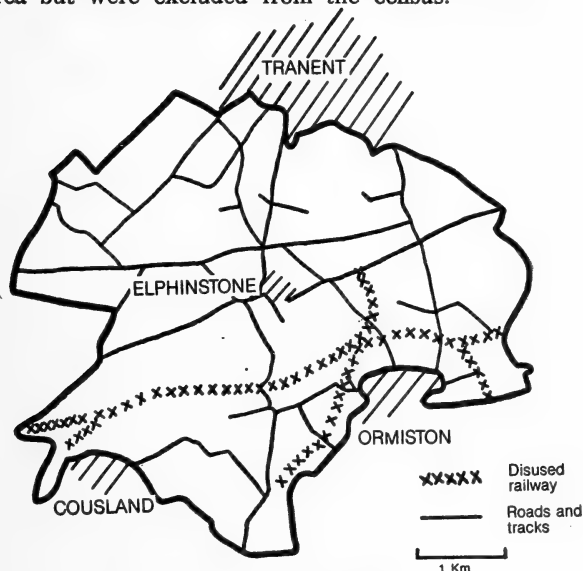


Fig 1. The study area

Methods

Birds were censused by a mapping method (see review and further references in Oelke, 1980) similar to that used by the British Trust for Ornithology (BTO) for its Common Bird Census (CBC) monitoring scheme (Marchant 1983). Territory mapping has been shown to be more efficient than other census methods in Scottish woodland (Moss 1976).

Most census visits started at dawn, though all areas were also visited in the evenings to check for crepuscular species such as Woodcock and owls. The size of the census area meant that it had to be sub-divided; morning visits were made to each sub-division at ca.10-day intervals. Starting points were changed between visits to ensure that every part of the study area was censused at least once immediately after dawn when song is at a peak. Censusing continued until late morning provided weather conditions (wind Beaufort Scale 4 or less and precipitation absent or, at most, light drizzle) did not deteriorate. Weather conditions were unusually favourable in 1984 and were a major factor in allowing a single observer to cover such a large area. Most areas were censused at least ten times but some between-field hedges known from previous experience to hold few birds were censused only six times. As a check, several such hedges were walked ten or more times in 1984. The extra visits did not establish more territories probably because so few birds

were present (Table 3) and the hedges were so narrow that birds were easily disturbed and therefore recorded even when not singing. A bicycle was used when censusing some road and trackside hedges though these hedges were also walked. The census period was from late March to early July. Early season (late March-mid April) visits proved useful with sedentary species eg. Dunnock, whose song output was reduced later in the season. Visits after mid-June proved of limited value except for some late migrants eg. Spotted Flycatcher.

All species which showed evidence of breeding in the area were censused except for feral pigeons and House Sparrows. Woodpigeons could not be censused accurately but an estimate was made of breeding numbers from flocks seen in spring; it is not known how such an estimate compares to the true population. Except on pasture, and arable fields early in spring, which could be walked through, field species were censused by scanning from field edges.

Habitat features, including field crops and the presence of scrub or marsh, were noted on visit maps in the field. Hedges were classified by height (greater or less than 2m) and the presence of trees was noted. When trees made up over 50% of a hedgerow's length it was classed as treeline; the presence or absence of shrub understorey was also recorded. Tree lines with two or more rows of trees were classed as shelterbelts. Ditches were recorded only if capable of holding water for at least part of the season, since many ditches were no longer maintained and gradually infilling. The widths of representative stretches of hedge and tree-line were measured at ground level.

Areas were calculated from Ordnance Survey maps with a planimeter, to allow bird densities/km² to be determined for the three major habitats covered ie. farmland, woodland and former industrial land, as well as a small (10.4ha) area of scrub and young woodland known to contain a particularly high density of breeding birds and under consideration as a Site of Special Scientific Interest and nature reserve. Bird densities are expressed as territories/km² to facilitate comparisons with other studies. However it should be borne in mind that densities derived from small areas of favourable habitat can be misleadingly high, for example when birds that hold territory and nest in a wood use areas outside the wood for feeding. This problem is particularly acute with shelterbelts and hedgerows since many birds that nest and sing in hedges feed elsewhere (Davis 1967 and pers. obs.).

Species maps were prepared which allocated each territory to a specific habitat. Territories overlapping habitat types were allocated to the habitat in which the majority of registrations occurred; when equal numbers of registrations occurred in two habitats the territory was allocated to the habitat with a majority of song registrations.

Results

The study area held 2980 territories of 61 species at an overall density of 172/km² (Table 1). This figure does not include House Sparrows or feral pigeons, which both bred in the area, or Rooks, Swifts and hirundines (except for a few Swallows) which fed in or over the census area but nested elsewhere. Birds were not evenly distributed throughout the study area. Densities reached over 2000/km² in the potential nature reserve, which gives an indication of how many birds a small area can support if the habitat is suitable. Densities

Table 1 The numbers of territories censused in 1735ha of predominantly agricultural land in Lothian, S.E. Scotland, in 1984

The numbers of territories are shown and, in brackets, the equivalent density per square kilometre. Densities under one territory/km² are divided into those under 0.5/km² (<0.5) and those above 0.5/km² but less than one territory/km² (<1).

	Farmland 1586.6ha	(1) Woods 26.9ha	Derelict land 111.4ha (2)	Scrub (3) Nature Reserve 10.4ha	Overall
Mallard	8(<1)	4(15)	5(4)	1(10)	18(1)
Sparrowhawk	1(<0.5)	2(7)	0	0	3(<0.5)
Kestrel	3(<0.5)	1(4)	1(<1)	0	5(<0.5)
Red-legged Partridge (4)	1(<0.5)	0	1(<1)	0	2(<0.5)
Grey Partridge	75(5)	1(4)	25(22)	4(38)	105(6)
Pheasant	6(<0.5)	6(22)	5(4)	4(38)	21(1)
Moorhen	1(<0.5)	0	1(<1)	0	2(<0.5)
Oystercatcher	7(<0.5)	0	0	0	7(<0.5)
Ringed Plover	1(<0.5)	0	0	0	1(<0.5)
Lapwing	21(1)	0	0	0	21(1)
Snipe	3(<0.5)	0	0	0	3(<0.5)
Woodcock	0	2(7)	0	0	2(<0.5)
Curlew	2(<0.5)	0	0	0	2(<0.5)
Redshank	1(<0.5)	0	0	0	1(<0.5)
Stock Dove	16(1)	5(19)	6(5)	1(10)	28(2)
Woodpigeon (5)	()	200 estimate)	22(212)	222(13)
Collared Dove	1(<0.5)	2(7)	11(10)	2(19)	16(<1)
Cuckoo	1(<0.5)	0	0	0	1(<0.5)
Tawny Owl	2(<0.5)	3(11)	0	1(10)	6(<0.5)
Great Spotted Woodpecker	0	1(4)	0	0	1(<0.5)
Skylark	188(12)	0	3(3)	0	191(11)
Swallow	2(<0.5)	0	12(11)	0	14(<1)
Meadow Pipit	3(<0.5)	0	3(3)	0	6(<0.5)
Grey Wagtail	0	0	1(<1)	0	1(<0.5)
Pied Wagtail	0	0	8(7)	0	8(<0.5)
Wren	20(1)	28(104)	18(16)	4(38)	70(4)
Duncock	174(11)	27(100)	73(66)	21(202)	295(17)
Robin	43(3)	30(112)	38(34)	11(106)	122(7)
Whinchat	0	0	2(2)	0	2(<0.5)
Blackbird	133(8)	34(126)	66(59)	21(202)	254(15)
Song Thrush	81(5)	23(86)	27(24)	15(144)	146(8)
Mistle Thrush	3(<0.5)	2(7)	3(3)	0	8(<0.5)
Grasshopper Warbler	4(<0.5)	0	2(2)	0	6(<0.5)
Sedge Warbler	16(1)	2(7)	43(39)	8(77)	69(4)
Lesser Whitethroat	4(<0.5)	4(15)	9(8)	3(29)	20(1)
Whitethroat	47(3)	2(7)	34(31)	6(58)	89(5)
Garden Warbler	0	4(15)	8(7)	2(19)	14(<1)
Blackcap	2(<0.5)	7(26)	2(2)	3(29)	14(<1)
Chiffchaff	0	2(7)	0	1(10)	3(<0.5)

	Farmland 1586ha	(1) Woods 26.9ha	Derelict land 111.4ha	(2) Scrub (3) Nature Reserve 10.4ha	Overall
Willow Warbler	53(3)	37(138)	76(68)	17(163)	183(11)
Goldcrest	3(<0.5)	21(78)	0	0	24(1)
Spotted Flycatcher	5(<0.5)	6(22)	2(2)	3(29)	16(<1)
Long-tailed Tit	0	1(4)	0	0	1(<0.5)
Coal Tit	5(<0.5)	9(33)	0	0	14(<1)
Blue Tit	41(3)	28(104)	20(18)	4(38)	93(5)
Great Tit	21(1)	15(56)	11(10)	2(19)	49(3)
Treecreeper	0	2(7)	0	0	2(<0.5)
Magpie	0	0	1(1)	0	1(<0.5)
Jackdaw	12(<1)	3(11)	4(4)	3(29)	22(1)
Crow	19(1)	5(19)	7(6)	2(19)	33(2)
Starling	51(3)	9(33)	22(20)	2(19)	84(5)
Tree Sparrow	29(2)	2(7)	12(11)	4(38)	47(3)
Chaffinch	36(2)	40(149)	53(48)	19(183)	148(9)
Greenfinch	14(<1)	12(45)	21(19)	6(58)	53(3)
Goldfinch	2(<0.5)	6(22)	9(8)	2(19)	19(1)
Linnet	41(3)	6(22)	39(35)	15(144)	101(6)
Redpoll	15(<1)	13(48)	32(29)	9(87)	69(4)
Bullfinch	3(<0.5)	9(33)	6(5)	3(29)	21(1)
Yellowhammer	86(5)	14(52)	56(50)	12(115)	168(10)
Reed Bunting	8(<1)	2(7)	15(13)	1(10)	26(1)
Corn Bunting	7(<0.5)	0	0	0	7(<0.5)
Total territories	1321	432	793	234	2980(6)
Total density	(83)	(1606)	(712)	(2250)	(172)
Total species	51	43	44	34	61

Notes (1) farmland included fields, hedgerows and shelterbelts but excluded farm gardens and yards.

(2) disused railways, sidings and coal bings.

(3) an area of regenerating scrub, some mature trees, and a particularly high population of songbirds, under discussion as an S.S.S.I. and S.W.T. nature reserve.

(4) Red-legged Partridge may have included Chukar hybrids.

(5) based on the flocks seen at the start of the season.

(6) the grand total is higher than the sum of the four habitat totals due to the inclusion of the estimate of 200 Woodpigeon territories.

were also high (1606/km²) in the three small woods, all of which provided a varied habitat with both mature and young trees and shrubs, creepers and herbs. Former industrial land had an overall density of 712 territories/km². However this category included areas not yet colonized by plants, especially the former railway tracks, the steeper bings and areas recently bulldozed. The lowest density by far was found on farmland with 83 territories/km² which is over 25 times less than in the rich scrub area; some individual farms without shelterbelts,

tall hedges or areas of scrub would have even lower densities. More species were recorded on farmland but that is almost certainly an artefact, since farmland occupied over 90% of the study area.

Only Skylark (12) and Dunnock (11) exceeded ten territories/km² on farmland with Blackbird the third most common species (8), followed by Grey Partridge, Song Thrush and Yellowhammer (5 each). Woodpigeons should possibly be included here, though Starlings and House Sparrows, which are also difficult to census, probably should not. The other 44 species were at densities below five territories/km²; 30 of them did not reach one territory/km². By contrast the woodland and scrub held several passerine species at over 100 territories/km² while even the "derelict" land held 21 species at densities of 10 or more/km², 19 more than on farmland.

Table 2 The number of territories in different field types. (Densities/km² are shown in parentheses)

	Arable 1413.8ha	Short term grass 28.5ha	Permanent pasture 82.6ha	Total fields 1524.9ha
Mallard	0	0	3(4)	3(<0.5)
Partridges	66 ³ (5)	0	10(12)	76 ³ (5)
Oystercatcher	1(<0.5)	2(7)	4(5)	7(<0.5)
Ringed Plover	1(<0.5)	0	0	1(<0.5)
Lapwing	13(<1)	2(7)	6(7)	21(1)
Snipe	0	0	3(4)	3(<0.5)
Curlew	2(<0.5)	0	0	2(<0.5)
Redshank	0	0	1(1)	1(<0.5)
Stock Dove	0	0	1(1)	1(<0.5)
Woodpigeon	0	0	2(2)	2(<0.5)
Skylark	176(12)	4(14)	8(10)	188(12)
Meadow Pipit	0	2(7)	1(1)	3(<0.5)
Corn Bunting	7(<0.5)	0	0	7(<0.5)
Other songbirds	0	0	69 ⁴ (84)	69 ⁴ (5)
Total territories	266(19)	10(35)	108(131)	384(25)
Total species	8	4	27	31

- Notes**
- 1 Birds from surrounding hedges are not included in this table.
 - 2 Permanent pasture invariably included areas of scrub, and/or marsh and damp ground.
 - 3 Includes one Red-legged Partridge.
 - 4 Made up of 17 species which all nested in scrub or marsh vegetation.

Although the overall bird density was low on farmland there was considerable variation in the number and variety of birds found in different habitats within the farms. Table 2 shows details of birds recorded in fields, excluding birds which nested in surrounding hedges. The few grass fields held a

greater variety (27 species) of birds than arable land (8 species) although the latter covered a much greater area. Skylarks and Partridges were common on both arable and grassland; most other field species were much more likely to occur on grass. Furthermore, many of the waders that nested in arable fields chose fields adjacent to damp grassland. The only species found on arable land but not on grass were a few Corn Buntings, two Curlews and single Red-legged Partridge and Ringed Plover territories. Permanent grassland also held a variety of songbirds, since two fields contained areas of scrub, while a third held a small marsh which attracted species like Grasshopper Warbler and Reed Bunting as well as the only Snipe found in the study area. Perhaps it should be stressed that in the study area permanent grass always occurred in conjunction with damp ground and/or scrub. Fields sown with grass for short term leys did not have these features, and were markedly poorer in bird species, though they did hold birds at nearly twice the density of arable land.

Table 3 compares the value of different types of field boundary to songbirds other than Skylarks and Corn Buntings. Numbers varied from under three territories/km in low hedges between fields to around 30 territories/km in field treelines with an understorey. More birds were found in hedges and treelines along roads and tracks than in comparable features separating fields, probably since the former were usually wider. Several road or trackside hedges and treelines held songbirds at 30-40 territories/km; their widths ranged from four to 18m. Shelterbelts, which were wider still, averaged 79 songbird territories/km which would be equivalent to a density of nearly 2000/km², although it is again stressed that densities derived from such narrow features can be misleadingly high. The presence of a ditch (few of which held permanent water) alongside a hedge seemed to serve chiefly to increase the amount of herbaceous vegetation; this in turn tended to increase the numbers of songbirds, rather than the number of species, though there was considerable variation due to the management of the ditches and adjacent hedges. The few ditches that did hold water for long periods also held a few Mallard and a single Moorhen territory.

Although shelterbelts and the larger types of hedge held a variety of songbirds these features were relatively uncommon as field boundaries. The majority (61%) of hedges were mechanically cut to well under 2m high each year, held an impoverished ground flora, except on some roadside verges, and supported a limited range of songbirds at five territories or less/km of hedge.

Table 3 Songbird numbers in hedgerows and shelterbelts

Between fields	Total length (kms)	Range of widths in mtrs.	Number of territories	Number of species	Territories per km.
1 Low hedge	19.41	1.2-3.0	54	6	2.78
2 Low hedge and ditch	1.42	4.9-5.5	7	5	4.93
3 Low hedge and scattered trees	4.10	2.5-5	49	11	11.95
4 Treeline without understorey	1.42	3-5	13	7	9.15
5 Treeline with understorey	1.42	4-8.6	41	14	28.87
6 Treeline with understorey and ditch	2.75	9.1-18.2	90	14	32.73
Along tracks and roads					
1 Low hedge	17.08	2-9.4	86	8	5.03
2 Low hedge and ditch	2.20	9-15.8	39	10	17.73
3 Low hedge and scattered trees	2.43	2.7-8.0	32	10	13.17
4 Tall hedge	1.46	4-15.0	58	12	39.73
5 Tall hedge and scattered trees	2.69	4-17.3	88	16	32.71
6 Treeline with understorey	3.58	5-17.8	141	20	39.38
Shelterbelts	1.97	18-85	156	24	79.19

Notes (1) Combinations not shown in the table eg. tall hedge between fields were either not found in the study area or occurred so infrequently as to give unrepresentative samples.

(2) All species of passerines are included except Skylarks, Corn Buntings, House Sparrows and corvids.

Discussion

In this study overall bird numbers on farmland were well under the 100-400 pairs/km² quoted by Williamson (1967) for a range of farms in England. This could result either from bird numbers being generally lower in Scotland or because the habitats available were poorer in the study area than on the English farms. Some species were certainly scarce or absent. Only seven male Corn Buntings were located in an area that held ten in 1982 confirming the species' decline in one of its few remaining strongholds in the Lothians (Brown *et al* 1984). By contrast Lesser Whitethroats may be increas-

ing (da Prato 1980) though they are still scarce by southern standards. The absence or scarcity of Barn Owl, Jay and Magpie is not typical of the Lothians (Lothian Bird Reports) though not of other Scottish regions (Sharrock 1976). The relatively low numbers of cold sensitive species eg. Wren and Long-tailed Tit in Lothian in 1984 is linked to recent cold winters (pers. obs.), while conditions in Africa adversely affected Whitethroats and Sedge Warblers throughout Britain (BTO provisional CBC data). Quail were absent in 1984 though the species has been recorded in small numbers in parts of the study area in seven of the ten preceding years. Moorhen were surprisingly scarce though the species seems to have suffered a population collapse elsewhere in the Lothians with feral mink a possible, though controversial, cause (Alexander 1983, Brown 1984).

However, the relative scarcity of certain species has to be set against the overall densities found in scrub and woodland, which are as high as found anywhere in Britain (see Williamson 1970, Moss 1978 and Wilson 1978 for comparative figures from a range of wood and scrub habitats) and the numbers found in the better hedges and treelines which are comparable to those quoted by Moore *et al* (1967) for overgrown English hedges, suggesting that it was the poor quality of much of the habitat that was responsible for the low overall bird density found on farmland in this study. This raises the question of how representative CBC plots are, since they are chosen by their volunteer observers who are unlikely to pick uninteresting farms (though see discussion of these problems in Fuller *et al* 1985). One farm in Suffolk, which supported birds at ca700 pairs/km² (Benson & Williamson 1972) contained several areas of wood and scrub, while the few farmland CBC plots in Scotland include one with ca10% of its area in deciduous woodland and an East Lothian farm which includes coastal dunes and scrub (Dr P. Shaw pers. comm.).

The large fields and low, clipped hedges which made up most of the 1735ha study area seem to offer suitable conditions to a very limited range of species. Arnold (1983) found that similar hedges in Cambridgeshire held no breeding tits, warblers, Robins or Wrens while Osborne (1984) found relationships between hedge size and complexity and bird numbers on a Dorset farm where most hedges corresponded to the more substantial ones found in this study.

In a survey of a 5.37km² English parish Wyllie (1976) found densities of 83-123/km² on farmland but up to 929/km² in a village where many of the birds were concentrated on common land, orchards and mature gardens; newer gardens held few

birds. Villages and farm buildings were not included in this study. They would have added House Martins and extra Dunnocks and Blackbirds but previous experience had shown that they held very few warblers and relatively few finches. Although built-up areas can hold many birds (Simms 1975) many modern housing areas typically hold only a few birds of a limited range of species (da Prato in prep.). In any case bird numbers in villages should not be allowed to influence estimates of farmland populations.

Studies of hedgerow characteristics throughout East Lothian (Tozer & Taylor 1979) indicate that most hedges in the district, and probably in many other arable farming areas, are similar to the low, clipped thorn hedges which seem to be of such limited value to most birds. These findings lend weight to Murton and Westwood's (1974) opinion that "hedgerows appear to be sub-optimal habitats which have become a red herring so far as the real issues affecting the welfare of birds in Britain is concerned". The point is worth stressing since popular books on conservation (eg. Shoard 1980, Pye-Smith & Rose 1984) continue uncritically to attribute a value to "hedgerow" of all types, an attitude which could prove harmful if it diverts attention from more valuable habitats*. In practice the most useful hedges are most likely to occur along roads, tracks or streams where there is less pressure to remove them. Many roadside hedges would hold more birds if adjacent verges were cut less frequently allowing the ground flora to develop. This would also encourage a variety of wildflowers and save money. A few tall hedges and shelterbelts will support many more songbirds than many small hedges between fields, and would have the added attraction for the farmer of facilitating cultivation and providing Pheasant cover.

The only species which might suffer from further removal of poor quality hedges would be the Grey Partridge, though this species' nest site requirements can be met by unploughed areas without woody plants, provided cover is sufficient (Potts, 1980). Although Skylark was one of the commonest field species in this study, the 12/km² density recorded is low compared to the 48-67/km² found on the nearby natural grasslands at Aberlady Nature Reserve (P. Gordon, pers. comm.) or the densities of up to 56/km² in NW England where Skylarks were found to prefer grassland to arable fields (Robson & Williamson, 1972). A marked difference in wader

*Footnote : unfortunately this is happening to two of these fields at the time of writing.

numbers between arable and unimproved pasture has been found throughout Scotland (Galbraith *et al* 1984). The few permanent grass fields which remained in the study area stood out since they were all relatively small remnants of sloping or damp ground unsuitable for cultivation. They are clearly of higher conservation value than most hedges but only provided they do not suffer scrub clearance or drainage (cf Shrubb 1970)*.

The relatively high bird density found in the woods compares with ca1400/km² in the best western oakwoods (Williamson 1974) and is higher than the ca800/km² in broadleaved Scottish woods without understorey (Williamson, 1974). Although spruce and larch had been planted in parts of the three woods censused, the nature of the ground and the relatively small size of each wood meant that there were opportunities for native shrubs, creepers and herbs to develop giving all the woods a complex structure. Moss (1978) recorded a density of 1600/km² in mixed woodland compared to 200 to 500/km² in even-aged conifer monocultures. These data support the view that structural diversity in woodland is at least as important as species composition.

Perhaps the most interesting finding from this study was the ornithological potential of what is often termed "derelict land". A fuller account of the birds of disused railways and coal bings will be published separately but the following points are appropriate here. Such land, although still below its full potential in many places, already provides better habitat for birds than many farm hedges and is less likely to be converted to arable land or removed than hedges for economic reasons. The scrub that develops on derelict land is particularly important for species such as Whitethroat, Linnet and Yellowhammer, which are scarce in mature woodland, and for which many modern hedges now seem inadequate.

Railways are particularly valuable since they do not require the site work that some bings do for safety reasons, and they have the advantage that they can cater for a variety of recreational needs besides wildlife conservation (Parham 1972). This means that local communities are likely to support their

*Footnote: as an example of this a farmer who "had been to a meeting on conservation and land-use organized by the Nature Conservancy Council and Scottish Wildlife Trust" proudly showed me his neatly clipped but almost birdless hedges in preference to an overgrown former colliery which he felt was "too untidy".

retention, whether for activities such as cycling, running or riding, or merely as public walkways which also commemorate the social and economic history of the local area.

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Summary

The breeding birds of 1735ha of predominantly agricultural land in Lothian, SE Scotland, were censused in 1984. Densities varied from 2250/km² in scrub, 1606/km² in mixed woodland, 712/km² on disused industrial land to 83/km² on farmland. The farmland density was lower than densities derived from CBC plots on English farms. The few permanent pastures held many more birds of more species than arable fields, probably because they contained areas of scrub and damp ground. The most common hedge types held songbirds at five territories/km or less. Only larger-than-average hedges, especially those with trees and a developed ground flora, and shelterbelts, held many songbirds. Such hedges were usually along roads, tracks or streams rather than between fields. The value of hedges to birds is discussed and it is suggested that in lowland Scotland former industrial land, especially old railway lines, is of potentially greater conservation value than most hedges.

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Photographic Competition Reminder All entries for the 1985 competition must reach 21 Regent Terrace by Monday 30 September.

Isle of May Bird Observatory and Field Station report for 1984

*Prepared for the Observatory Committee
by B. ZONFRILLO, Hon. Secretary*

The Observatory's Golden Jubilee year opened on 28th March and coverage was generally good until 19th November. Only short periods in early April and early November were without records. New to the island were Mediterranean Gull and Red-rumped Swallow*, with rarities such as Sabine's Gull, Thrush Nightingale*, and Little Bunting* making an appearance. Dr Sarah Wanless, NCC's summer warden and Dr M. P. Harris assisted with the Observatory's records and we are grateful to them and to Peter Kinnear for additional records. 6284 birds were ringed and Arctic Terns bred successfully for the first time since 1956.

Migration summary

Early signs of migration were evident as the Observatory opened for the season with a "Commic" Tern, Wheatear and 20 Woodcock present on 28th **March**. A Glaucous Gull was seen on 29th and on 30th a Black Redstart arrived. Offshore on 31st was a Red-necked Grebe and a Merlin and Peregrine hunted on the island.

Further Wheatears and a Grey Wagtail arrived on 1st **April** and small flocks of Redwings, Fieldfares, Song Thrushes and Blackbirds made their way northwards. The first Swallow arrived on 16th April with, among other birds, a Water Rail and a Whimbrel. On 18th April an influx of 100 Goldcrests, a record spring count, had with them a fine Firecrest and the first Chiffchaff of the year. A Black Redstart and four Willow Warblers on 19th and a Redstart, two Tree Pipits, 20 Robins and a Collared Dove on 21st gave only a hint of spring passage. Migration was slow and sparse and the breeding birds were awaiting a change in the weather, the first Shag eggs appearing on 27th April, about a month later than usual. By 30th a White Wagtail, Black Redstart, Ring Ouzel and Golden Plover were the best of a meagre arrival.

May day saw a Greylag Goose on the island and small numbers of Meadow Pipits on passage. Arrivals on 2nd included

*Records subject to acceptance by Rarities Committee.

a Dunnock, Wren, Black Redstart and Ring Ouzel. Six Sandwich Terns were seen at sea and a superb adult Mediterranean Gull called and flew close to the startled observers, providing the first record of this species for the island. A Tufted Duck on 11th May was unusual but other migrants were in short supply with only a Lapland Bunting on 13th as a highlight. A Lesser Whitethroat was trapped on 14th and another arrived the next day, but it wasn't until 18th that an easterly drift brought in a Bluethroat. By 21st May the northeasterlies paid dividends with a fall of continental migrants. A male Bluethroat appeared out of the fog and rain, then a Hawfinch was trapped, only the second ever record for the island. This was followed by a dowdy Scarlet Rosefinch and a few more regular species such as Pied Flycatcher, Black Redstart and Cuckoo. A Grey-headed Wagtail was also seen.

The 22nd brought in more migrants with seven Bluethroats, outnumbering Wheatears. A female Red-backed Shrike, two Black Redstarts, a selection of warblers and other small passerines were occupying diverse habitats on the island. A Marsh Warbler was trapped and a Thrush Nightingale* dodged in and out of rabbit burrows; next day it too was trapped. The clearer weather on 23rd did not diminish the quality of migrants on the island, indeed it was a truly red letter day, with red or rather various shades of it to the fore. A male Red-backed Shrike joined still present Scarlet Rosefinch and Red-spotted Bluethroats, Robin and Redstart were seen but best of all was a superb Red-rumped Swallow* which joined the local breeding Swallows. New for the island, this lovely bird flew within a few feet of the observers and perched on the wires near the ringing hut giving further close-range views. The Rosefinch, Thrush Nightingale and Red-rumped Swallow were still present on 24th but all had gone by 25th. A Red-backed Shrike was new on that date and was duly trapped along with a Black Redstart and a Blackcap. Migration slowed until 29th May when a Whinchat, Bluethroat, Black Redstart, Ring Ouzel and another Marsh Warbler were all trapped and ringed. For the third year in succession a Red-breasted Flycatcher was trapped on 31st May.

As often in the past, early **June** proved a good period for migrants with four Spotted Flycatchers, two Tree Pipits and a male Wigeon on 1st, and a Turtle Dove and two Cuckoos on 2nd. The 3rd brought a female Bluethroat and the 4th another Scarlet Rosefinch, which was trapped. An Osprey was sighted on 7th and an Icterine Warbler was trapped. A sprinkling of migrants on 8th included a male Bluethroat. Little else appeared until fog on 15th brought yet another Blue-

throat and a single Blackbird.

Autumn migration had its beginnings on 5th **July** with a Whinchat and a Black Redstart arriving. On 7th 40 Swifts and an Arctic Skua were seen and on 9th a male Ring Ouzel was trapped. On 18th a Greenshank and a Whimbrel were sighted but the prolonged warm weather had dried up all of the standing water usually so attractive to migrant waders. Six Storm Petrels were lured ashore on 30th.

August began with two Willow Warblers on 1st and a Cuckoo on 5th. Weather was calm and dry thereafter until 16th when an easterly breeze diverted a Snipe, a Reed Warbler and a Barred Warbler to the island. Movement of birds was poor, but on 22nd Willow Warblers totalled 150, with 16 Garden Warblers accompanying them. A Red-backed Shrike arrived on 23rd and four Pied Flycatchers were present on 24th. Three Barred Warblers on 25th were the best of a small influx and another was present on 29th.

September started with east winds and rain but little materialised on the island. Offshore two Sooty Shearwaters were seen on 4th and on 5th two Pomarine Skuas flew past. On land was a Green Sandpiper. A Peregrine, a Kestrel and a Merlin arrived on 6th perhaps attracted by the constant flow of Meadow Pipits with a grand total of 6,000 birds moving in the course of the day. 1500 Swallows were also noted and a flock of 99 Common Scoters counted at sea. Over the next few days Meadow Pipit numbers tailed off but clearly a large general movement had been under way. Land birds were sparse but sea watching was proving worthwhile. Thirty Sooty Shearwaters were counted on 12th and two "large" Shearwaters were seen. Also noted were one Pomarine Skua, one Great Skua and two Arctic Skuas. An easterly wind on 15th brought four Grey Wagtails and a Barred Warbler to the island while an early morning seawatch revealed two Great Skuas, three Arctic Skuas and the island's second record of Sabine's Gull. A Water Rail and a Corncrake were present on 16th and at sea 5 Black Terns flew past. Continuing easterly winds failed to produce any large falls of birds but by 22nd Long-eared and Short-eared Owls began to arrive. On 24th three Barnacle Geese were seen and a Jack Snipe was present. One of the few migrants present on 27th was a Red-breasted Flycatcher which was trapped. 150 Song Thrushes on 28th heralded the start of the thrush migration but numbers were generally unspectacular. At sea, 20 Manx Shearwaters and two Arctic Skuas were seen on 30th and a Peregrine was present.

Thundery squalls on 2nd **October** brought a selection of passerines into cover. A Sparrowhawk was trapped but the best bird was a Little Bunting* which was mist-netted near the Low Trap. Passage on 4th included a Great Northern Diver, three Red-throated Divers, 21 Manx Shearwaters and three Great Skuas. On 5th a fall of migrants included a Red-breasted Flycatcher, two Black Redstart and a Yellow-browed Warbler. Finches were well represented with three Chaffinch, a Goldfinch, two Siskin, 65 Linnets, 15 Redpolls and five Snow Buntings. A Barred Warbler was trapped on 6th. Six Mute Swans flew past the island on 11th and on 12th four Whoopers, 22 Pink-footed Geese and 46 Greylag Geese did the same. Waterfowl continued to interest observers with 15 Red-breasted Mergansers counted on 13th. Westerly winds inhibited migration but a few species such as Jack Snipe, Woodcock and Snow Bunting joined 2500 Fieldfares and 1800 Redwings on 16th and made landfall against the wind. Amongst them were two Long-tailed Tits which were duly trapped and ringed. Gulls seen on 20th included 28 Common Gulls, eight Black-headed Gulls and an adult Iceland Gull. With only a few interesting records such as two Brent Geese and a Canada Goose on 22nd, three Tufted Ducks on 25th and a female Hen Harrier on 26th, October ended as wet as it had begun.

Thrush numbers in **November** were generally lower than usual with a maximum 1500 Blackbirds on 14th. A count of Woodcock totalled 60. Six Blackcaps were seen on 15th and on 18th a Brent Goose was present with six Snow Buntings and five Greenfinches, and finally, a first year Little Gull was found freshly dead.

Breeding birds

Seabirds fared reasonably well with increases in some and decreases in others. Fulmars occupied a record 175 "sites", laid at least 95 eggs but produced 83 chicks—a drop of around 10% on last year. Shags laid a month late and active nests were down by some 200 to 1643. A "wreck" of mainly first and second year Shags in January and February will not show up in the breeding population until a couple of years time although those which did breed had a good season. Two broods of Shelducks were produced from at least nine active burrows and Eiders declined in numbers and nests from last year's record totals with around 413 nests found. Lapwings again laid in four nests and this time a single chick was known to fledge, the most successful season yet! Oystercatcher numbers were around normal with 29 pairs producing 19 chicks, of which 12 young are believed to have fledged. Kitt-



PLATE 31. Barn Owl, a species that is now scarce or absent from many Scottish farms. Its stronghold is the south west where this female was photographed.

E. C. Fellowes



An unusually good hedge in East Lothian (PLATE 32) large enough to support breeding Blackcaps (PLATE 33). Note the presence of tree, shrub and herb layers.

S. R. D. da Prato

E. C. Fellowes





Large arable fields (PLATE 34) with low hawthorn hedges provide poor bird habitat. Even open country species such as the Curlew prefer unimproved grassland for nesting (PLATE 35).

S. R. D. da Prato

E. C. Fellowes





PLATE 36. Old railway lines provide better habitat for many songbirds than most Scottish hedgerows.

S. R. D. da Prato

PLATE 37. Thrush Nightingale on the Isle of May, 22-24 May 1984.

J. Torino



wake populations remain healthy but breeding Herring and Lesser Black-backed Gulls counted by NCC showed 2230 and 1485 pairs respectively. Culling was again carried out. While the larger gulls were increasing so too were the island's terns, with Commons reaching 36 nests by early August and a sudden and unexpected breeding group of Arctic Terns totalling 19 nests. This proved to be the first successful breeding of Arctic Terns on the Isle of May since 1956. Puffin numbers remain high but counts of Guillemots and Razorbills made by Dr Harris showed declines to 12,972 pairs and 1260 pairs respectively. Feral Pigeons bred and Stock Doves may have bred. Passerines breeding included Swallow, Pied Wagtail, Starling, Meadow Pipit and Rock Pipit. Rock Pipit numbers declined noticeably following gull culling, 31 pairs reduced to around 17 pairs, with only four young ringed. A pair of Carrion Crows built a nest on the wreckage of the "Mars" and hatched young but they mysteriously vanished before fledging.

Ringling

Ringling effort varied through the season with passerine numbers lower than usual, mainly through their non-appearance. Shag ringling produced the record total of 1724, and record totals were also achieved with Guillemots 447 and Razorbills 87. Large numbers of Kittiwakes 758, and Puffins 1887 were also ringed. The Leigh Ringling Group are to be commended for their super efforts in ringling almost 2000 birds during their week's stay. Unusual or rare species ringed included a Cormorant, Sparrowhawk, Kestrel, five Woodcock, three Bluethroats, six Black Redstarts, two Marsh Warblers, an Icterine Warbler, five Barred Warblers, a Yellow-browed Warbler, Firecrest, two Red-breasted Flycatchers, two Long-tailed Tits, four Red-backed Shrikes, two Scarlet Rosefinches, a Hawfinch, Little Bunting and Thrush Nightingale. Quality birds, if not quantity. Ten Storm Petrels were tape lured to a net placed at the front door of the Observatory.

Ringling recoveries

As if to celebrate the Observatory's Golden Jubilee in spectacular fashion some species chose to be recovered in exotic surroundings. Age codes are bracketed after species name.

Ringed Isle of May		Recovered/controlled	
Fulmar (1)	01.08.84	12.09.84	Vlissingen, Netherlands (exhausted)
Storm Petrel (4)	29.07.82	07.08.83	Fetlar, Shetland (control)

Ringed Isle of May		Recovered/controlled	
Shag (1)	09.06.83	21.01.84	Lier, Antwerpen, Belgium (sighted)
Shag (1)	08.06.83	07.02.84	Ijmuiden, Netherlands (oiled)
Shag (8)	11.06.74	17.06.84	Forth Road Bridge, Lothian (dead)
Shag (1)	13.06.83	09.04.84	Tay Road Bridge, Tayside (dead)
Shag (1)	17.06.82	04.03.84	Calais, France (dead, oiled)
Lesser Black-backed Gull (1)	09.07.82	06.02.84	Tan-tan, Western Sahara ("found")
Lesser Black-backed Gull (1)	14.07.83	26.07.84	Maze Prison, Lisburn, N. Ireland (tangled in plastic, released)
Herring Gull (1)	13.07.83	26.04.84	Limburg, Netherlands (dead)

Young Fulmars hit peak mortality soon after fledging in early September and sick or exhausted birds gravitate towards the southern north sea coasts, where they are washed ashore. Perhaps contrary to expectation Shags on the continent are uncommon unless, as above, they are "wrecked" by gales. Similarly Herring Gulls seldom cross the North Sea. The Lesser Black-backed Gull in W. Sahara is our furthest south recovery and the Irish recovery was clearly a jailbird!

Kittiwake (1)	23.06.82	27.08.84	Godthab, Greenland (shot)
Kittiwake (1)	24.06.84	12.09.84	Bonavista Bay, Newfoundland, Canada (killed)
Kittiwake (1)	23.06.83	21.04.84	Nador, Morocco (alive, released)

Three remarkable recoveries, our first from Greenland and Morocco and a very rapid and distant recovery of a first year bird in Canada. We have two previous records of second year birds in Newfoundland.

Guillemot (1)	25.06.83	25.01.84	Grimstad, Norway (dead in net)
Guillemot (1)	01.07.83	10.01.84	Aberavon, Wales (dead)
Guillemot (1)	12.06.83	15.11.83	Torshavn, Faeroes (dead)
Razorbill (6)	21.06.83	02.04.84	Bassin D'arachon, France (dead)
Puffin (8)	16.07.83	10.04.84	Hourtin-Plage, Gironde, France (dead)

Young auks such as the above Guillemots disperse far and wide after leaving the island, as do most young seabirds. Adult auks in recent years have tended to remain in southern North Sea or Biscayan waters over winter. Previous recoveries were largely from Scandinavian coasts.

Purple Sandpiper (6)	03.05.83	13.03.84	Zuidpier, Ijmuiden, Netherlands (sight record)
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Ringed Isle of May		Recovered/controlled	
Whimbrel (3)	05.09.83	16.12.83	Comporta, Estremadura, Portugal ("collected")
Our first Purple Sandpiper in Holland and our first, of only two ringed, Whimbrel wintering in Portugal.			
Blackbird (3)	28.12.82	24.05.84	Munster, Luneberg, FR Germany (roadkill)
Willow Warbler (3)	03.09.84	16.09.84	Lundy Island, Devon (control)
Goldcrest (3)	02.10.84	12.10.84	Kroonspolders, Netherlands (control)

The Blackbird was wintering on the island when ringed. The warbler and Goldcrest show quick movements south in autumn.

Ringed elsewhere		Recovered/controlled Isle of May	
Fulmar (1) Fair Isle, Shetland	28.07.71	24.06.84	(control)
Dunnock (4) Morpeth Northumberland	10.04.84	19.04.84	(control)
Willow Warbler (4) North Ronaldsay, Orkney	04.06.84	07.06.84	(control)
Chaffinch (3) Haarlem, Netherlands	30.10.83	29.03.84	(control)

We have one previous record of a Fair Isle Fulmar chick on the May, but to date no island-born chick has returned to breed on the island. The Willow Warbler moved 354 kms in 3 days and the Chaffinch perhaps wintered in Britain since previous summer recoveries have been in Norway.

Observatory notes

A chilling spring followed by a hot dry summer created some interesting changes in the island's fauna and flora. A Meadow Brown *Maniola jurtina* stayed some weeks and a Humming-bird Hawk Moth *Microglossum stellata* was seen, but new to the island was the Latticed Heath Moth *Chiasmia clathrata*, an attractive day-flying species.

A school of nine Common Porpoises *Phocaena phocaena*, comprising adults and three young, moved northwards. Grey Seal *Halichoerus grypus* pups numbered 430 on 18th November, so catching up on last year's drop. Although not counted, the final total would probably be around 600 pups at the end of the breeding period. While Rabbit *Oryctolagus cuniculus* increased, the dry weather did not seem to benefit the House Mice *Mus musculus* and the population crashed in summer. Perhaps the Orcadian mice introduced during 1983 produced a strain unable to withstand the very arid conditions.

On the social side the Observatory held its commemorative dinner in an Edinburgh hotel and many of the founders managed to join in the evening's celebrations. Dr E. V. Watson gave the after dinner speech, reminiscing on that very first day in 1934 when he arrived on the island with R. M. Lockley, W. B. Alexander and H. D. F. Elder and logged the first entries in our unique handwritten history.

The Observatory received many gifts and donations during Jubilee year from visitors to the Low Light, ranging from paraffin lamps to cooking pots.

Cash from the efforts of John Callion (Cumbrian Run) and James Lough (sponsored bird count) were donated to the Observatory's common good and were very welcome.

The theme of the SOC's conference was the island and its wildlife and Keith Brockie's book (and film) "One Man's Island" added to the general celebrations, as did Mike Harris's book "The Puffin", based largely on his studies on the Isle of May.

We are grateful to all those who made our Jubilee year so eventful and enjoyable and in particular to our boatman Jimmy Smith for his help and expertise in landing the visitors safely. The Northern Lighthouse Board participated in celebratory events and we thank the Commissioners for their continued interest in the Observatory's work.

*Bernard Zonfrillo, 28 Brodie Road,
Glasgow G21 3SB*



Oil-related Eider mortality in Scapa Flow, Orkney

E. R. MEEK

During February/March 1984 an unusually high mortality of Eiders occurred in Scapa Flow, Orkney. Eiders normally make up only a small proportion of the corpses found on Orkney beaches, the figure for the period March 1978-February 1983 being just 3.3% of over 7000 corpses examined (Lea 1979, 1980; Adam and Reynolds 1981; Meek 1982, 1983). During February/March 1984, however, 97 Eiders were found dead in Scapa Flow, 32.3% of the total number of corpses found.

The first was found in Orphir Bay (see Fig. 1) on 17th February and the standard beached bird survey, between 22nd-28th February, revealed several more in the north and north-western parts of the Flow. In order to ascertain the full extent of the incident, extra beach walks were undertaken especially on sections of coast not normally covered. Of the 97 corpses located, 92 were on the Orkney Mainland, the major concentration being between Houton Head and Breck Ness. Five bodies were found on Hoy but, unfortunately, Graemsay could not be visited although local people noted numbers of dead Eiders ashore there too.

Over 80% of the corpses were adult drakes. A small number were heavily oiled but the majority showed only a light, fudge-coloured staining on the underparts, the cause of death not being immediately apparent. A single duck was dissected and examined at the height of the incident. A total of 42 parasitic worms, believed to be *Profilocollis botulus* were found in the intestine. Such a parasite load is not thought to have contributed significantly to the death of the bird since infestations of up to 1500 worms have been recorded elsewhere (Prof. G. Dunnet pers. comm). A dark residue was also taken from the duck's gut and sent for analysis to the Laboratory of the Government Chemist. The residue proved to be bio-degraded hydrocarbon oil, although the sample was too small to ascertain whether the oil involved was crude or fuel. Samples of obviously oiled plumage from two other corpses found at Scapa Bay on 22nd February and at Swanbister Bay on 2nd March were also submitted to the L.G.C. Both proved to be 'fairly fresh and only lightly weathered crude oil' (S. A. Bevan, pers. comm.); a third sample, from a bird found at

Stromness on 29th February, was described as 'well weathered and possibly biodegraded crude oil'.

A further sample of 11 corpses (eight drakes and three ducks) was sent to Dr H. Milne and C. A. Galbraith for post-mortem examination at the University of Aberdeen's Culterty Field Station. Traces of oil were found, either externally or internally, on all birds. Parasite loads varied from 'slight' to 'heavy' but none was considered to be at a level which would prove fatal. All the males and two of the females were well under normal weight. Contamination by oil was probably the indirect cause of death in eleven of the twelve birds examined, the poor condition of the birds possibly being due to the ingestion of light oil in small doses over a relatively long period (i.e. a few days to weeks). An alternative possibility is that

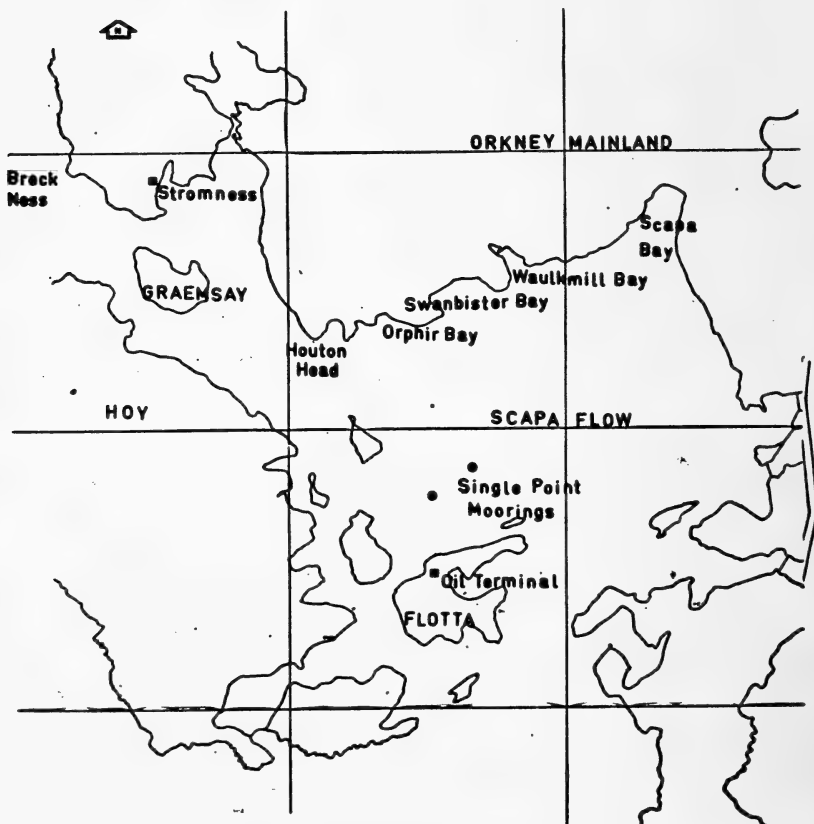


Fig. 1. Localities mentioned in the text

the birds may already have been in poor condition and contamination then hastened their deterioration. The twelfth bird, a female in good condition, was thought to have died more quickly, possibly ingesting a larger bulk of heavier oil than the other birds. (C. A. Galbraith pers. comm.).

The ultimate cause of this mortality seems likely to have been an oil spillage which occurred in Scapa Flow on 11th February 1984, i.e. six days prior to the first corpses being located and two to three weeks prior to the bulk of the birds being found. The spillage in question occurred when the Finnish Tanker 'Fanny' had just finished loading crude oil from the Flotta terminal at one of the single point moorings in the Flow. The cause of the spillage was a two inch hull fracture; official estimates at the time stated that the oil spilled amounted to some two tonnes. Booms were used to contain the slick while absorbents and mechanical means were used to disperse and break it up; no chemical dispersants were used (Capt. D. Robertson, Orkney Islands Council Oil Pollution Officer, pers. comm.). Nevertheless, despite these efforts, small quantities of an oily 'mousse' were coming ashore in Scapa and Waukmill Bays the next morning.

The sequence of events and the analyses performed clearly implicate the 'Fanny' spillage as the cause of the Eiders' deaths but there remain two puzzling factors. One is the extent to which other species escaped contamination. Of the 181 corpses of other species found on Scapa Flow beaches during February/March 1984, just 23 (12.7%) were reported as oiled and no deaths at all were reported amongst the internationally important concentrations of Great Northern Divers and Long-tailed Ducks which winter here. Secondly the high incidence of drakes among the Eiders that died remains to be explained. Drake Eiders are much more conspicuous than ducks and this may have led to some bias in the beached bird survey figures but the majority of beach walks were carried out by experienced observers aware of this problem, so this is not believed to be the full explanation. The incident occurred before duck and drake Eiders have separated for the breeding season and, although there is a degree of separation of the sexes during the winter period in some areas (C. A. Galbraith pers. comm.), this is probably not to the extent which would explain the observed difference in mortality.

References

- ADAM, R. G. and REYNOLDS, P. 1981. Orkney Beached Bird Survey Report for 1980-81. Cyclostyled report. Kirkwall ■ LEA, D. 1979. Orkney Beached Bird Survey Report for 1978-79. Cyclostyled report. Kirkwall ■ LEA, D. 1980.

Orkney Beached Bird Survey Report for 1979-80. Cyclostyled report. Kirkwall ■ MEEK, E. R. 1982. Orkney Beached Bird Survey Report for 1981-82. Cyclostyled report. Kirkwall ■ MEEK, E. R. 1983. Orkney Beached Bird Survey Report for 1982-83. Cyclostyled report. Kirkwall.

E. R. Meek, RSPB Orkney Officer,
"Smyril", Stenness, Orkney

Short Notes

Wellingtonias and Treecreepers

The first report of the Treecreeper excavating hollows in Wellingtonia trees in this country was in the annual report for birds for 1907 by John Paterson in the Annals of Scottish Natural History (Paterson 1908), though the habit is common in North America where the native Wellingtonia *Sequoia gigantea* and Redwood *Sequoia sempervirens* trees are used by the local race of *Certhia familiaris* (Moffit 1941). Paterson refers to his visit to Glendoune, Girvan, on 22 April 1905 to call on Mr Symon, the gardener there. He states 'The Tree-Creeper, Mr John Symon pointed out to me, has found the dry spongy bark of the Wellingtonia useful, presumably for nest building, and I found many—say 9-10—places in the trunk where the birds had hollowed out spaces'. He incorrectly assumed that these hollows were nest sites, and it was not until 1922 in Co. Down (Foster 1923) that the true story emerged.

To examine how the habit had fared since 1905, I recently visited Glendoune estate, Girvan, by kind permission of Major Young, to see the Wellingtonia in the grounds. There is only a single *S. gigantea*, evidently of a similar age (c.120 years) to all the others I have seen. I was struck by the fact that this tree had many more excavations than are usually found on a single tree—29 excavations as against 9-10 in 1905. The highest were about 6 m from the ground and were very shallow, hence most recently made. Many of the lower ones were markedly deeper and three had burrowed through a ridge of the bark. All looked old from their colour but some six had droppings below them indicating recent roosting. The number of hollows on this tree show firstly that it was colonised relatively early by Treecreepers and also that it had probably been in constant use since 1905 at least. The ease with which Treecreepers have found and made use of these trees since their introduction suggests a natural affinity (Moffit 1941) since they seem to prefer Wellingtonias, when available, to other roosting sites. The nature of the bark must be helpful both in providing insulation and in facilitating excavation, and thus may have survival value for the birds.

References

- FOSTER, N. H. 1923. Sleeping habits of the Tree-Creeper. *Irish Nat.* 32: 1-2 ■ MOFFIT, J. 1941. Creepers and Sequoias. *Condor* 43: 75-76 ■ PATERSON, J. 1908. Report on Scottish Ornithology for 1907. *Annals Scot. Nat. Hist.* p 197.

NEAL RANKIN

Common Gulls successfully nesting on a roof in Aberdeen

In 1984, a pair of Common Gulls successfully raised two fledglings, from a clutch of three eggs, on a flat office roof at Total Oil Marine, Altens, Aberdeen. The roof has been used as a nest site by Oystercatchers since the spring of 1982, soon after the building had been completed.

In the spring of 1982 and 1983 a pair of Common Gulls was seen to be prospecting the site, and roosting on the roof for most of the day during April and May. No serious attempts at either nesting or mating were made in these two years. In April 1984 a pair returned and indulged in nest building and pairing behaviour, including food begging and copulation. Nest material, mostly grasses and small twigs, was brought to the site and placed in a corner against a low balustrade which surrounds the roof.

During this time a pair of Oystercatchers had once again arrived and laid two eggs on the roof. Little or no aggression was displayed by either pair towards the other, rather they seemed to both benefit from the increased protective cover against crows and Herring Gulls provided by the non-sitting birds. Three eggs were laid around 12-13 May, and incubation, undertaken by both birds, lasted until 8 June when all three hatched. One chick died soon after becoming trapped between two pebbles on the roof, at a week old, but the other two fledged successfully and left the nest site about 9 July.

This appears to be the first recorded instance of successful nesting by Common Gulls on a roof, although Cramp, Bourne and Saunders (1974) record a failed attempt in 1971 at Dalcross Airport, Inverness. Common Gulls in Scandinavia frequently use man made sites, whilst Dutch and British birds do not seem to do so.

Reference

CRAMP, BOURNE and SAUNDERS, *The Seabirds of Britain and Ireland*. Collins 1974.

M. A. SULLIVAN

Pied Wagtails roosting in birch tree

With reference to the short note "Unusual roost-site of Pied Wagtails" (SB 13: 115-116), I am writing to record another unusual site. For several years Pied Wagtails have roosted in a young birch tree in a landscaped area between buildings at Raigmore Hospital, Inverness. The birds appear in autumn and roost in the tree every night until spring, gathering on the roofs of nearby buildings before moving into the tree as darkness falls. The tree is in an exposed, windswept position and on windy nights it sways wildly. The windows of a laboratory are only about 3 feet from the tree and the lights in the lab. are switched on and off several times during the night, but the birds do not seem to be disturbed. The Pied Wagtails leave at dawn and are only occasionally seen during the day. On average about 30 use the roost each night, 50% of them first-year birds.

CAROL A. MUNRO

Dipper covering eggs

On 26 May 1984 I discovered a typical Dipper nest on the Dighty Water, Tayside. The interior of the nest had the usual lining of dead leaves but it did not appear to contain any eggs. On returning to the site some hours later I observed a female leaving the nest. I inspected the nest again and, on moving the leaves, was surprised to discover a full clutch of eggs. I made further visits to the nest throughout the incubation period and on each occasion the eggs were concealed by dead leaves. I have never before recorded Dippers covering their eggs with leaves and cannot find any reference to this behaviour in the literature.

M. PURVEY

Glider attacked by Golden Eagle

On 27 October 1984 my friend John Anderson (also an ornithologist) and I were flying two single-seater gliders at North Connel, Argyll, making use of the uplift created to maintain a height of about 450 m. At about 1500 hrs we both spotted a Golden Eagle which had joined us in the uplift. Gliders have to maintain a steady air speed of about 40 knots when using the uplift and therefore making a series of beats to and fro along the hillface; the eagle, with a superior soaring ability and much slower stalling speed, was able to maintain position over the steepest part of the face. We had both passed fairly close below the eagle in order to obtain a better view and make positive identification, but when John made his next beat along the face he observed the bird in a steep dive towards him. He expected it to flatten its dive and pass overhead but instead he felt a violent blow on the tail of the aircraft. As gliders are lightly constructed and easily damaged, especially around the control surfaces, he immediately returned to the airfield and landed. A close check showed no apparent damage, but several weeks later an area of paint on the tail fin started to craze and flake off.

I had not witnessed the actual attack so continued soaring, finally landing just before dusk. After hearing about the incident I climbed back up the hill and was fortunate enough to locate the bird lying dead in the heather near the summit. It was a fully adult male weighing 7½ lbs and with a wingspan of just under 2 m. It had not been ringed. Measurements showed it to be a small bird, even for a male. Its crop was empty and later examination of the carcass showed the stomach to be almost empty except for a pellet and a small amount of paste-like material. Tests for organochlorine residues showed very low levels—a reassuring piece of information to come out of the incident. The eagle had obviously died as a result of the impact and its injuries included a broken leg, a broken wing and a crushed breastbone.

Just why an eagle should attack a glider can only be a matter of conjecture. Beinn Lora is not within a known eagle breeding territory, although eagles certainly breed not many miles away. The hill has been used regularly for five years by the gliding club without any similar incident, though other species of soaring birds such as Buzzards, Kestrels, Ravens and gulls often use the uplift in close proximity to the gliders. This bird might have seen the aircraft as rivals on its hunting ground or may simply have resented their presence. Eagles are themselves regularly mobbed by birds such as Ravens and crows and by smaller raptors, usually without any actual contact, and this individual

might have been indulging in a similar sort of sporting activity. However, the fact that the attack was pursued so violently suggests that there was much more aggression in this case.

There is only one previous record of an eagle attacking an aircraft in Britain—in the Ben Wyvis area of Ross-shire during the second world war, when an RAF pilot had an anxious few minutes avoiding the dives of a pair of eagles (Seton Gordon—*The Golden Eagle* p 112 & p 134). There have been two recent cases involving gliders in Italy. A British pilot flying near Aosta in April 1984 was attacked three times by an eagle, which hit the tail twice and the front canopy once. The pilot returned to the vicinity later and obtained a photograph which showed the bird to be an immature Golden Eagle (*Sailplane and Gliding*, Vol. XXXV No. 4, August 1984). A later report in *The Times* gave details of an eagle making at least four attacks on an Italian hang glider pilot in the Dolomites. No reference is available for this incident but the story was repeated in *Sailplane and Gliding* of October 1984.

MIKE GREGORY

Review

The Growth and Development of Birds by R. J. O'Connor; Wylie; 1984; 326 pp; 96 line illustrations; £20.

Science, whether pursued by experiment or observation, may be viewed most simply as a process of classification: the reduction of natural phenomena into easily described units and the assembly of these units into a logical pattern. In this book, O'Connor condenses the diversity of avian lifestyles and growth patterns into an adaptive, ecological framework. After an introductory chapter explaining different modes of post-natal development, the author traces avian development in sequence from the egg, through hatching, post-natal growth and development to senescence of the adult bird. The book is not confined to the purely physical processes of growth but covers the development of behaviour, in both parent and offspring, as an essential component of successful reproduction.

The Growth and Development of Birds is definitely a 'whole-animal' book: finer points of egg and neonate physiology, anatomical development and, disappointingly, feather development, are not covered or only briefly referred to. Unlike Murton & Westwoods' *Avian Breeding Cycles* (with which there is only a slight overlap) this is not a detailed analytical review and the treatment of some subjects (eg. incubation) lacks depth. In my view, the book's major shortcoming results from the large amount of material summarised in such a relatively short book. In places, facts are presented without sufficient supporting argument and some statements appear glib.

Nevertheless, this book is a very wide-ranging, but lucid and original synthesis of the 'state of the art' of growth and development in natural populations. Recent detailed reviews are, after all available elsewhere (eg. *Avian Biology* series, eds. Farner, King and Parkhouse, Academic Press). The text is written in a concise but relaxed and very readable style. Overall, this is an excellent book and should widen every ornithologist's horizons.

CHRIS REDFERN

Short Reviews

Breeding Biology of the Adelie Penguin by D. G. Ainley, R. E. LeResche and W. J. L. Sladden; University of California Press; 1983; 240 pp; 15 monochrome plates, many figures and tables; £30.95.

The title says it all. The Adelie is the most numerous and widely distributed penguin of the Antarctic and sub-Antarctic. This book is based on 15 years "summer" field work on 4,500 Adelies at a rookery on Cape Crozier, Ross Island, 77°S. The Adelie is now arguably the best studied sea-bird ever, except perhaps for the Herring Gull.

JOHN DAVIES

Ocean Birds, their breeding, biology & behaviour by L. Lofgren; Croom Helm; 1985; 240 pp; 200 colour plates, many figures; £16.95.

This wide ranging book covers all aspects of the life of ocean birds from evolution to interrelationships with man. The text is copiously illustrated with colour plates, line drawings, paintings and diagrams.

Shorelands Summer Diary by C. F. Tunnicliffe; Orbis; 1985; 160 pp; many colour and black & white illustrations; £9.00 (S).

Well produced reprints are always welcome and this one will be applauded by all Tunnicliffe enthusiasts. The book is an account of Tunnicliffe first at his home on Anglesey in 1947 and is beautifully illustrated with his drawings and paintings. Also available in hardback (Clive Holloway Books) £12.95.

A Lighthouse Notebook by N. McCanch; Michael Joseph; 1985; 200 pp; many colour and black & white illustrations; £12.95.

Norman McCanch's book takes the form of a diary describing his life as a lighthouse keeper and the many birds resident on, or attracted to, the islands he lived on. The text is illustrated by McCanch's sketches and watercolours.

Vulture Biology and Management by S. R. Wilbur and J. A. Jackson (eds); University of California Press; 1984; 550 pp; many figures; £36.75.

This book is divided into seven parts containing a total of 32 chapters by various authors. Paleontology, status, biology, management and environmental effects are covered and the final chapter is a useful bibliography.

The Countryside and Wildlife for Disabled People by A. Chapman; RADAR; 1985; 392 pp; maps; £1.

A regional access guide to the UK.

Eric Hosking's Wildfowl by E. Hosking and J. Kear; Croom Helm; 1985; 153 pp; many colour plates; £14.95.

The now familiar format of Eric Hosking's books is repeated in this volume on Wildfowl. Hosking's photographs are accompanied by Janet Kear's authoritative text.

British Birds in their Habitats by R. Freethy; Crowood Press; 1985; 207 pp; 26 colour plates, black & white plates and drawings; £10.95.

Freethy has divided Britain into nine different habitats; for each he

gives a brief history and description before species accounts which relate the bird to its habitat. The classification of birds by habitat is always difficult and not everyone would have chosen this classification, but the book is still an interesting introduction for the beginner.

The Concise Birds of Britain & Europe by H. Heinzel; Hodder & Stoughton; 1985; 64 pp; many colour illustrations; £2.95.

An illustrated 'tick list' of European birds with a few words of description for each species. The use of this 'tick list' will be limited as it has only one 'tick box' for each species.

Marine Birds: their feeding ecology and commercial fisheries relationships (Proceedings of the Pacific Seabird Group Symposium, Seattle, Washington, 6-8 January 1982.) Ed. D. N. Nettleship, G. A. Sanger and P. F. Springer. Canadian Wildlife Service, Ottawa.

Parts I and II mainly comprise accounts of the feeding habits of marine wildfowl and of pelagic seabirds respectively: they will interest specialists. Part III comprises studies of the interaction of seabirds and fisheries: it will be valuable to anyone interested in the conservation of either seabirds or fisheries.

ITEMS OF SCOTTISH INTEREST Articles and reports on birds in Scotland, mainly on status and distribution. Some biological studies are excluded, as are references from the widely available journals **British Birds**, **Bird Study**, and **Kinging and Migration**. Most of these items are available in the Waterston Library for reference. The librarian would be glad to receive reprints or copies of papers on any aspect of ornithology.

Scavenging and predation upon sheep and lambs in West Scotland. R. Hewson 1984. *J. Applied Ecol.* 21: 843-868. (Predation by Golden Eagles and foxes).

Seasonal trend in the breeding performance of Sparrowhawks. I. Newton & M. Marquiss 1984. *J. Anim. Ecol.* 53: 809-829. A study in Scotland.

Vocal mimicry in Starlings. A. M. Hindmarsh 1984. *Behaviour* 90: 302-324. A study in Scotland.

The Peregrine population in the Loch Lomond-Trossachs area of Scotland between 1961 and 1981: a review. J. Mitchell 1984. *Glasgow Naturalist* 20: 389-399.

Forth Area Bird Report (Clacks, Stirling, Southwest Perth) 1982. C. J. Henty 1984. *Forth Naturalist and Historian* 7: 45-56.

Angus and South Kincardine Bird Report 1981/2. N. K. Atkinson 1984. *Angus Wildlife Review* 6: 21-48.

Ayrshire Bird Report 1984 (39 pp). A. Hogg (ed) 1985. Includes reports on Siskins in South-West Scotland, on wildfowl and wader counts, and on Mute Swans in Ayrshire in 1984. Available from the SOC Bookshop £1.50 post free to SOC members.

A guide to the birds of Mid-Argyll, Kintyre and Cowal. (34 pp). G. Murray & C. McLaren 1985. Available from the SOC Bird Bookshop £1.25 post free to SOC members.

North Ronaldsay Migration Report no. 2 (15 pp). J. J. Sweeney 1984. This report covers the period 19th September to 1st October 1984.

Wader Study Group Bull. 43 (April 1985). Includes progress reports on the effects of severe weather on waders, on the West Coast Spring Passage Project, and on the surveys of breeding waders in the southern isles of the Outer Hebrides.

Two cases of Guillemots helping to rear neighbours' chicks on the Isle of May. S. Wanless & M. P. Harris 1985. *Seabird* no. 8, 5-8.

- Examination of corpses of auks beached on East British coasts in February 1983. P. Hope Jones, C. F. Barrett, G. P. Mudge & M. P. Harris 1985. *Seabird* no. 8, 9-14. Includes the auks beached in the Moray Firth.
- Breeding Skuas in Orkney. E. R. Meek, C. J. Booth, P. Reynolds & B. Ribbands 1985. *Seabird* no. 8, 21-29.
- Assortative mating in Arctic Skua populations in Orkney and Shetland. P. O'Donald 1985. *Seabird* no. 8, 29-33.
- Distribution and feeding habits of the Great Skua in the North Sea. M. L. Tasker, P. Hope Jones, B. F. Blake & T. J. Dixon 1985. *Seabird* no. 8, 34-44. The greatest concentrations are off the northeast coast of Scotland.
- Great Black-backed Gull predation of seabird chicks on three Scottish islands. K. Taylor 1985. *Seabird* no. 8, 45-52, Sule Skerry in Orkney and Dun and Boreray in St Kilda.
- Growth, diet and mortality of Arctic Tern chicks in Shetland. P. J. Ewins 1985. *Seabird* no. 8, 59-68.
- Manx Shearwaters breeding in the Isle of Muck. R. H. Dobson 1985. *Glasgow Naturalist* 20(5), 491. Eggs and a well-grown chick established the presence of a small breeding colony on the island.
- Energy expenditure by free-living Dippers in winter. D. M. Bryant, C. J. Halls & R. Prys-Jones 1985. *Condor* 87, 177-186, a study on the River Devon, near Stirling.

W. HARPER

Notices

British Birds We are again able to offer SOC members a significant discount off the normal subscription rate for *BB*. We thoroughly recommend this excellent monthly magazine for birders, keen birdwatchers and amateur and professional ornithologists. Subscriptions should be made using the enclosed form and sent to Mrs Erika Sharrock, B.B. Subscriptions, Fountains, Park Lane, Blunham, Bedford MK44 3NJ.

British Ecological Society Grants The BES is offering grants ranging from £50 to £500 to amateur and professional scientists undertaking ecological research and survey, usually within the United Kingdom, but grants are also given to projects abroad. Application forms are available from the British Ecological Society (SEPG), Burlington House, Piccadilly, London W1V 0LQ. Further details from Dr M. B. Usher, Department of Biology, University of York, York YO1 5DD.

BTO/SOC Wintering Cormorant Survey 1985/86 The aim of this survey is to make monthly counts of wintering Cormorants at all coastal and inland waters in the United Kingdom between September 1985 and April 1986. In addition three counts of all known roost sites will be made. By the time this article appears volunteer counters should have been recruited to cover all Scottish waters. Help will still be required in some areas however. Anyone interested in taking part in the survey should contact Neil McCulloch or Dr Jeremy Greenwood, Dept. of Biological Sciences, The University, Dundee DD1 4HN, and they will be put in touch with their regional organiser. The survey is supported by the RSPB and the Ministry of Agriculture, Fisheries and Food.

SWT Lecture Sir David Attenborough will speak on 'Travels of a Naturalist' in the Usher Hall, Edinburgh, at 7.30 pm on Monday 4th November. Tickets available from the Usher Hall booking office at £6, £5, £4 and £2, from mid-September.

The Scottish Ornithologists' Club

SUBSCRIPTIONS 1985/86

We are very grateful to all those Club members who have already paid their subscriptions at the new rates, particularly those who have completed a new banker's order and/or covenanted their subscription. Those members who have not already renewed their subscriptions will find a Membership Renewal Form enclosed with this journal. Please complete and return the form now. And please, if at all possible, help the Club increase the value of your subscription by completing the Deed of Covenant, and help the Club to save money by completing the Banker's Order.

ANNUAL CONFERENCE and AGM

The 38th Annual Conference, "Scottish Forestry & Birds", and 49th AGM of the Club will be held during the weekend 1st-3rd November 1985 in the Marine Hotel, North Berwick, East Lothian. The conference programme, booking form and AGM agenda are enclosed with this issue of *Scottish Birds*.

ANNUAL RAFFLE

A book of raffle tickets is enclosed with this issue of *Scottish Birds*. We apologise to those members who do not like to receive raffle tickets in this way. However, the Club's finances benefit significantly from the annual raffle. Additional books of tickets are available at Branch meetings or direct from Miss Pat Webster, the Membership Secretary. Ticket counterfoils and payments must either reach Pat Webster at the SOC offices by 31 October, or be handed in at the Conference before the draw.

ENDOWMENT FUND GRANTS

This year 13 Club members received grants totalling £1,450. Grant applications for 1986 must be made on forms obtainable from John Davies, the Club Secretary, and submitted by 31 December 1985.

WINTER FIELD TRIPS

AYR BRANCH

Sunday, 29 September 1985. BARRASSIE & TROON. Meet Wellington Square, 1.45 pm or Barrassie beach car park, 2.00 pm. Leader, I. M. Leach.

Saturday, 26 October 1985. MAIDENS/TURNBERRY. Meet Wellington Square, 9.30 am or Maidens, 10 am. Leader, R. Hisset.

Saturday, 16 November 1985. MARTNAHAM. Meet Wellington Square, 1.45 pm or Martnaham Lodge Gatehouse, 2.00 pm. Leader, Miss Mary Hogg.

Sunday, 26 January 1986. BARONS HAUGH RSPB RESERVE. Meet Wellington Square, 9.15 am or Dalziel House car park (NS 760550), 10.30 am. Leader, Mrs Jean Burton.

Sunday, 16 March 1986. GLENBUCK. Meet Wellington Square, 1.00 pm or Glenbuck, 2.00 pm. Leader, W. McKechnie.

ST ANDREWS BRANCH

Sunday, 22 September 1985. FIFE NESS. Meet at Kilminning Castle, 7.00 am and again at 10.30 am.

Sunday, 20 October 1985. ISLE OF MAY. Meet at Crail Harbour, 9.45 am. Cost about £5. Bring lunch.

Sunday, 17 November 1985. LOCHORE MEADOWS. Meet at the Visitors' Centre, 10.00 am.

Sunday, 15 December 1985. EDEN ESTUARY. Details from Miss Betty Rowling, 064 43 226.

STIRLING BRANCH

Lecture meetings this season will be held at the Stirling Smith Art Gallery and Museum, Dumbarton Road, Stirling.

ROOF REPAIRS

By the time this issue of the journal is published, major repairs to the roof of 21 Regent Terrace will be under way. The disruption to Club members and staff should be significantly less than that caused by the recent replumbing. This work is the first phase of a major repair and maintenance programme planned for the exterior of the house. The cost of the work, £8,000, is being funded initially by borrowing from the Club's Endowment Fund.

NEW TELEPHONES

British Telecom (BT) installed a new telephone exchange for the SOC offices in July. It replaced a system installed in 1959 and the only working one of its kind left in the Edinburgh area! BT had declared it redundant and were unable to maintain it any more. The new exchange has two lines, ten extensions and an answering machine for receiving calls out of office hours. We are sure this will enable us to give a better service to Club members and our Bookshop customers.

NEW MICRO-COMPUTER

A new micro-computer system, based on a BBC Model B, is now working in the SOC offices. Initially it is being used for production of the Bookshop catalogues and customer mailing lists. Later it will be used for Bookshop stock control and SOC accounts. It is also hoped to produce Scottish Ringing Reports, for inclusion in the Scottish Bird Report, using this system.

BOOKSHOP STAFF

Peter Bell rejoined the staff as assistant manager in August after his sojourn on the Farne Islands. We are very pleased to have him back. Alex Thom, a Club member from Linlithgow, worked with us for a few months as a temporary, part-time bookshop assistant. We were very grateful for his help in time of need. Sarah Abbott, an Edinburgh University ecology student, worked as a temporary bookshop assistant during her summer vacation inputting data to the new micro-computer system.

EXPULSION

At a recent meeting Council decided to expel a member found guilty of an offence under the Wildlife and Countryside Act 1981.

BRANCH NEWS

Stirling Branch Argyll Weekend, 1-3 March 1985. A change of venue, to the "Galley of Lorne" Hotel, Ardfern, and a change in the main excursion brought a rather different flavour to one of the Stirling Branch's oldest institutions, the Argyll Weekend. Thirteen members enjoyed this year's trip and those able to travel over on the Friday met a welcome improvement in the weather from the cloud and rain of Stirling. We found ourselves sharing the hotel with a group from the Marine Conservation Society—*non sequiturs* arising from enquiries as to the whereabouts of 'divers' were largely avoided.

On Saturday, after a necessarily brief perusal of the Greenland White-front flock at Rhunahaorine, we took the ferry to Gigha. A surprise on the beach at Tayinloan was the appearance of a lively female Black Redstart. Much of our time on the island was spent trying to decide

which of the winter-plumaged divers were Great Northern and which Black-throated. Fortunately several superb Blackthroats in breeding plumage presented no problems. Also good for our eastern eyes were the gangs of Tysties close inshore, small parties of Rock Doves and, after much searching, a couple of Stonechats. Back on the mainland, the Black Redstart had turned coy and proved adept at utilising the available cover. As a result, natives were treated to the sight of an odd bunch of incomers apparently taking considerable pains to photograph a decrepit old caravan.

Saturday night's hotel lounge species list of 85 was voluntarily reduced to 80 in the cold light of Sunday morning, but pre-breakfast Peregrine and Water Rail raised hopes of restoring a respectable total. In the event visits to Crinan Moss and Loch Sween in deteriorating weather were not too productive, but further sightings of Great Northern Diver, Hen Harrier and Stonechat rounded the weekend off nicely before the heavens really opened and persuaded the last of us to head for home.

D.T.

Recent Reports

These notes include unchecked reports and are not intended as a permanent record, nor will they be indexed. Please send reports to Pete Ellis, Houss, East Burra, Shetland, via local recorders at the end of March, June, September and December. The period April to June is covered here.

After an influx of early migrants in the northern isles at the beginning of April, spring was cool, with long periods of northerly winds which delayed many summer migrants. However falls in mid May produced huge numbers of **Bluethroats** and other drifted migrants, as well as some amazing rarities. Two apparent first records for Britain which occurred in Shetland could unfortunately have escaped from captivity and will have to wait for the verdict of the BOU.

Shetland had no less than 3 **White-billed Divers** and South Uist a **Pied-billed Grebe**. A **Great White Egret** in Caithness may have been the same one seen in Shetland by a few lucky folk. Wildfowl of note included a **Bewick's Swan** at Loch of Spiggie in April, 2 male **Mandarins** on Papa Westray and Unst, an **American Wigeon** at the Endrick Mouth and a **Green-winged Teal** on North Uist, whilst the **Black Duck** remained at Tynninghame. **Garganey** visited Loch of Strathbeg, Orkney and Shetland and **Ring-necked Duck**, Shetland and Kirkcudbrightshire. Lerwick had a female **King Eider** and Fair Isle a fine male. Larger than usual numbers of **Common Scoter** were in the northern isles, and a male **Surf Scoter** was at Gosford in April. Three **Ruddy Duck** were seen at Loch of Strathbeg, with another at Sand Loch and one in Fife. Two **Honey Buzzards** seen in Shetland both died. Fair Isle had a **Marsh Harrier** and 4 more were seen in Aberdeenshire. A **Goshawk** was on Hoy and a **Common Buzzard** was a victim of **Fulmar** oil in Shetland. Single **Rough-legged Buzzards** stayed in Orkney and Shetland into April whilst at least 6 **Ospreys** reached Fair Isle and Shetland. **Red-footed Falcons** in Aberdeenshire and near Stirling and **Hobbies** on Fair Isle and at Fife Ness were out-classed by an **Eleonora's Falcon** (first Scottish if accepted) on South Uist. The only **Quail** reported were singles on Fair Isle and in Ayrshire. A **Spotted Crake** was trapped on Fair Isle and single **Corncrakes** called in Shetland, Aberdeenshire and Fife. At least 3 **Cranes** were involved in records from the north isles and South Uist. Waders included a **Stone Curlew** in Shetland, a **Kentish Plover** at Aberlady, 4 **Dotterel** in the Lammermuirs and 2 on North Ronaldsay (probably the same ones seen later on Fair Isle), 2 **Little Stints** on Fair Isle and 2 others in East

Lothian, and single **Temminck's Stints** in Shetland and at Aberdeen. Were the **Pectoral Sandpiper** and the **Broad-billed Sandpiper** seen at Sumburgh in late May the same birds seen in Orkney in early June? Fair Isle had 50 **Woodcock** on 8th April. Small numbers of **Black-tailed Godwits** in the northern isles reached a maximum of 10 at Quendale, where a **Spotted Redshank** was also seen. A few **Green** and **Wood Sandpipers** were also in the northern isles. Single **Pomarine Skuas** were on Whalsay and at Fraserburgh, but over 100 were seen from an oil platform north of Shetland in May. There was an adult **Long-tailed Skua** on Fair Isle in June, a **Mediterranean Gull** at Musselburgh in April and a **Little Gull** in Orkney. A **Ring-billed Gull** was also at Musselburgh in April when a maximum of 3 **Iceland Gulls** were seen there with 4 also at Fraserburgh. A **Roseate Tern** was at Girdleness, a **Black Tern** at Aberlady and rarer still, a **White-winged Black Tern** in Orkney. At least 10 **Turtle Doves** were on Fair Isle and in Shetland where there were also 9 **Long-eared Owls**, 6 unfortunately dead. Papa Westray was visited by a **Scops Owl** and Orkney also had a **Snowy Owl**. Single **Nightjars** were on North Ronaldsay and Unst. A **Little Swift** in St Andrews was a very lucky find. **Hoopoes** were seen on Bressay, Shapinsay, and at Fife Ness. **Wrynecks** appeared in good numbers, with at least 40 in the northern isles, 5 on the Isle of May and 8 along the east coast.

Fair Isle and the Isle of May each had a **Short-toed Lark**, whilst Fair Isle also had a **Woodlark**. The Isle of May had a very unusual spring **Olive-backed Pipit** and 160 **Tree Pipits** landed on Fair Isle on 14th May. Small numbers of **Grey-headed Wagtails** reached the northern isles. A **Cedar Waxwing** on Noss at the end of June could have come out of a cage, but if not is a first for Britain. A **Black-bellied Dipper** was on Fair Isle where 150 **Robins** landed on 5th April, when 300 were on North Ronaldsay. Two **Thrush Nightingales** on Fair Isle and another on Whalsay were joined by similar numbers of **Nightingales**. The massive fall of **Blue-throats** involved about 25 in Shetland, 150 on Fair Isle (with at least 70 in one day), 30 in Orkney, 100 on the Isle of May and at least 52 on the east coast. Earlier, 33 **Black Redstarts** were in the northern isles. 120 **Redstarts** were seen on Fair Isle on 13th May. There were 5 **Marsh Warblers** in the northern isles, with singles on the Isle of May and one singing at Aberlady, but only for one day. **Great Reed Warblers** were on Out Skerries and at Girdleness. Fair Isle had 2 **Icterine Warblers** in June and a **Subalpine Warbler** in May. A **Red-breasted Flycatcher** was in Shetland, with 2 on Fair Isle, where there was also a **Golden Oriole**, with another at Quendale and one in South Uist. The mid-May fall resulted in at least 100 **Red-backed Shrikes** in the northern isles with 4 on the Isle of May and at least 20 along the east coast. Eight **Great Grey Shrikes** were in Shetland in the April fall. Adult **Rose-coloured Starlings** were on Yell, Fair Isle and South Uist. The immaculate **Daurian Starling** on Fair Isle in May could be another first for Britain and couldn't possibly be an escape, could it? A **Goldfinch** was on Fetlar in May, and flocks of **Mealy Redpolls** reached 45 at Sumburgh and 20 on Fair Isle, whilst a pair bred in Orkney. Two **Arctic Redpolls** were on Fair Isle. A large irruption of **Common Crossbills** began to arrive in the northern isles in early June. Of 8 **Scarlet Rosefinches** in Shetland, 5 were red males, but the singles on Fair Isle and at Fife Ness were not. A few northern **Bullfinches** reached the northern isles, but more unusual were the 16 **Hawfinches** in Shetland, with another on Fair Isle and 2 in Orkney. Three super male **Lapland Buntings** were in Shetland where there was also an influx of **Yellowhammers**. Fair Isle had 2 **Ortolan Buntings**, with singles on Out Skerries and at Fife Ness. **Rustic Buntings** were on Whalsay and at Virkie with 2 on Fair Isle which also had 2 **Little Buntings** and even rarer for there, a **Corn Bunting**.

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SCOTTISH BIRDS

THE JOURNAL OF THE SCOTTISH ORNITHOLOGISTS' CLUB
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SCOTTISH BIRDS

THE JOURNAL OF THE SCOTTISH ORNITHOLOGISTS' CLUB



Volume 13 No. 8

Winter 1985

Edited by V. M. Thom, assisted by S. R. D. da Prato
and R. W. Furness

Editorial

A pre-view of the new publications

Preparations are now well in hand for the change-over in *Scottish Birds*, from the format in which it has appeared for the last 27 years to a twice-yearly publication, appearing in June and December. The summer number will consist largely of papers on studies or surveys of birds in Scotland, while the winter number (which will be bigger) will also include the *Scottish Bird Report*. Because there will be more pages available, and the new format will permit more words per page, we will not be forced to limit the length of individual papers purely for reasons of lack of space, while the change in printing process will allow us more flexibility in layout and illustration. Papers submitted will be published in order of acceptance.

Our other new publication is to be entitled *Scottish Bird News* (the words 'the Scottish Ornithologists' Club' will appear just above the title, so it will be clear that it is an SOC publication). The Editorial Committee considers that this title reflects the aim for this quarterly newsletter, which is to present topical material relating to birds and birdwatching. *Scottish Bird News*, due out early in March, June, September and December, will carry all the Club notices (including, we hope, much more about Branch activities than has appeared in recent years), reviews, appeals for help, conference notices and reports, comment on current conservation issues, news of ringing group activities, letters, short reports on recent or on-going surveys and fieldwork (eg Raptor Study Groups Report) and an expanded 'Recent Reports'. It will be illustrated with photographs, line drawings, cartoons, maps and diagrams, as appropriate.

The preparation of a publication like *Scottish Bird News* presents a somewhat different challenge to its Editors than does the production of a more formal journal of the *Scottish Birds* type. The interest and variety of its content is inevitably

dependent upon contributions from many more people, covering a much wider range of subjects. Topicality is all-important, so the interval between a 'happening' and the appearance of a report on it must be kept to the minimum practicable. And the final-stage bringing together of text and illustrations to fill the available space may involve last-minute editing and adjustment. An amended version of 'Advice to Contributors', detailing the requirements and conditions of acceptance for each of the new publications, appears on page 280 and is also available from the Secretary.

We hope that you will find these new productions both enjoyable and stimulating. The Editors would very much welcome constructive comment and suggestions. We would remind members, however, that—as Maury Meiklejohn wrote in his Editorial to *SB* 1(1)—a journal like *Scottish Birds* cannot hope to survive unless it is supported by numerous regular voluntary contributions. This is even more true of a magazine like *Scottish Bird News*. Its success or failure will lie largely in members' hands.

Photographic Competition Winners

For this year's competition nine people submitted a total of 40 photographs, of which four were colour prints, ten were black & white prints, and the remainder colour transparencies. Judging was carried out by the Editorial Committee and the first three places were awarded to:

- 1 P. J. Newman - Dunlin at the nest (transparency)
- 2 E. Fellowes - Wheatear (b & w print)
- 3 W. E. Middleton - Swallows at the nest (transparency).

The winning photographs, and a selection of other entries, were displayed during the Conference; they will be published in the first number of *Scottish Bird News*. We are grateful to all who submitted photographs and hope that many more will do so next year—we are going to have increasing need of good quality photos for our publications.

Errata Sharp-eyed readers may already have noticed that in Stan da Prato's paper on "The breeding birds of agricultural land in south-east Scotland" the footnotes on pp. 213 and 214 had been transposed. Lothian birdwatchers puzzled by the first complete sentence on p 212 should amend their copies to read: "The absence or scarcity of Barn Owl, Jay and Magpie is typical of much of the Lothians..." We apologise to the author for these errors.

Wintering Goldeneye in the Moray Firth

J. BARRETT and C. F. BARRETT

Ringed recoveries indicate that Goldeneye *Bucephala clangula* wintering in east Scotland come from the same breeding populations as those wintering in southern Scandinavia i.e. from northern and central Sweden. Whilst some birds from the breeding populations of south Sweden, Finland and western Russia also winter in southern Scandinavian waters many winter further south in central Europe and apparently do not reach east Scottish waters (Nilsson, 1969). The wintering

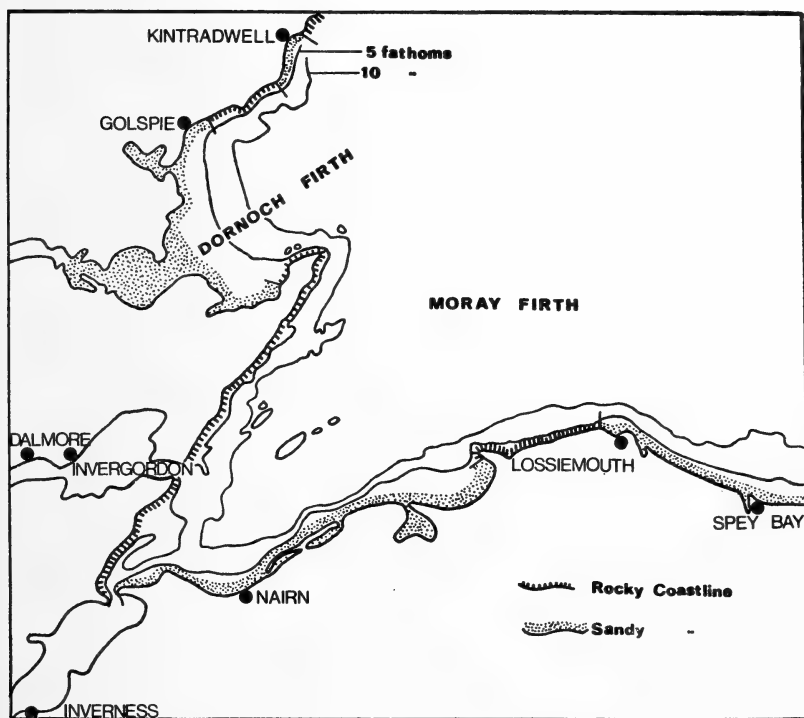


Figure 1. Moray Firth study area.

quarters of the small but expanding Scottish breeding population (Dennis and Dow, 1984) have yet to be determined.

In Scandinavia during the non-breeding season Goldeneye feed on inland lakes and in shallow coastal waters; there is no reference to them feeding in association with sewage outfalls. In eastern Scotland large concentrations feed in the vicinity of sewage outfalls (Milne and Campbell, 1973). This is so in the Moray Firth, though small numbers also feed on inland lakes and away from sewage outfalls in coastal waters. Past references have been made to the numbers of Goldeneye in the Moray Firth (eg Milne and Campbell, 1973; Pounder, 1976; Mudge and Allen, 1980), though in view of changes to domestic and industrial discharges in recent years, the situation is clearly changing (cf the Firth of Forth, Campbell, 1984). This paper includes some results from a larger study of seaduck behaviour in the Moray Firth undertaken by the RSPB between 1981 and 1983, as part of the environmental monitoring programme carried out for Britoil plc in relation to the Beatrice oilfield (Barrett, 1983).

Study area and methods

The study area covered the whole of the Moray Firth basin between Kintradwell, East Sutherland and Spey Bay, Morayshire and included sites within the inner Beauly, Cromarty and Dornoch Firths (Figure 1). The Moray Firth is largely a sandy area with shallow water extending well offshore in many places. Rocky stretches of coastline occur between Brora and Golspie, between Cromarty and Rosemarkie and between Burghead and Lossiemouth. The inner firths are mainly sheltered, shallow areas with considerable expanses of mudflat exposed at low tide.

Regular counts (up to five a month depending on weather conditions) were carried out in these areas from November 1981 - March 1982 and October 1982 - March 1983. Particular attention was paid to the major sewage outfalls, where the main concentrations of Goldeneye were known to occur.

Results and discussion

Numbers and distribution Table 1 shows the peak monthly counts for each site and the distribution (average usage—calculated from the mean of all the monthly counts over both winters) of Goldeneye. Invergordon-Dalmore and Inverness were of particular importance, together holding 72.6% of the overall Moray Firth population, (no other site held more than 6% of the total). Small concentrations occurred at Loch Fleet, off Nairn and at the mouths of the rivers Findhorn and Spey.

Peak counts occurred in January in the 1981-82 winter

Table 1: Peak monthly counts at each site in the Moray Firth, 1981-82 and 1982-83 and average usage for the two winters.

	October		November		December		January		February		March		Average Usage (%)
	82	81 82	81 82	81 82	82 83	82 83	82 83	82 83	82 83	82 83	82 83		
Kintradwell/ Golspie	0	2 9	4 3	4 0	0 0	4 0	4 0	8 0	8 0	8 0	8 0	0.8	
Dornoch Firth	0	100 7	72 13	6 6	19 7	3 12	4 4	4 4	19 7	3 12	4 4	4.4	
Edderton Bay	0	0 4	0 7	0 4	19 19	0 6	19 6	0 6	19 6	0 6	19 6	1.3	
Tarbet Ness/ Chanonry Point	0	14 3	1 8	12 8	7 7	5 0	7 7	5 0	7 7	5 0	7 7	1.5	
Invergordon/ Dalmore	2	21 222	227 112	197 74	65 178	62 229	25 3	229 25	62 229	62 229	229 25	25.3	
Inverness	73	175 191	130 126	533 393	531 191	287 319	47 3	319 47	287 319	287 319	319 47	47.3	
Ardersier/ Nairn	5	14 1	40 26	31 3	0 28	15 18	2 2.5	18 2	15 18	15 18	18 2	2.5	
Culbin	8	0 14	39 2	39 2	4 28	52 6	4 4.6	28 52	52 6	52 6	6 4.6	4.6	
Burghead Bay	65	13 3	32 18	70 46	58 35	78 40	5 5.6	35 78	78 40	78 40	40 5.6	5.6	
Burghead/ Lossiemouth	0	8 8	10 7	42 11	11 28	11 10	2 2.8	11 10	11 10	10 2.8	10 2.8	2.8	
Spey Bay	2	12 6	43 30	13 18	4 37	25 15	3 3.9	37 25	15 3	15 3	15 3	3.9	
TOTAL	155	359 468	598 358	947 565	718 568	533 670							

and March in 1982-83. The count in January 1982 was boosted by a movement of birds to this coast coincident with an icing over of local inland lochs. If these additional birds are excluded, peak numbers of Goldeneye in the Moray Firth were between 600-700 birds each winter. The numbers at most sites remained fairly constant over the winter, fluctuations in the overall numbers reflecting changes at the two main sites.

Effects of changing effluent treatment Since 1970 there have been several major changes to effluent discharges in the Moray Firth. Invergordon-Dalmore: at Dalmore discharge of spent grain ceased when the maltings closed in July 1981 and there has also been a cut back in effluent discharge from the distillery. At Invergordon there has been no change in the quality of the discharges, which include both domestic and industrial effluents, but improvements are currently being made to discharge all crude sewage via one long sea outfall at Rosskeen. At the Invergordon distillery outfall a new plant was installed between 1970-74 which enabled 85-90% of all solids to be removed and by 1981-82 further improvements increased this recovery to 100%. Burghead: in October 1978 a new discharge

pipe was commissioned in deeper water, over 1 km offshore. Inverness: in August 1982 the Carn Arc outfall was closed. All effluent (domestic, industrial and distillery wastes) is now being discharged through the Longman outfall, where there has been little improvement in quality.

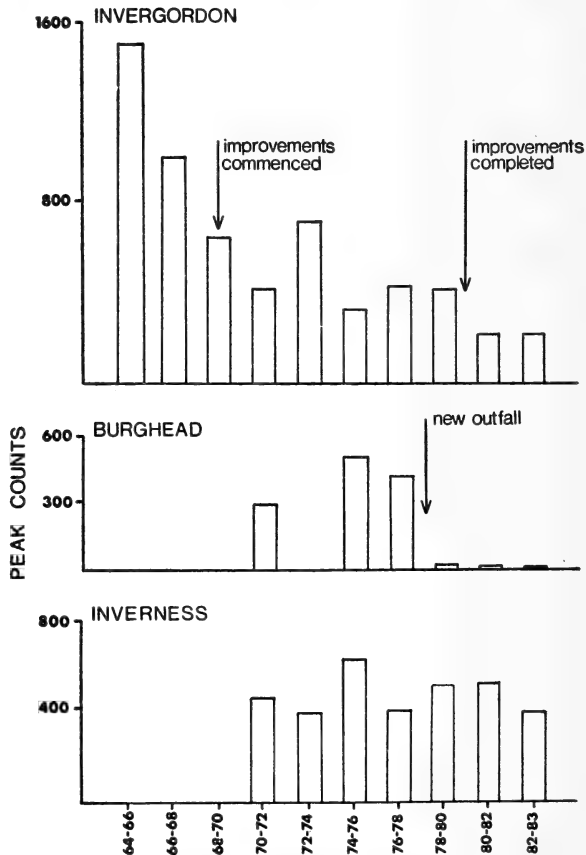


Figure 2. Biennial peak Goldeneye numbers at Invergordon, Burghead and Inverness.

Sources of information : Wildfowl Trust counts, Scottish Bird Report, Pounder (1976), Mudge (1978), Allen (1979).

The effects of these various changes are illustrated in Figure 2 (data show biennial peak counts where available, sources of information are listed). Following improvements at Inver-

gordon-Dalmore and Burghead there were declines in the Goldeneye populations. At Burghead the decline was dramatic, the birds presumably unable to feed in deeper water, whilst at Invergordon-Dalmore the decline has been gradual, coincident with improvements spanning over a decade. A further decline might be expected once the new outfall is constructed. At Inverness, where there has been little change, numbers of Goldeneye have remained fairly constant and there does not appear to have been any increase here following the declines at Invergordon-Dalmore and Burghead. After the Carn Arc outfall closed, the small flock of up to 30 Goldeneye and 350 Tufted Duck *Aythya fuligula* (M. I. Harvey pers comm) previously in the area disappeared, probably moving the short distance to the Longman outfall.

Overall Goldeneye numbers in the Moray Firth have declined from about 2000 birds in the mid-1960s to a present level of about 600-700 birds. This may in part be attributable to improved effluent treatment procedures which have had similar effects elsewhere in Scotland. Campbell (1984) showed that the numbers of Goldeneye in the Firth of Forth declined sharply at three main outfalls following the introduction of a major sewage treatment improvement scheme. Although there were some small scale shifts to other sites within the Forth, there was no evidence of any major relocation locally, but as was apparent in the Moray Firth the birds simply abandoned the area.

Feeding behaviour Goldeneye feeding activity was observed at the Longman outfall, Inverness. Observations were carried out over five tidal cycles. The whole flock was scanned systematically in hourly periods. Each part of the flock was observed continuously for a period of 5 minutes, the number of birds recorded, and any feeding activity (ie birds recorded diving) within that period, noted. The next portion of the flock would then be observed and in this manner an estimate of the total number of birds feeding within each hourly period was made (Figure 3). The observations were simplified by the fact that the flock was geographically separated into a feeding section and a resting section, feeding birds generally located close to the outfall. There was a significant increase in feeding activity as tide fell (Fig. 3: $r=0.94$, $p<0.001$). At high tide most birds rested in a loose flock in the vicinity of the outfall. If Goldeneye are feeding on solid material contained in the sewage discharge then a decrease in feeding activity might be anticipated when the discharge ceased (this often occurs during the period of slack water around high tide in order to prevent unsightly build-up of solid wastes). Alternatively,

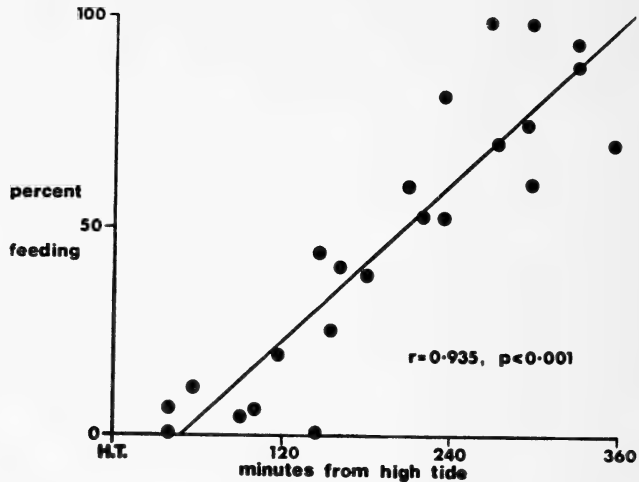


Figure 3. Relationship between the numbers of Goldeneye feeding and tidal conditions.

diving in shallower water at low tide may represent a more energy efficient means of obtaining food. Indeed, in very shallow water, Goldeneye have been observed to feed by dabbling (L. Campbell pers comm). However, other studies (eg Nilsson, 1970a; Campbell and Milne, 1977) have failed to observe any tide-dependent relationship in feeding activity.

Sex ratios Sex ratios in Goldeneye flocks vary greatly between different areas (Nilsson, 1970; Pounder, 1976a; Campbell, 1977). The sex ratios at the two main sites are shown in Table 2. Elsewhere, away from these outfalls, adult males predominated. At Invergordon a consistently low proportion of males was present in the flock and this appears to be a regular feature (Pounder, 1976a; Mudge and Allen, 1980). At Inverness, however, the ratio between the sexes was more equal.

The reasons for regional variations in sex ratios have been discussed in the past. Nilsson (1970) suggested differential migration of the sexes though he also found differences in food seeking intensity between the sexes. Females showed a higher food seeking intensity and thus had a greater need to stay in shallower water where diving is more economic (Nilsson, 1970a). Pounder (1976a) suggested that the sexes might have different food requirements (females being more attracted to distillery wastes than males), whilst Campbell (1977) thought that shelter and freedom from disturbance might be contributory factors (females and immatures preferring more

Table 2 Proportions of adult males in Goldeneye flocks at Invergordon and Inverness, 1981-82 and 1989-83

		Mean % Adult Males	Range	Sample size
Invergordon	1981-82	29.25	26.8-31.61	4
Invergordon	1982-83	23.58	3.6-36.9	12
Inverness	1981-82	52.23	35.3-75.2	4
Inverness	1982-83	44.82	13.8-57.6	20

sheltered areas). None of these suggestions would appear to explain the difference between the sex ratios at Invergordon-Dalmore and Inverness. Both sites are relatively sheltered and free from disturbance. At Inverness, where distillery wastes are discharged and the water is shallower, there is a lower proportion of females than at Invergordon-Dalmore, where little distillery waste is now discharged and the water is deeper. As yet, no satisfactory explanation can be put forward to explain these differences.

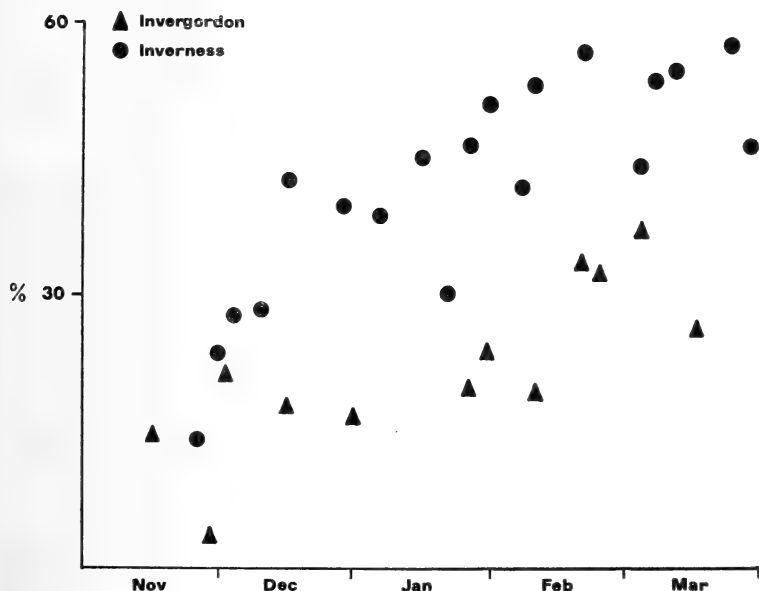


Figure 4. Proportions of adult males in Goldeneye flocks at Invergordon and Inverness, 1982-83.

At both sites there was some evidence of a seasonal change in sex ratios (Figure 4), with the proportion of males increasing throughout the winter and then declining at the end of March. Pounder (1976a) found that adult males arrived later and departed later than females on the Tay, but on the Forth Campbell (1977) found little variation throughout the winter. Nilsson (1970) showed that adult males left the breeding grounds later and returned earlier than females and immatures. This may in part explain the seasonal change in sex ratios observed at sites in the Moray Firth and on the Tay.

Daily movements and roosting behaviour Tide related behaviour was noted at several coastal sites, such as river mouths, where feeding took place inshore at low tide by groups of birds otherwise resting offshore. At Invergordon no consistent pattern was evident (cf Peterhead, Campbell and Milne, 1977) although Mudge (1978) had distinct morning and late afternoon peaks in numbers. When not feeding at the outfall, many rested a little way from the outfall, others flighted to Nigg and Udale Bays, whilst others probably commuted to inland lochs such as Loch Eye. No diurnal or tidal patterns of movement were recorded at Inverness.

The Goldeneye is normally considered to be a daytime feeder which roosts communally at night (Linsell, 1969; Campbell, 1977). However, in the Moray Firth this did not appear to be the case. Mudge (1978) observed Goldeneye feeding well into darkness at Invergordon and Burghead. In the present study the Inverness flock remained at the outfall throughout the night, either resting, or feeding when conditions were favourable.

Summary

Aspects of behaviour and distribution of wintering Goldeneye in the Moray Firth are discussed. Declines in the numbers of wintering Goldeneye have been noticed and these can in part be related to improving effluent treatment practices. At the Longman outfall, feeding activity was closely related to tidal state. Sex ratios differed markedly at the two main sites and there was evidence of a seasonal change in the sex ratio at both these sites.

Acknowledgments

Our thanks to Lennox Campbell and Roy Dennis for helpful criticism of a draft of this paper. We are grateful to the Highland Regional Council, Invergordon Distilleries Ltd, Mackenzie Brothers, Dalmore, and Scottish Malt Distillers for information regarding changes in effluent discharges and to the Wildfowl Trust for count data. This paper draws on data collected as part of the environmental monitoring programme carried out for Britoil plc and its partners in the Beatrice oilfield, Kerr McGee Oil (UK) Ltd, Deminex UK Oil and Gas Ltd, London and Scottish Marine Oil Ltd, and Hunt Overseas Oil Inc, and their permission to publish this information is appreciated.

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TUFTED DUCK K. Brockie

Storm Petrel ringing in Caithness

H. CLARK

Introduction

Noss Head (58° 28' N; 3° 03' W) juts out into the North Sea on the east coast of Scotland, 18 km south of John O'Groats and 3 km north of Wick; from July to September, 1981 to 1984, Storm Petrels were tape-lured there for ringing. Thirty eight of the birds caught at Noss Head had already been ringed elsewhere and 34 birds ringed at Noss Head were subsequently caught (controlled) elsewhere. The information obtained from these 72 movements is presented here, together with other details of the birds examined.

Methods

On several nights, between 23.00 and 0.300 hours, mostly from July to September (1981 to 1984), two mist nets were placed on the cliff top about 20m above sea level, 100 m south of the Noss Head lighthouse, at which spot the slope of the land provides a backdrop to the nets. In 1981 and June 1982, B.T.O. Storm Petrel tape-lures (the "churring" of breeding birds) were played on cassette recorders without amplification, one behind each net, but from July 1982 onwards one of the Storm Petrel tapes was replaced by a B.T.O. Leach's Petrel tape which also seemed to attract Storm Petrels.

Most birds were weighed (to the nearest 0.5g) and their wings measured (to nearest 0.5 mm). Three ringers took wing length measurements and regular checks showed that they usually obtained identical measurements. Brood patches were inspected on 248 birds and were classified as 'good' (with a large patch of bare skin) or 'poor' (substantial amounts of old down remaining and little bare skin). Attempts were made to keep records of all birds which regurgitated oil or food.

Results

Catches The biggest catches were made between mid-July and the end of August. Three catching attempts in late June (1982) in ideal weather conditions (with 2 Storm Petrel tapes playing) proved fruitless, and birds were only caught between 5th of July and 6th of September, after which date wet, windy weather prevented attempts at netting. Nightly catches varied with the season and the weather; the highest was 89.

A Leach's Petrel tape was played from July 1982 along with a Storm Petrel tape and with this combination roughly

Table 1. Numbers of Storm Petrels caught at Noss Head, Caithness, from July to September, 1981 to 1984

Year	1981	1982	1983	1984
Number caught	394	157	195	266
Average nightly catch	35.8	15.7	17.7	26.6
Tapes played	Two of Storm Petrels	One of Storm Petrels and one of Leach's Petrels		

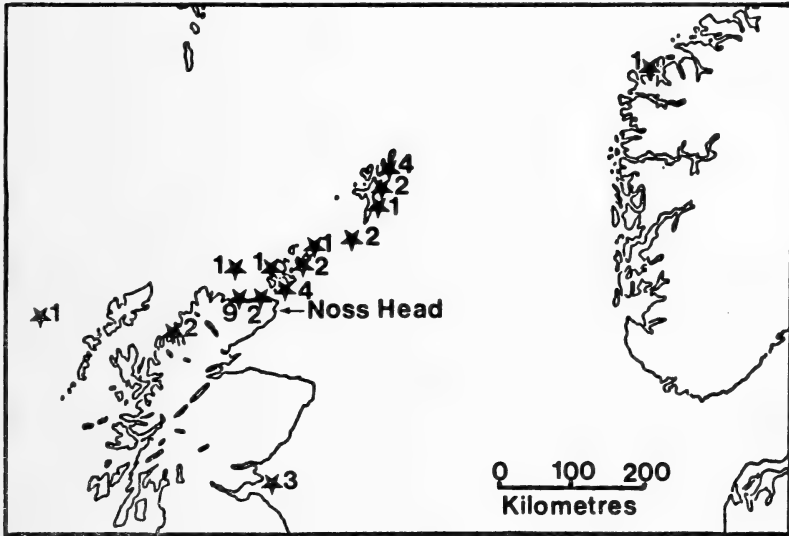


Figure 1 Movement within the same year of Storm Petrels tape-lured at Noss Head, Caithness. Stars mark the location and numbers show how many birds were involved. Some neighbouring sites have been grouped together under the same star.

equal numbers of Storm Petrels were caught in each net although the credit for pulling birds ashore may still have belonged to the "Stormie" tape. However, Leach's Petrel tapes undoubtedly attract Storm Petrels, for early in the night of 7-8 August 1982, the Storm Petrel tape stopped due to "battery failure" and the Leach's tape on its own then caught 44 Storm Petrels. Three Leach's Petrels were caught in July 1983, all at the Leach's Petrel tape.

As shown in Table 1, the number caught varied from one season to another, as perhaps did the actual numbers of Storm Petrels off Noss Head.

Though the majority of birds were caught on the seaward side of the nets, presumably having been pulled in off the sea

by the tape lures, birds were regularly seen approaching from the landward side; some Storm Petrels obviously take a "short-cut" across the headland.

Controls Seventeen Storm Petrels were controlled at Noss Head in the same year as they were ringed elsewhere, and 19 ringed at Noss Head were subsequently controlled elsewhere later in the same year. Fig. 1 shows the other capture site for all of these controls, including Runde, Heroy, Norway ($62^{\circ}25'N$; $5^{\circ}38'E$) where one bird was controlled 26 days later at a distance of 647 km from Noss Head.

The other British sites of these same-season controls were, for the most part, near breeding colonies in St Kilda, Priest Island, Fair Isle, the Orkneys and Shetlands, but 14 birds were tape-lured at sites not associated with colonies: three on the Isle of May, two at Holburn Head and nine at Strathy Point (the last two sites being on the north coast of mainland Scotland).

The time lapse between ringing and subsequent control ranged from three hours, for a bird ringed at Strathy Point and subsequently controlled 58 km away at Noss Head, to 53 days for another movement between Strathy Point and Noss Head. The time between ringing and control averaged 16.5 days for all same-season controls. Information relating to rapid movements (taking two days or less) is shown in Table 2.

Table 2 Movements taking two days or less of Storm Petrels tape-lured at Noss Head, Caithness

Time between ringing and control	Other site of capture	Distance from Noss Head
3 hours	Strathy Point	58km
1 day	Strathy Point	58km
1 day	Strathy Point	58km
1 day	Sule Skerry	102km
1 day	Vatsetter, Yell	262km
2 days	Burravoe, Yell	255km
2 days	Priest Island	155km

The distances quoted from Noss Head (in Table 2) are straight line distances measured across land, but if it is assumed that Storm Petrels mostly travel over sea, then the distances become much greater, e.g. Strathy Point to Noss Head would be around 80 km and Priest Island to Noss Head around 215 km.

Thirty-six controls between seasons were recorded. Fig 2 shows the other capture site for all of these controls except for one at Runde, Heroy, Norway, two years after being

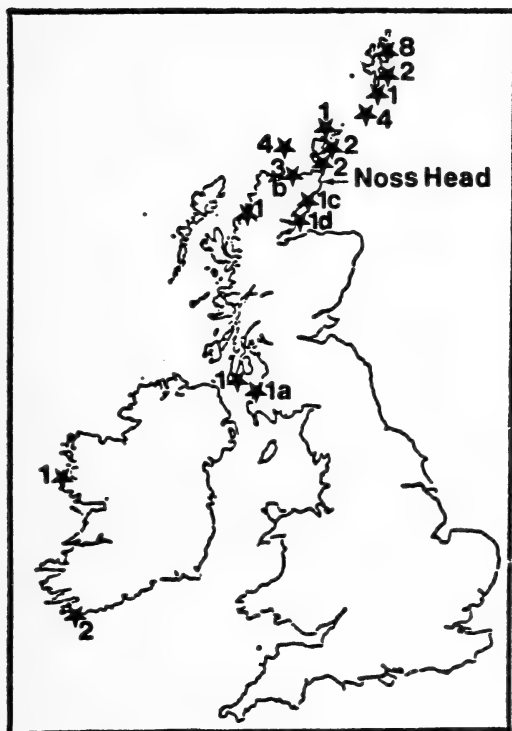


Figure 2 Movements in different seasons of Storm Petrels captured at Noss Head, Caithness. The stars mark the location and the numbers show how many birds were involved. Eight controls from closely neighbouring sites around Yell, Shetland, are covered by the same star. Sites marked a, b, c and 4 are Turnberry, Strathy Point, Helmsdale and Tarbat Ness respectively.

ringed at Noss Head. All controls represented in Fig 2 are near colonies except for those at Turnberry, Strathy Point, Helmsdale and Tarbat Ness.

Twenty-five of the controls occurred one year after ringing; 13 at Noss Head and 12 elsewhere. None of the 13 controlled at Noss Head regurgitated on being handled.

Seven Storm Petrels were controlled at Noss Head two years after being ringed elsewhere when fully grown. None of these birds regurgitated and two were examined and found to have very small, poorly developed brood patches.

Two Storm Petrels controlled at Noss Head had been ringed

Table 3 Biometrics of Storm Petrels which regurgitated oil on being handled compared with those which did not regurgitate

	Wing Length (mm) (mean \pm S.D.)	No. measured	Weight (gm) (mean \pm S.D.)	No. weighed
Regurgitated	123.0 \pm 2.42	56	24.56 \pm 1.61	829
Did not regurgitate	122.80 \pm 2.53	841	24.08 \pm 1.59	55

five and seven years earlier in Westray (Orkney) and Fair Isle respectively.

Physical features The biometrics of all Storm Petrels measured are presented in Table 3, and, for reasons explained in the ensuing discussion, birds which regurgitated oil are compared with those which did not. The small difference between the two wing length means is not statistically significant (t - test).

Those birds which regurgitated obviously lost weight and were consequently less heavy than the others. Sixty-four (6.3%) of the Storm Petrels caught regurgitated oil but no solid or semi-solid food.

From the sample of 248 birds examined for brood patches, 105 had substantial amounts of old down remaining and the other 143 had good brood patches with no vascularisation.

Discussion

Quick, same-season controls of Storm Petrels have been shown by earlier workers to involve wandering non-breeding birds which first visit colonies at two or three years old and do so each summer (July and August being the period of greatest activity) until themselves breeding at four or five years old (Scott 1970, Mainwood 1976). Thus the 36 same-season controls indicate a high proportion of wandering non-breeders in the Noss Head catch.

From reference to Scott's findings (1970), that breeding birds usually regurgitated food when handled and had well vascularised brood patches, it may be inferred that the different-season controls probably also involved wandering non-breeders, for the 13 birds controlled at Noss Head one year after ringing did not regurgitate; they were probably non-breeders in at least their second year of wandering.

The seven Storm Petrels controlled at Noss Head two years after being ringed elsewhere when fully grown must have been at least four years old, since Storm Petrels do not visit land until they are at least two years old (Scott 1970). However, none of these birds regurgitated, and the two examined were found to have very small, poorly developed brood patches, so were probably still wandering non-breeders.

The two birds controlled at Noss Head five and seven years after being ringed were definitely old enough to be breeding birds but were probably failed breeders since such birds travel with non-breeders in late July or August (Scott 1970), and breeders, at colonies at least, are less likely to be attracted to tape-lures (Mainwood 1978, Furness and Baillie 1981, Fowler, Okill and Marshall 1982).

Earlier workers (Scott 1970, Furness and Baillie 1981) have shown that samples of probable breeders are on average both longer winged and heavier than samples containing mainly probable non-breeders. On the assumption that birds regurgitating oil are perhaps more likely to be breeding birds than others, the biometrics of the two classes are compared in Table 3, but it may be inferred from the almost identical wing length means that all birds belong to a homogeneous population; the evidence so far suggests a population of wandering non-breeders.

The mean weights of just over 24gm (Table 3) are noticeably lower than the weights of over 26gm generally recorded for breeding birds by earlier workers (Love 1978, Furness & Baillie 1981), further confirming the non-breeding status of the Noss Head catch.

Brood patch observations also point to a high proportion of wandering non-breeders; those with substantial amounts of old down remaining (105) must have been wandering non-breeders, but those with good brood patches and no vascularisation (143) could have been breeders or non-breeders, since Scott (1970) showed that some non-breeders passed through a bare phase in the brood patch during which they were indistinguishable from breeders as vascularisation in the latter rapidly receded away from the nest.

Some of the 64 birds found regurgitating oil were definitely non-breeders, for out of 35 regurgitating birds examined for brood patch, twelve had substantial amounts of old down remaining; furthermore, of the birds which regurgitated, three were subsequently involved in controls characteristic of wanderers, at Yell, Holburn Head and Lerwick, 2, 15 and 22 days respectively after being ringed at Noss Head. It may be concluded, therefore, that a small proportion (ca 6%) of wandering non-breeders regurgitated oil, but no food, when handled.

All the evidence available points to the Storm Petrels caught at Noss Head being wandering non-breeders accompanied by some failed breeders. The period of catching, July and August, coincides with the period of greatest wanderer activity (Scott

1970) and furthermore the number of retraps (three) is consistent with an ever-changing population.

It is not unreasonable to expect breeding birds to feed off Noss Head which is only 20 km from the nearest sites of proven breeding in the Pentland Firth (Sharrock 1978) and less than 50 km from sizeable colonies in the Orkneys, since adult birds may be expected to gather food in the sea within about 100 km of the nest (Lockley, 1983). Breeding birds could be at sea off the Noss Head area throughout June since other ringers have caught breeding birds at their colonies in mid-June (Love 1978), yet no birds could be tape-lured at Noss Head during this time, which agrees with the findings of Mainwood (1978) that breeding birds are virtually unaffected by tape lures.

The controls of birds from as far away as Cape Clear and Norway further demonstrate the wide range of these wandering birds and underline the full extent of the mixing of populations at this stage in the Storm Petrel's life cycle.

With similar inter-colony movements also recorded for Leach's Petrels (Love 1978) it is perhaps not surprising that three Leach's Petrels were tape-lured, for Noss Head is obviously well within the range of Leach's Petrels wandering, say between North Rona, Foula and Ramna Stacks where there are colonies (Love 1978, Fowler & Butler 1982).

Acknowledgments

I would particularly like to thank Keith Banks, Stuart MacKay and Iain MacKay for their dedicated hard work throughout the long summer nights. Without their help with the erection of nets, extraction and processing of birds this study would have been impossible. I would further like to thank Keith for helpful comments on the first draft. I thank John Clark for computer help with the statistics and Mrs Anne Campbell for typing the manuscript.

Summary

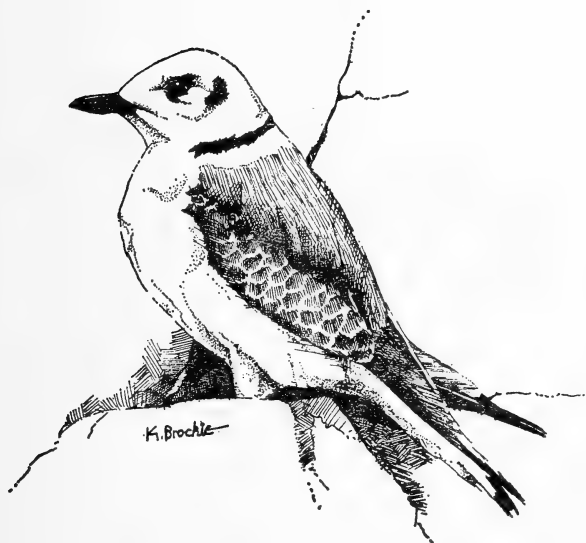
One thousand and twelve Storm Petrels and three Leach's Petrels were tape-lured at Noss Head, Caithness from 1981 to 1984; 72 of the Storm Petrels were controlled. Rapid controls, poorly developed brood patches, no regurgitation of food and relatively low weights imply that the Storm Petrels tape-lured at Noss Head were wandering non-breeders or failed breeders. A small proportion of non-breeding Storm Petrels regurgitated oil when handled.

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KITTIWAKE

Stop Press - Birds in Scotland

The publishers, T. & A. D. Poyser, have kindly provided a spare set of page proofs for promotional purposes. These will be available for inspection in the Bird Bookshop and at relevant conferences until the pre-publication offer closes on 15 March 1986. Sample pages will also be sent to Branch Secretaries, for display at meetings during the same period. We are most grateful to Trevor Poyser for giving potential purchasers this unusual opportunity to see what they will be getting before deciding whether or not to take up the members-only pre-publication offer.

Counts of some breeding birds in two recently afforested areas of Kintyre

S. J. PETTY

This paper reports on a visit in 1983 to upland Kintyre, where substantial areas have recently been afforested. The object was to investigate the status of the Merlin, since concern has been expressed about the effects on Merlins of loss of breeding and foraging habitat resulting from both agricultural improvements and increased commercial afforestation in the uplands (Newton *et al.* 1978, Watson 1979, Williams 1981). The opportunity was also taken to record counts of other species usually associated with moorland habitats, prior to canopy closure of a large proportion of the planted area.

Study areas and methods

The two study areas were situated on the Kintyre peninsula (Figure 1). That in South Kintyre Forest was centred around Lussa Loch, and that in Carradale around Gleann Drochaide and Barr Water. A high proportion of each area had recently been planted, much of it over the last three years in Carradale and over a longer period in South Kintyre (Table 1); in both areas the main tree species was Sitka spruce. The altitudinal range was similar in both areas. The two study areas, both owned by the Forestry Commission, were selected because they were the only blocks of ground where Merlins had been observed during the breeding season in recent years. (G. Heddon, pers. comm.).

The areas were searched primarily for Merlins, which have fairly rigid nesting habitat requirements. They either nest on the ground amongst heather, usually on a steep bank situated above a watercourse or around crags, or utilise the tree or crag nest of other species in similar situations, particularly those of Crows but also Ravens (Newton *et al.* 1978). Within the study area all the watercourses were walked, crags visited and suitable areas of heather checked for signs of Merlins. The search included old nests on crags or in broadleaved trees. Crows and Buzzards also nest on the edge of thicket-stage plantations where Merlins can use their old nests, therefore the perimeters of all the older blocks of conifers were also checked. Checking included searching suitable nesting areas for plucking posts and perching areas with signs such as moulted feathers, droppings, pellets and prey remains and

Table 1 Habitat characteristics of the two study areas

Habitat Features	South Kintyre		Carradale	
	Area ha	% area	Area ha	% area
Water and moorland	900	21	200	14
Forest planted 1960-1974	1000	24	-	-
Forest planted 1975 to date	2300	55	1200	86
Total area	4200		1400	
Altitude range	100-397 m		120-364 m	
Geology	Quartzose Mica Schist Chloritics & Epidotic Schists		Quartzose Mica Schist	

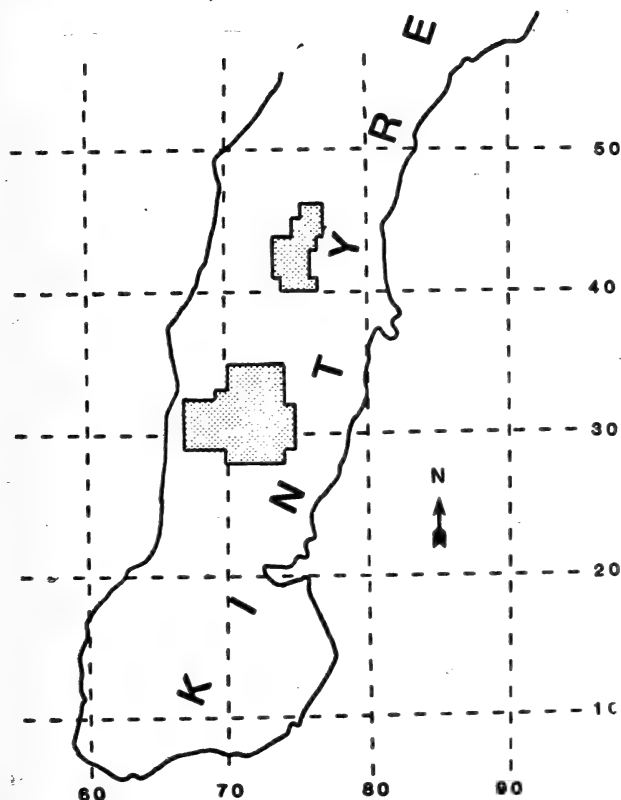


Fig. 1. The southern end of the Kintyre peninsula with the two study areas shaded: Carradale in the north and South Kintyre to the south. The national grid 10 km squares are also shown; these form part of the 100 km square NR.

then looking for nests if some of these signs were present. Merlins occupy breeding areas in March and April and generally commence egg laying in early to mid-May. By the time of this visit, on 23 to 26 May 1983, successful pairs should have been incubating. If pairs had failed prior to this visit then some signs should still have been present.

Sightings of all corvids, raptors and divers were recorded on a 1:50,000 map, together with the location of any active nesting area, ie. areas where a nest was found or where parental behaviour suggested that a nest was present. Additional landscape features such as lochans and derelict buildings were also checked. During the visit the weather, including visibility, was excellent.

Results and discussion

The numbers of adult raptors, corvids and divers were recorded together with the numbers of active nesting areas (Table 2). These figures give a minimum population and may under-estimate the actual density. The abundance of Crows in Carradale probably relates to the close proximity of sheep-walk, to and from which most of the adult birds were seen flying, presumably to feed and to obtain food for the chicks present in most nests. The lack of small lochans and large crags may account for the lack of Red-throated Diver, Pere-

Table 2. Numbers and density of raptors, corvids and divers recorded in the two study areas

Species	South Kintyre			Carradale		
	Adult birds	Active nesting areas		Adult birds	Active nesting areas	
		Total	per 1000 ha		Total	per 1000 ha
Crow	14	7	1.7	12	8	6.7
Buzzard	19	6	1.4	2	1	0.8
Kestrel	8	5	1.2	2	0	0
Short-eared Owl	9	6	1.4	1	0	0
Hen Harrier	3	2	0.5	3	2	1.7
Barn Owl	2	1	0.2	0	0	0
Long-eared Owl	2	1	0.2	0	0	0
Golden Eagle	0	0	0	4	0	0
Peregrine	0	0	0	2	1	0.8
Raven	0	0	0	2	1	0.8
Red-throated Diver	0	0	0	6	3	2.5



PLATE 38a & b. Golden Eagle at the nest. The relationship between these magnificent birds and lambs can still cause controversy in some parts of the Highlands.

B. S. Turner





PLATE 39. Storm Petrel: a species that has attracted an increasing number of enthusiastic, nocturnal ringers in an attempt to elucidate the extent of its wanderings.

B. Zonfrillo

PLATE 40. Hen Sparrowhawk feeding young. A note on hunting behaviour is on p. 268.

R. T. Smith

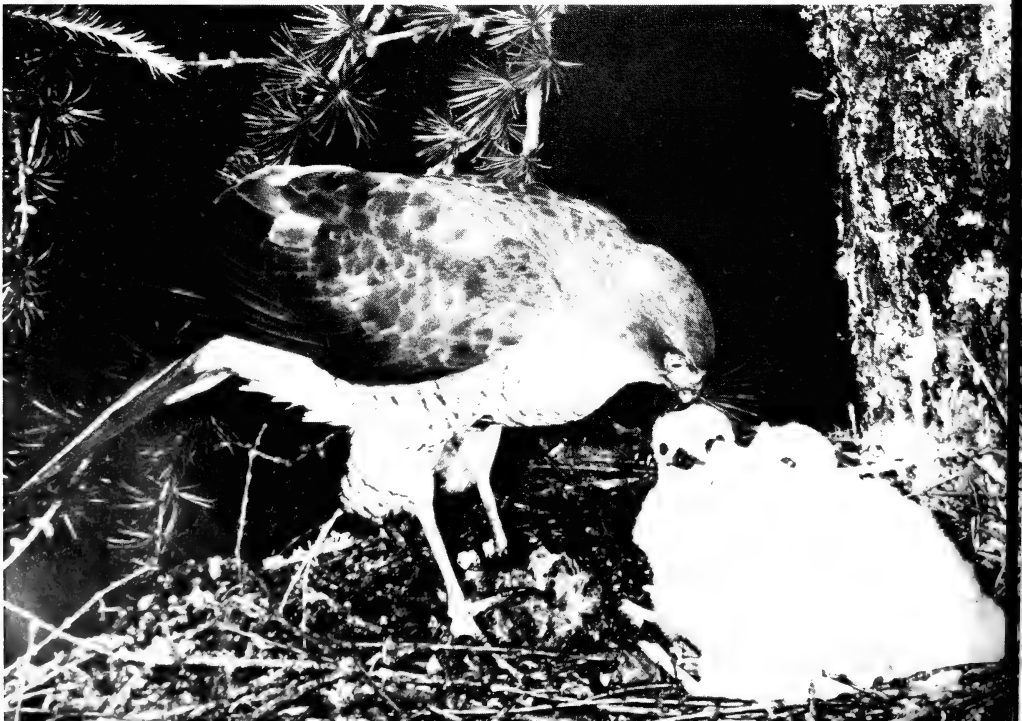




PLATE 41. Oystercatcher, & PLATE 42, Lapwing at the nest. A note on one species laying in a nest of the other is on p. 270.

A. D. Johnson





Left. PLATE 43. Maxwell Kerr Hamilton 1915-85, Treasurer of the Scottish Ornithologists' Club from 1963-80. See p. 271.

Drummond Young

Below. PLATE 44. Turnstone, one of the more widely distributed waders in winter.

R. J. Chandler



grine and Raven in the South Kintyre area. Although a large proportion of each area had been recently afforested, most of the birds recorded were those usually associated with open habitats. This population structure will undoubtedly change once canopy closure occurs. The abundance of small-mammal predators in South Kintyre probably resulted from the increase in Field Voles which occurs soon after planting (Charles 1981). Fledged broods of both Long-eared and Short-eared Owls were observed, suggesting that egg laying had commenced in mid-March.

Though many apparently suitable nesting areas were present, breeding Merlins were not located in either study area, nor were hunting Merlins seen or any signs (such as the plucked remains of prey on fence posts and boulder tops) found. It seems unlikely that Merlins have already disappeared from these two areas as a result of afforestation, as the present growth stage of much of this young forest would tend to favour Merlins, due to the increase in passerine prey that occurs soon after planting (Moss 1979, Moss *et al.* 1979). The largest blocks of young forest have yet to reach the stage where they offer potential prey shelter from hunting Merlins. The complete lack of Merlins in this apparently suitable habitat suggests that the population on the rest of Kintyre would be sparse, if this species is present at all.

While little should be inferred from a short visit in a single year, the data presented do provide evidence of the relative abundance of groups of birds little covered in conventional upland bird censuses. While the densities are low it should be remembered that these are minimum figures and that the study areas comprised the high central backbone of the Kintyre peninsula and excluded any of the richer coastal strip. Many of the species recorded nest on or near the landscape features that were searched, and the densities recorded for these are likely to be reasonably accurate compared with those for Short-eared Owls, which may have nested on some of the plateaux between watercourses, and Long-eared Owls, which are difficult to locate during the day.

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I am grateful to Gordon Heddon for providing maps of the areas, information and help during my stay, and to Peter Strang for this assistance at Carradale. Judith Rowe and Fred Currie kindly commented on a draft of this paper.

Summary

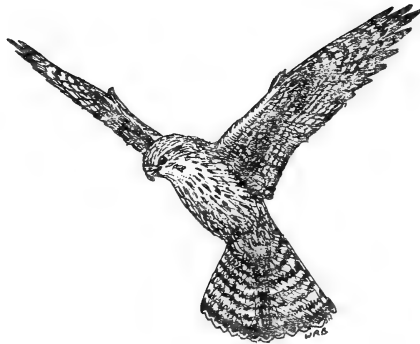
In two recently afforested areas in Kintyre, covering a total of 5,600 ha, no Merlins were located in 1983. Differences between the two areas in

densities of corvids, raptors and divers were probably associated with the relative availability of specific habitats, of prey and of carrion.

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Golden Eagles and lambs in Badenoch, Highland

D. N. WEIR

Two adjacent pairs of Golden Eagles in Badenoch, Highland, were thought to kill lambs in 1984 and this was investigated. Criticisms of the estimates of damage made in 1984 led to further fieldwork at one nest in 1985.

Study area and methods

The 12,000 ha study area, at 250-890 m elevation, was mainly heather moor and mountain. It included seven sheep farms and two crofting townships. Farmers provided information on 1984 sheep and lamb numbers. Lamb remains were looked for on the hill and at eagle nests, where other food was also recorded. Earlier work on eagle populations, and 1984 reports of eagles by residents, helped to outline the home ranges of the eagles. Wild prey populations were assessed from 20 years familiarity with the area.

Results

Golden Eagles Birds in the traditional Territory One nested in the same tree in 1982-5; they failed during incubation 1982, did not lay 1983, reared one young in 1984, and two young in 1985. The cock was thought to be present from autumn 1981 and the hen from July 1982, to judge from unusual size or behaviour. Territory Two was occupied by unpaired birds for, probably, more than 20 years, but in 1984 a sub-adult cock and adult hen built an incomplete nest. It was not visited in 1985, when it was said that there was no nest. In March-August 1984, more than 100 sightings and reports attributed to the two pairs indicated that they hunted most of the study area, except for arable farmland and some woods. An 'intruding' eagle was identified once. Radio-telemetry and colour marking in the USA suggest that the ranges of neighbouring pairs tend to be mutually exclusive (McEneaney & Lockhart, 1979).

Potential 1984 lamb crop and losses There were estimated to be about 7300 pregnant ewes (95% of 7700 present) in the study area. On a farm nearby, ultra-sound scanning in March indicated that there were 1.26 embryos/ewe and in September there were 0.97 lambs/ewe (n ewes = 725). This loss of 23% in the potential crop was thought to be unusually low for the district. Most study area farmers reported 0.9-1.0 saleable lambs/ewe. If two-thirds of mortality was before suckling (cf. Houston, 1977), then reasonable approximations for the study

area were 8000 embryos, 6300 suckling lambs and 5500 saleable lambs, a loss of 31% in the potential crop. Detailed studies in two West Highland districts indicated annual losses of 17-22% and 26% (Houston, 1977; Hewson, 1984).

About 80% of ewes were lambed on or near arable farmland and put to the hill about four weeks later. Almost all lambing was from 20 April to 30 May. On the nearby farm losses were mainly of suckling lambs which disappeared; 38% of twin lambs were lost compared with 14% of single lambs. Study area farmers thought that losses were mainly still-births or failures to suckle, non-traumatic losses of suckling lambs, or predation by Foxes. There were also road and rail casualties, and dogs killed 40 lambs in two incidents in 1984. Only two farmers considered that killing by eagles was important in 1984.

Lambs eaten by eagles In June-July 1984, a shepherd found three large, part-eaten lambs in the home range of the Territory Two eagles; eagles, or excreta and shed feathers, were found at all three. Pathological examination of one indicated some punctures consistent with post-mortem talon wounds, and that the lamb was dead or dying of *Pasteurella haemolytica* pneumonia and pleurisy before the attack (H. Ross, in litt). In April-June 1984, I examined remains of 19 part-eaten lambs on the hill; bruising and bleeding indicated that some had been killed but there were no eagle excreta or shed feathers at any.

Table 1 Notes on nine lambs at Badenoch Territory One Golden Eagle nests 1982 and 1985

Year and approx. date taken	State of remains	Indications of development, death cause
1982, early April	half complete	had walked. bruising/bleeding at strike marks, shoulder base to nape, killed by eagle
1982, mid April	half complete	had walked. bruising/bleeding at strike marks, nape to skull. killed by eagle
1984, late April	skin and wool	no determination possible. small
1984, early May	skin and wool	no determination possible. small
1984, mid May	hind leg	had grown. had bled. killed by unknown predator
1985, late May	fore leg	had walked. no bleeding. possibly taken dead
1985, mid-late May	hind leg	had walked. had bled. killed by unknown predator
1985, mid-late May	skin and wool	no determination possible. small
1985, mid-late May	skin, wool part skull	had grown. no bleeding, possibly taken dead

By contrast, at least two of nine lambs at Territory One nests in 1982, 1984, and 1985 had been killed by eagles (Table 1). All were small lambs, almost all brought in during the main lambing period. In 1982 lambs were brought during incubation, but in 1984-5 the eagle chicks hatched before lambing began (about 12-15 April). Lambs were brought when almost all hunting was probably by the cock. At least six lambs had ruptured hoof membranes or had grown, so that they had walked or suckled. At Territory One nests no lambs were found in 1972, when there was a different pair, nor in 1983 when the present pair did not lay. No lambs were found at the Territory Two nest in 1984.

Wild prey The study area was mainly 'hind forest' with an annual cull of about 200 Red Deer. There was a substantial calf crop, and some spring-summer carrion. With some feral goats and Roe Deer calving on the hill, young wild ungulates might have been 5-10% of lamb numbers. Rabbits and Brown Hares were scarce on the hill and the last major peak in Mountain Hare numbers was in 1957. Between about 1960 and 1980, Red Grouse numbers declined so much that all five sporting estates largely or entirely ceased to shoot them by driving. Ptarmigan were cyclically common on two estates. Over the last 20 years, Black Grouse and Capercaillie became uncommon and very rare, respectively. Thus most wild prey declined markedly over 15-30 years.

Eagle diet March-July remains and pellets indicated that Red Grouse was the most frequent item, followed by Mountain Hare and lamb, although hares and lambs were probably more important by weight (Table 2). The few data for Territory Two included no lamb, although these birds were seen eating lamb (above). In Territory One in 1982-5, lamb was 41% of remains and 14% of occurrences in pellets. Fresh remains tend to exaggerate the importance of lamb (Lockie, 1964) but it was clearly an important food of this pair.

Discussion

Basing estimates on Brown & Watson (1964), the study area eagles would take about 190 kg of food, in April-July 1984 (when lambs were available); this figure allows for 25% waste. If lamb was 10-40% of food by weight, then 19-75 kg of lamb would be taken. Eagles tend to eat 2-4 kg per lamb (Weir, 1973), suggesting that they fed on 5-40 lambs. Because it was known that they fed on at least six, 10-40 lambs was the estimate used here.

In 1982-85 eagles had killed two to nine of 12 lambs examin-

Table 2 Food remains and pellet contents at nests in Badenoch Golden Eagle Territories One and Two in 1972, 1982, 1984 and 1985

Fresh remains						
Food Type	A	B	C	D	E	total (%)
Non-passerines, except game	0	1	1	1	0	3(7)
Gamebird	8	0	4	3	4	16(39)
Passerines	0	0	0	0	0	0
Voles	0	0	0	0	0	0
Lagomorphs	3	0	1	1	1	6(15)
Young wild ungulates	2	0	0	0	0	2(5)
Large ungulate carrion	1	0	1	0	0	2(5)
Lambs	0	2	3	4	0	9(22)
totals	14	3	10	9	5	41 items

Recent pellets				
Food Type	F	G	H	total (%)
Non-passerines, except game	0	0	0	0
Gamebirds	18	12	3	33(44)
Passerines	1	0	0	1(1)
Voles	2	0	2	4(5)
Lagomorphs	14	5	4	23(31)
Young wild ungulates	1	1	0	2(3)
Large ungulate carrion	0	2	1	3(4)
Lambs	5	4	0	9(12)
totals	41	24	10	75 occurrences
	(28)	(16)	(7)	(51 whole/part pellets)

Food species : Grey Heron, Teal, Red Grouse, Ptarmigan, Black Grouse, Meadow Pipit, Short-tailed Vole, Water Vole, Mountain Hare, Brown Hare, Rabbit, feral goat (carrion, kid), Red Deer (carrion, calf), Sheep (carrion, lamb).

Territory, collection date : Territory One—A 6/5-12/7/72; B 10/4-15/4/82; C 13/5-9/84; D 5/6/85; F 13/5-16/7/84; G 5/6/85. Territory Two—E 19/5/84; H 19/5-13/6/84.

ed and on which they had fed. Based on this, they might have killed 2-30 lambs in 1984, at worst accounting for 4% of the estimated 800 deaths among suckling lambs. However, they might have killed a much higher proportion of the 20% of lambs which were born on the hill. Eagles usually take prey of 0.5-4.0 kg, and lambs in the first week of life (Tjernberg, 1981; Hewson, 1984). In Badenoch only the hill-born lambs were available to them while small; at worst, eagles might have killed roughly 30 of 160 suckling, hill-born lambs which died (about 19%). Most hill-born lambs were on crofters' grazings, in the home range of Territory One eagles.

Probably, the Territory One cock brought in small lambs

each time the pair bred, from about the hatching date. Probably, many were crofters' lambs which were common within the hunting range whereas wild prey was scarce. Complaints would have been justifiable but were not made; 1984 complaints were for farms in the hunting range of the other pair. If complaints were made for farms in the range of the Territory One pair, licensed killing or chick removal might be sought; this might need to be repeated in future years. It might be better to pay compensation temporarily, subject to phasing out the lambing of ewes on the hill—which might reduce other lamb losses too. Finally, this inconclusive investigation probably cost more than the value of lambs taken.

Acknowledgments

I thank the farmers, shepherds and stalkers of the area for all their help. H. Ross, the North of Scotland College of Agriculture, kindly examined a dead lamb. Drs A. Watson and R. Hewson valuably criticized drafts of the paper. The Director, U.S. Dept. of the Interior, Denver Wildlife Research Center, kindly allowed me to cite unpublished data. I was Speyside Representative of the Scottish Wildlife Trust when the study was made but the views expressed are mine.

Summary

In 1984 two pairs of Golden Eagles hunted nine sheep farms in Badenoch, Highland, where a potential crop of about 8000 embryos in March was reduced to about 5500 saleable lambs in September. Eagles probably killed 2-30 lambs and fed on 10-40. All kills might have been by one cock, and from the 20% of lambs which were born on the hill. Dogs killed more lambs than eagles did.

References

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Douglas Weir, 2 Belvedere Park,
Edinburgh EH6 4LR

Short Notes

Unusual method of killing prey by Sparrowhawk

On 21 December 1984, at Hamilton Low Parks (Lanarkshire), a distress call was heard from a clump of Rhododendron. An adult male Sparrowhawk emerged clutching a male Blackbird which was struggling violently. The Sparrowhawk flew to a puddle, about 100 m distant, where it pitched down into the water, completely immersing the Blackbird, and itself, sitting belly-deep. After approximately half a minute the Sparrowhawk flew, still clutching the Blackbird which continued to struggle. Thereupon, the Sparrowhawk returned to the pool, once more sitting on the immersed Blackbird, for about one minute, before flying off. This time the Blackbird appeared lifeless, no longer struggling. The pool was approximately 22.5 cm deep at its maximum.

Ian Newton states in his book that larger items of prey taken by Sparrowhawks are often not immediately killed but die during plucking. No other mention was found in available literature of this unusual but effective method of despatching proportionately large prey. However killing of prey cannot be a sequence of events which is often witnessed.

B J. BROADLEY

Dipper with one leg

On 2 January 1985, while ringing Dippers in South Ayrshire, I caught a Dipper with only one leg, the other amputated at the tarsal joint. The bird was recaptured on 25 January. Its weight (64 gms) was normal for the season; it was sexed as a female.

This disability is quite commonly reported for a wide range of species and appears to have small effect on survival. However the semi-aquatic lifestyle of the Dipper and in particular its reputed underwater locomotion makes survival with this injury appear unusual. There has long been discussion on underwater 'walking' by Dippers where fast flowing water is advantageously used to maintain position on the stream bed, leaving the legs free for locomotion. This ability is widely accepted. W. R. Goodge, conducting laboratory observations on locomotion in the North American Dipper (*Cinclus mexicanus*), concluded that wing movements were essential to maintain position and also for propulsion. The conclusion in the case of this Dipper is that wing movements must have been essential for survival.

B. J. BROADLEY

Reference

GOODGE, W. R. 1959. Locomotion and other behaviour of the Dipper. *The Condor* 61: 4-17.

Waders wintering on Colonsay and Oransay

The islands of Colonsay and Oransay lie 17 km south of Mull and 10 km north-west of Islay and like many of the other Hebridean islands have been little studied by ornithologists, particularly in winter. Attention has recently been drawn to the important populations of waders wintering on the machair and beaches of the Outer Hebrides (Buxton, 1982a, 1982b). Small but significant areas of similar habitat are found on the southern and western seaboard of Colonsay and Oransay and these are supplemented by the considerable area of tidal mudflat on "The Strand" which joins the two islands at low tide.

During 6-17 January 1984 the islands were surveyed for the BTO Winter Atlas and local concentrations of waders were found. Two visits, one during 14-28th December 1984 and the other 18-25 January 1985, for the WSG Census added to the information. The data from these counts are presented in Table 1 along with maximum passage numbers, based on the authors' observations on visits since 1975, and the only available figures in the literature for the islands—some estimates made by Reed *et al* (1983) of likely wintering and passage populations.

From these figures the two islands would appear to be of greater local importance for wintering waders than previously suspected and may together qualify as a site of national importance for wintering Ringed Plover.

References

- BUXTON, N. E. 1982a. Wintering coastal waders of Lewis and Harris, *Scot. Birds* 12: 38-43 ■ BUXTON, N. E. 1982b. Wintering waders on the Atlantic Shores of the Uists and Benbecula, *Scot. Birds* 12: 106-113 ■ REED, T. M., CURRIE, A. and LOVE, J. A. 1983. Birds of the Inner Hebrides. *Proc. Royal Soc. Edin.* 83B: 449-472.

D. C. JARDINE, J. CLARKE & P. M. CLARKE

Table 1 Total numbers of waders found on Colonsay and Oransay, Argyll

				Passage	Reed <i>et al</i> (1983)*
	6-17 Jan 1984	14-28 Dec 1984	18-25 Jan 1985	Max since 1975	
Oystercatcher	132	334	249	161	25-50
Ringed Plover	112	264	140	241	25-50
Golden Plover	20		7	167	5-10
Grey Plover	1	3	5	16	
Lapwing	168	240	164	567	25-50
Knot			6	3	5-10
Sanderling				45	
Purple Sandpiper	9	20	41	18	5-10
Dunlin	60	120	147	50	25-50
Jack Snipe			2	1	SV
Snipe	8+	c50	30	30	5-10
Woodcock		10	6	()	5-10
Bar-tailed Godwit	1	13	17	10	5-10
Whimbrel	1			16	PV
Curlew	102	322	184	100	25-50
Redshank	9	77	28	40	
Greenshank	4	11	4	12	5-10
Common Sandpiper				60	ND
Turnstone	49	71	209	50	5-10

*Brackets indicate species not counted. Figures for Reed *et al* are minimum and maximum. SV - Scarce Visitor, PV - Passage Visitor, ND - No Data.

Other wader species recorded on Colonsay and Oransay include: Killdeer**, Little Stint, Curlew Sandpiper, Ruff, Black-tailed Godwit, Green Sandpiper, Phalarope sp.

**subject to acceptance by BBRC.

Oystercatcher laying in Lapwing nest

On 14th May 1984, in a field near Wellbank by Dundee, I watched an Oystercatcher laying an egg in the nest of a Lapwing. It did this while being threatened by both male and female Lapwings. Once the Oystercatcher had left the area and the female Lapwing had reclaimed her nest, I decided to take a closer look. The nest contained four Lapwing eggs and one Oystercatcher's. I returned to the site each day for three days, during which the female Lapwing continued to incubate, but on the fourth day I found that the entire clutch had been removed, possibly by egg collectors.

M. PURVEY

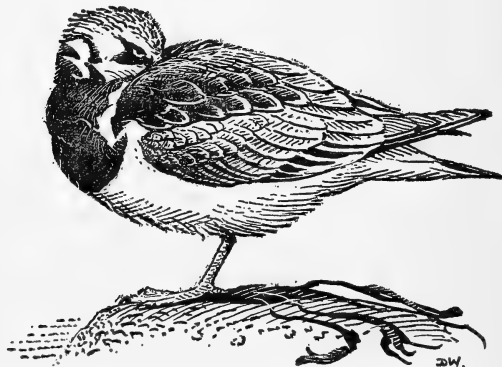
Interaction between Marsh Harrier and Roe Deer

I read with interest the note (12: 162) on a Golden Eagle interacting with a roe deer in Deeside. I have seen similar behaviour in Galloway involving an immature Marsh Harrier and roe deer.

On 28th May 1983 at 1535 hours the harrier was hunting a marshy area before landing on a grassy mound near a feeding adult roe deer with her fawn. The deer looked up and ran towards the harrier with the fawn at its side and stopped about 5-6 m. away from the harrier. The harrier flew up, circled and twice hovered above the heads of the deer as they looked up at it, before landing on the grassy mound again. The deer approached closer, whereupon the harrier flew up, hovering just above them, and making short swoops on the fawn before landing. Again the harrier flew up, hovering above the fawn now with lowered talons, whereupon the adult deer twice lunged at it, kicking out with her forelegs. The harrier continued to show a sporadic interest in the deer, hovering above them until it lost interest and landed at 1620 hours.

Although a roe deer would be too large a prey species for the harrier, the interest shown in the fawn was enough to elicit a positive offensive reaction, as would be expected, from the adult roe deer.

R. C. DICKSON



TURNSTONE

Maxwell Kerr Hamilton 1915 - 1985

With the death of Maxwell Hamilton on 14 October 1985, the Scottish Ornithologists' Club lost a founder member and one who had given great service to the club in several capacities. His early interest in birds led him to join the Midlothian Ornithological Club when it was formed in 1933; its sole objective was the serious study of birds. He was among those who, in 1934, helped to found Britain's first co-operatively manned bird observatory—on the Isle of May—and made regular visits to the island before the war. In 1945, while still on war service, he obtained special permission to go to the May and wrote a comprehensive account of his visit. He took particular pleasure in being able to attend the Observatory's Jubilee Dinner celebration in 1984.

Maxwell qualified as a Chartered Accountant in Edinburgh in 1939 and then saw active service in the Royal Navy during the war, in the course of which he was Mentioned in Despatches. His service took him to the Middle and Far East and, while in India, he met and married his wife Helmy. After the war he worked for some years in Sweden, his wife's home country.

When he returned to Scotland in the early 1960s Maxwell renewed his ornithological contacts and soon became involved in the affairs of the club. In 1963 he was elected Honorary Treasurer, a post he held until 1980. During those seventeen years his work as Treasurer increased considerably, due primarily to the expansion of the Bird Bookshop in which sales rose from £1200 in 1963 to £78,000 in 1980. He was therefore responsible for advising council on financial matters during a most important period of the club's development, and successive Presidents relied on his sound judgment.

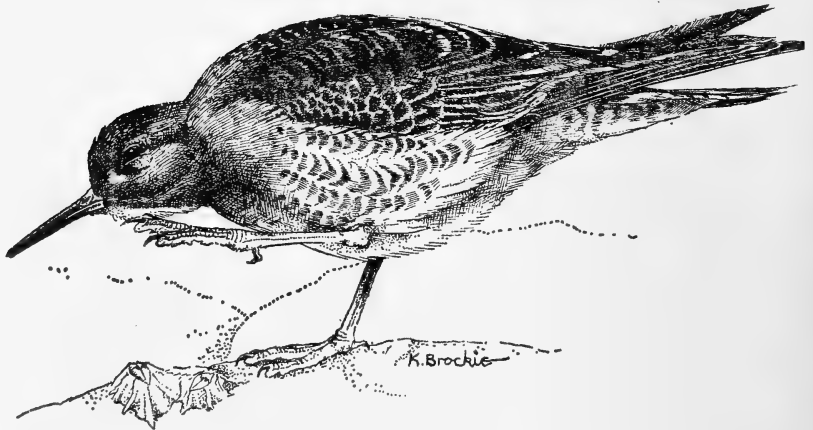
During this time, from 1968-77, he was chairman of the club's important Management Committee; it is responsible for making recommendations to council on matters of policy and administration, and for dealing with urgent matters arising between council meetings. From 1966-69 he was chairman of the Edinburgh Branch, and for many years chaired the Edinburgh Discussion Group with great enthusiasm. This Group consisted mainly of members active in the field, and it organised surveys and enquiries in the Lothian area. All these activities Maxwell undertook willingly and cheerfully and, on relinquishing his work as Honorary Treasurer in 1980, he was elected an Honorary Member in recognition of his great service to the club.

During these years he naturally had his own accountancy work to attend to, including directorship of companies and societies, but somehow he found time to become involved in other natural history activities. He joined the Scottish Wildlife Trust on its formation in 1964, and was elected one of its Vice-Chairmen in 1970. In 1978 he succeeded Sir Charles Connell, and became the Trust's second Chairman until he handed over this responsible position in 1981.

Maxwell was a quiet and dedicated man with a fine and dry sense of humour. Many will remember his attachment to his pipe which he puffed assiduously during meetings; frequently it went out, as evidenced by a mounting pile of matchsticks, but re-lighting it gave him time to ponder the answer to some difficult question. He was firm when occasion demanded and, though some may have disagreed with him at times, his suggestions generally prevailed.

Maxwell was very much a family man and took great pleasure in the company of his two daughters and five grandchildren. To them, and in particular to his wife, Helmy, who sustained him through his long illness, we extend our deepest sympathy. We have lost a man who was dedicated to his family, his work and our club.

ALASTAIR D. PEIRSE-DUNCOMBE



PURPLE SANDPIPER

Reviews

A Dictionary of Birds Edited by Campbell, B. & Lack, E. T. & A. D. Poyser; 670 pp; 500 illus; £35 until 30 September, then £39.00

Have you ever wondered what sort of bird was a cochoa, a donacibus, a hawk eagle, a peep, or a rainbow bird? Have you ever wanted to know what birds were members of the Apodi, Indicatoridae, Otidae, Sphenisciformes, or Xenicidae? Have you ever wished to know more about broadbills, divers, gulls, megapodes, or sparrows? Have you ever wanted to know the meaning of the terms altricial, columella auris, feral, over-shooting or syndactyly? Have you ever wished to read a brief but comprehensive account of biostatistics, falconry, migration, birds as pests, or vocalizations? If so, this is the book for you—indeed, it is the book for any serious ornithologist.

The editors have done a fine job in bringing up-to-date Landsborough Thomson's *A New Dictionary of Birds*. Like Thomson, they have used their experience and knowledge not only to write, or rewrite, many entries but also to bring together a team of specialists to write the rest. By careful editing they have ensured that the contributions are both concise and clear; by extensive cross-referencing they have made it easy for one to trace through subjects about which one has little previous knowledge. The carefully chosen illustrations support the text well. The book is well-designed, much less bulky than its predecessor and not unwieldy to handle—despite the hugeness of its contents.

I would place this book second only to a good identification guide in any ornithologist's library. Fortunately, the publishers have held the price low enough for people to afford to buy it. I am even considering the purchase of a second copy, for I shall need to consult it both at home and at work.

JEREMY J. D. GREENWOOD

A Guide to the Birds of Nepal by C. & T. Inskipp; Croom Helm; 1985; 392 pp; many maps & b. & w. drawings; £25.00.

This is not a field guide. The authors' main aim was to describe and map the distribution of birds in Nepal, and that takes up three-quarters of the book. Most descriptions are accompanied by a small sketch of the bird. The introductory chapters are helpful for anyone planning a bird watching trip to Nepal; one deals with areas to visit and their specialities, another describes in detail some of the more difficult species, accompanied by drawings and 8 colour plates. This is a useful contribution to the literature on Asian bird distribution, and my criticisms are concerned mainly with presentation. The general layout and typeface are unattractive. The typeface used for the index is too reduced and chapters are not clearly headed or separated. The overall impression is more that of a well-researched report (602 references) than of an expensive book, which is too bulky to take to Nepal. One tenth of the world's birds have been recorded in Nepal and a good field guide is long overdue. A combination of the text from Fleming's *Birds of Nepal*, simplified maps and salient identification features of difficult birds from the Inskipp's book and a new set of illustrations on good quality paper, would be a winner. The Inskipp's book, good though it is, may be a bit premature, and at £25, unlikely to have wide appeal.

N. PICOZZI

ITEMS OF SCOTTISH INTEREST Articles and reports on birds in Scotland, mainly on status and distribution. References from the widely available *British Birds*, *Bird Study* and *Ringing and Migration* are excluded. The items listed are available in the Waterston Library for reference. The librarian would be glad to receive reprints or copies of papers on any aspect of ornithology.

Argyll Bird Report 1984 (86 pp). C. A. Galbraith (ed) 1985. In addition to the usual species list and ringing report, it has short papers on Tawny Owls in spruce forests, Greenland White-fronted Goose roost sites, heronry survey, and birds of the Oban area. Available from the editor, 4 Achnagoil, Minard, Inveraray, Argyll for £3 post free.

Caithness Bird Report 1984 (35 pp). Available from the SOC Bird Bookshop, £2 post free to SOC members.

Fife and Kinross Bird Report 1984 (28 pp). D. Dickson & C. Smout (eds) 1985. Includes short reports on the 1984 Ringed Plover survey and on birdwatching on the Lomond Hills. Available from the SOC Bird Bookshop, £1.20 post free to SOC members.

Lifetime reproductive output of female Sparrowhawks. I. Newton 1985. *J. Anim. Ecol.* 54: 241-253. Based on extended studies in south Scotland from 1971 to 1983.

Notices

Whooper Swan Census, January 1986 A recent estimate that the post-breeding population of Whooper Swans in Iceland numbers as many as 10-11,000 (*Wildfowl* 35: 37-47) has prompted the Wildfowl Trust to organise a census of Whooper Swans in Britain and Ireland for the weekend of January 11th/12th 1986. It is hoped that full coverage will be achieved. Anyone who would like to take part is asked to contact their regional wildfowl count organiser (see list below) or David Salmon at the Wildfowl Trust, Slimbridge, Gloucester, GL2 7BT.

Shetland D. P. P. Eva, 6 Westerloch Brae, Lerwick.

Orkney P. Reynolds, Berrybank, Evie, Orkney.

Wester Ross and Skye A. Currie, Glaiseilean, Broadford, Isle of Skye IV49 9AQ.

Outer Hebrides Vacant - contact Wildfowl Trust.

Caithness S. Laybourne, Old Schoolhouse, Harpsdale, Halkirk, Caithness KW12 6UN.

Inverness-shire, Easter Ross, Sutherland (East) R. H. Dennis, Landberg, North Kessock, Inverness IV1 4XD.

Banffshire, Morayshire, Nairnshire J. Edelsten, 12 Durn Avenue, Portsoy, Banffshire.

Aberdeenshire, Kincardineshire A. Duncan, 12 Cairncry Avenue, Aberdeen AB2 5DS.

Angus B. Pounder, 64 Forfar Road, Dundee, Angus.

Perthshire (East) E. D. Cameron, Strathclyde, 14 Union Road, Scone, Perth PH2 6RZ.

Argyllshire and Inner Hebrides (South) S. Newton, 7 Strathmiglo Place, Place, Stenhousemuir, Stirling FK5 4UQ.

Fife, Kinross-shire Mrs J. A. R. Grant, Brackmont, Crail, Fife.

Central Region D. Thorood, 4 Archers Avenue, Stirling FK7 7RJ.

Bute J. B. Simpson, Estate Office, Rothesay, Bute.

Dunbartonshire and Renfrewshire A. Young, 76 Liddel Road, Ravenswood, Cumbernauld G67 1JE.

Strathclyde South East A. Wood, 47 Kilbowie Road, South Carbrain, Cumbernauld G67 2PZ.

Lothians Miss J. Wilcox, 18 Howdenhall Gardens, Edinburgh EH16 6UN.
Ayrshire A. G. Stewart, 31 St Andrews Avenue, Prestwick, Ayrshire
KA9 2DY.

Borders A. Bramhall, 28 Blakehope Court, Tweedbank, Galashiels, Sel-
kirkshire TD1 3RB.

Dumfriesshire, Kirkcudbright, Wigtownshire P. Shimmings, 5 Broom-
house Road, Lockerbibe, Dumfriesshire DG11 2LX.

Tagged Common Seals As part of a study of their distribution and be-
haviour, a number of common seals have been marked in Orkney. Each
seal has a flipper tag, and some also have fur marks or radio transmitters.
White and yellow sheep eartags are used, each with a two digit
number (12 mm high) on the outside, and placed in one or both hind
flippers. Fur marks are either orange, red or lime-green, and are of a
variety of shapes and sizes, normally on the back and/or head. Radio
transmitters are glued to the fur on the head or back, and are the same
colours as the fur marks with a 34 cm whip aerial. Any records of
marked individuals, dead or alive, would be gratefully appreciated. Even
if the tag number can't be read, details of any sightings are still useful.
Please send any records, or write for more details of the marking scheme,
to : **Paul Thompson, Barebrecks Cottage, Burness Road, Firth, Orkney**
KW17 2ET.

The 19th International Ornithological Congress will be held in Ottawa,
Canada, from 22 to 29 June 1986. The deadline for registration and
submission of contributed papers is January 1986. Further information
and registration forms are available from **Dr H. Ouellet, Sec. Gen. XIX**
Congressus Internationalis Ornithologicus, National Museum of Natural
Sciences, Ottawa, Ontario, Canada K1A 0M8.

Raptor Organization Registry The American Raptor Research Foundation
plans to prepare a Directory of Raptor Organizations of the World, the
aim being to have available in one document details of all organisations
whose major purpose is to deal with some aspect of the life of raptors.
Officers of relevant organisations can obtain further information from
R. J. Clark, Raptor Research Foundation Inc., Dept. of Biology, York
College of Pennsylvania, York, PA 17403-3426 USA.

Operation Wildlife is a new quarterly magazine containing news and
articles of interest to naturalists and conservationists. It is available by
subscription only and contributions are invited. Further details from **D. H.**
Reed, c/o The Old Vicarage, Great Barford, Bedford MK44 3JJ.

Important Notice There have been several late changes to the list of
local recorders given on pages 278-279. Full details will be found in
SBR 1984.

The Scottish Ornithologists' Club

JUBILEE RECEPTION

The fiftieth anniversary of the founding of the Scottish Ornithologists' Club will be celebrated by a reception to be held in the Kelvingrove Museum, Glasgow, on the evening of Friday, 21 March 1986. Besides celebrating 50 years of Scottish ornithology, the reception will also launch the publication of "Birds in Scotland" by Valerie Thom. (See below for details of the pre-publication offer). The SOC Council warmly invites all Club members to the Reception and book launch. Tickets are available from Hector Galbraith (Glasgow Branch Chairman), 96 Neilston Road, Paisley, Renfrewshire PA2 6EJ, (041-887-5499). Tickets are £5.00 and include the cost of a buffet and wine.

BIRDS IN SCOTLAND

This new book by Valerie Thom and sponsored by the SOC will be published by Poysers on 24 March 1986. Details of an exclusive pre-publication offer to Club members are enclosed with this issue of the journal. Club members may order one copy each at £19.00 saving £5.00 off the publication price of £24.00. Copies of the book will be posted to members on publication (postage and packing free of charge) or they may collect their copy and have it signed by Valerie Thom at the Jubilee Reception (see above).

SCOTTISH BIRDWATCHERS' CONFERENCE 1986

Next year's Spring one-day conference organised by the SOC and BTO will be held on Saturday, 5 April 1986, at the University of Aberdeen. Speakers will include Dr Ian Newton (ITE) on Sparrowhawks and Dr Mike Moser (BTO) on the Winter Shorebird Count in Scotland. The SOC Bird Bookshop and the BTO Shop will be at the Conference. Ian Newton's new book "The Sparrowhawk" may be available at the Conference. The charge for the Conference is £9.00 per person including lunch. Further details of the programme and a booking form are available from Miss Pat Webster, SOC, 21 Regent Terrace, Edinburgh EH7 5BT.

REDESIGNED EMBLEM

Keith Brockie, the well-known young Scottish wildlife artist, author and Club member, has drawn the new Crested Tit emblem. The Bird Bookshop is already using the new emblem in its promotional material and the new bird features on the new envelope (of re-cycled paper) used to post the journal. The new Crested Tit will feature more prominently during Jubilee Year when new ties, badges and car stickers will become available. We are very grateful to Keith for his excellent drawing.

SCOTTISH BIRD REPORT 1984

The 1984 *SBR*, edited by Angus Hogg, was published in November. Copies are available, price £2.50 (inc post & pack), from SOC (*SBR* 1984), 21 Regent Terrace, Edinburgh EH7 5BT.

SCOTTISH BIRD REPORT 1985

Observers are reminded that all records for 1985 should be sent to the local recorders (listed on page 278) by the end of January 1986. This will enable the recorders, compilers and the editor of the *SBR* to include

the *SBR* 1985 with the Winter 1986 issue of the new *Scottish Birds*.. The editor invites the submission of black & white prints or colour transparencies of rare or uncommon birds taken in Scotland in 1985, together with any line drawings of Scottish birds. Remember, the *SBR* is your report, please give it your full support by being prompt with the submission of your records—Angus Hogg, Editor *SBR*, Kirklea, Crosshill, Maybole, Ayrshire KA19 7RJ.

INDEX, VOLUME 13

The Index to Volume 13 of *Scottish Birds* will be published in 1986 and sent free of charge to all Club members and subscribers.

ENDOWMENT FUND GRANTS

The closing date for applications for 1986 grants is 31 December 1985. Application forms are obtainable from John Davies, SOC, 21 Regent Terrace, Edinburgh EH7 5BT.

SOC TRIP TO ISRAEL

Following an enjoyable visit to Israel last spring by John Davies (Club Secretary) as a guest of the Society for the Protection of Nature in Israel, a trip is being arranged for Edinburgh Branch members and any other Club members who are interested. Israel offers some of the best bird-watching in the Western Palearctic with a rich indigenous avifauna and a spectacular spring migration. This, combined with diverse scenery and numerous historic/biblical sites, will make a memorable holiday. The trip is being led by Alan Brown, recorder for East Lothian and member of the Scottish Bird Records Committee. Further information, including details of the itinerary, the birds to be seen, the travel and accommodation arrangements as well as the very competitive costs are available from Alan Brown, 23 King's Court, Longniddry, East Lothian EH32 0QP. Telephone 0875 - 52413.

GLASGOW BRANCH CHEESE & WINE PARTY

Glasgow Branch invites all SOC members and their friends to attend their cheese and wine party on Wednesday, 19th February 1986. Wine, food, quizzes, prizes, what more could you ask? All for the astoundingly low price of only £3. The venue is Kelvingrove Museum, Dumbarton Rd., and the time 7 p.m. Tickets are available from Hector Galbraith, 96 Neilston Rd., Paisley PA2 6EJ (SAE).

SOC JUBILEE CRUISES

Two special cruises have been arranged for Club members for the spring of 1986 visiting some of the remoter Scottish islands, particularly those which have large seabird colonies. The Dutch expedition ship *PLANCIUS*, which carries 26 passengers in fairly simple accommodation, is being chartered. The aim will be to land on most of the islands mentioned below for 2 to 4 hours. The exact programme will be subject to weather conditions but will probably be as follows:

Cruise A, 14th to 23rd May, from Leith to Greenock. Leader, John Arnott. Bass Rock, Hoy, Westray, Papa Westray, Fair Isle, Mousa, Noss, Fetlar, Out Skerries, Hermaness, Foula, St Kilda, Canna, Greenock.

Cruise B, 24th May to 2nd June, from Greenock to Aberdeen. Leader, Bobby Tulloch. Canna, St Kilda, Foula, Hermaness, Fetlar, Out Skerries, Noss, Mousa, Fair Isle, Westray, Papa Westray, Hoy, Aberdeen.

The cost per person will be £591. The cruises are being run by ERSKINE EXPEDITIONS. Members should write for further information direct to ERSKINE EXPEDITIONS, 14 Lnerleith Place, Edinburgh EH3 5PZ.

Should anyone be interested in going further afield, the *PLANCIUS* will be proceeding on a further cruise from 3rd to 14th June from Aberdeen to Reykjavik via the Shetlands and the Faroes. (Information available from ERSKINE EXPEDITIONS).

LOCAL RECORDERS 1985/86

The list below is a new and up to date (7 October 1985) list of SOC Local Recorders. The areas covered by the local recorders have this year been changed from the old County to the new Region and District basis. In the large majority of cases this involves only a small change in the relevant areas. It will greatly help the local recorders and editor and compilers of the *Scottish Bird Report* if this new system of recording areas, using Regions and Districts as set out below, is used from this year (1985) onwards.

Shetland (except Fair Isle) D. Coutts, 'Da Knowe', Twageos Road, Lerwick, Shetland.

Shetland (Fair Isle) N. J. Riddiford, Bird Observatory, Fair Isle, Shetland.

Orkney C. J. Booth, 'Ronas', 34 High Street, Kirkwall, Orkney.

Western Isles W. A. J. Cunningham, 'Aros', 10 Barony Square, Stornoway, Isle of Lewis, PA87 2TQ.

Highland (Caithness) S. Manson, 7 Duncan Street, Thurso, Caithness.

Highland (Sutherland) A. R. Mainwood, 13 Ben Bhraggie Drive, Golspie, Sutherland.

Highland (Badenoch & Strathspey, Inverness, Lochaber, Ross & Cromarty, Skye & Lochalsh) R. H. Dennis, Landberg, North Kessock, Inverness IV1 1XD.

Grampian/Highland (Moray/Nairn) M. J. H. Cook, Rowanbrae, Clochan, Buckie, Banffshire

Grampian (Banff & Buchan, City of Aberdeen, Gordon, Kincardine & Deeside) Dr M. V. Bell, 20 West Mount Street, Aberdeen AB2 4RJ.

Tayside (Angus, City of Dundee) N. K. Atkinson, 5 Tolmount Crescent, Montrose, Angus.

Tayside (Perth & Kinross) E. D. Cameron, Strathclyde, 14 Union Road, Scone, Perthshire PH2 6RZ.

Fife (Dunfermline, Kirkcaldy, North East Fife) D. E. Dickson, 133 Duddingston Drive, Kirkcaldy, Fife.

Fife (Dunfermline, Kirkcaldy, North East Fife) D. E. Dickson, 133 Duddingston Drive, Kirkcaldy, Fife.

Central (Clackmannan, Falkirk, Stirling) Dr C. J. Henty, 7 Coneyhill Road, Bridge of Allan, Stirlingshire.

Lothian (Midlothian, City of Edinburgh, West Lothian, inc Forth Is) I. Andrews, 15 The Parsonage, Musselburgh, Midlothian EH21 7SW.

Lothian (East Lothian) A. Brown, 23 King's Court, Glassel Park, Longniddry, East Lothian.

Borders (Berwickshire, Ettrick & Lauderdale, Roxburgh, Tweeddale) R. D. Murray, 143 Eskhill, Penicuik, Midlothian.

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Dumfries & Galloway (Stewartry, Wigtown) A. D. Watson, Barone, 54 Main Street, Dalry, Castle Douglas, Kirkcudbrightshire DG9 3UW.

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Sunday, 15 December 1985 DUNDEE Stannergate to Monifieth.

Sunday, 12 January 1986 TENTSMUIR TAYPORT AREA.

Sunday, 9 February 1986 TULLYBACCART AND REDMYRE (Sidlaws between Dundee and Couper Angus).

Sunday, 9 March 1896 DUNNING AREA.

Sunday, 20 April 1986 FOWLSHEUGH near Dunnottar Castle.

BRANCH NEWS

Aberdeen Branch Sutherland Visit On the May holiday, May 3-6, the Aberdeen Branch had a weekend trip to Lochinver, organised by our secretary Donald Bain, and a former Aberdeen member, Doug Mainland, who now stays in Lochinver. Doug made sure that we were all in excellent accommodation. We drove up to Lochinver on the Friday and next morning took the boat from Tarbert, near Scourie, across to the RSPB island reserve Handa. Handa is great for a day's birding. The sheer cliffs at the west of the island had Kittiwake, Fulmar, Guillemot and Razorbill and the dramatic Great Stack had Puffins on its top. Bonxies were present in groups but had not yet taken up territory and we had one pair of Arctic Skuas just before we left. Other birds included Red-throated Diver and Tysties on the sea and a Snipe's nest with 4 eggs. Unfortunately, none of us saw the Great Northern Diver which had been hanging about recently.

The Sunday and Monday morning were spent birding in the area. Here again Doug was invaluable in advising where to walk and drive and generally bird spot in the area. In all the group had 97 species for the weekend, including Black-throated Diver, Peregrine, Eagle and Twite. Many thanks to Doug and Angela Mainland for their hospitality and to David for organising a trip which we will undoubtedly repeat.

One other piece of news from Aberdeen is that our just retired chairman, that "well kent" figure, Logan Steele, has become engaged and will be married in October. So Logan has finished lekking and he and Christine will be taking up territory in Hull. Our best wishes go with them both.

A.D.

ADVICE TO CONTRIBUTORS

SCOTTISH BIRDS publishes original material relating to ornithology in Scotland; papers concerned with status and distribution are particularly invited. All papers are considered by an Editorial Panel and, where appropriate, are scrutinised by specialist referees. Authors are advised to invite comment from friends or colleagues, and if necessary to make amendments, before submitting their papers. Short notes on unusual observations or records are also accepted. Contributions are accepted subject to editing and on the understanding that they are not being offered elsewhere. Those accepted will normally be published in order of receipt of the finally revised typescript. Two numbers are published per year, in early June and December. The winter number contains the *Scottish Bird Report*, which includes rarity descriptions (these should be sent to the SBR Editor).

Authors should bear in mind that only a small proportion of the readership is science-trained, and should aim to present their material concisely, interestingly and clearly. Unfamiliar technical terms and symbols should be avoided wherever possible and if deemed essential should be explained. Supporting statistics should be kept to a minimum. Reference should be made to recent issues of *Scottish Birds* for guidance on style of presentation, use of capitals, form of references, etc. Papers should be typed on one side of the paper only, double-spaced and with wide margins; two copies are required and the author should also retain one. Headings should NOT be underlined.

The new format for *Scottish Birds* is the same size as the old-style *Bird Study*, with the text set in double columns. Tables, maps and diagrams should be designed to fit either a single column or the full page width. Tables should be self-explanatory and headings should be kept as simple as possible, with footnotes used to provide extra details where necessary. Each table should be on a separate sheet. Maps and diagrams should be in Indian ink and drawn so as to permit reduction to half their original size; they should be submitted WITHOUT LETTERING and accompanied by a copy showing the lettering required. Captions should be typed on a separate sheet. Relevant line-drawings (in ink) will be welcomed, as will photographs (preferably black & white glossy prints).

SCOTTISH BIRD NEWS is the same dimensions as, and similar in general layout to, *BTO News*. The aim is to present material which is as up-to-date as possible and this inevitably imposes constraints during production. Since the material will have to be adjusted to fit into tight space limits, editing may have to be extensive, while time limits mean that it will not be practicable to circulate proofs to contributors, as is the practice with *Scottish Birds*. Publication is quarterly, in early March, June, September and December. Contributions—other than 'Late News' items (see below)—require to be in the Editor's hands not later than 8 weeks prior to publication date (eg by the end of December for the March issue). Longer articles (up to c1,000 words) should be typed (as for *SB*) but short items will be accepted hand-written (so long as they are easily legible!). The absolute deadline for brief 'Late News' reports, requests for help and notices is 4 weeks before publication is due: such items may be notified to the Editors by telephone if necessary (0738 - 23508)—but it is not possible to guarantee the inclusion of material which arrives at a late stage of production.

Material suitable for *SBN* includes the following: Branch news, accounts of Ringing Group activities, short reports on conferences, expeditions and on-going fieldwork, comment on unusual bird movements or

mortality, and letters. Illustrations include photographs and vignettes (there is an urgent need for more offers of both) and cartoons, as well as relevant maps and diagrams. All drawn material should be of a size that will allow reduction by about half. It need not be submitted in a 'finished' form, but should carry all the information needed for re-drawing (eg scale, north point, names, units of measurements, etc.).

Recent Reports

These notes include unchecked reports and are not intended as a permanent record, nor will they be indexed. Please send reports to Pete Ellis, Houss, East Burra, Shetland, via recorders at the end of March, June, September and December. The period July to September is covered here.

The exceptionally wet summer affected breeding birds in all areas except the northern isles. **Black-throated Divers** and **Peregrines** had a poor season, but **Ospreys** reared over 50 young for the first time since recolonisation began. Seabirds were badly affected by food shortages. **Guillemots** died in large numbers in the Firth of Lorn and **Arctic Terns** and **Kittiwakes** had a disastrous breeding season in the northern isles. Migration was rather poor with only 2 sizeable falls on the east coast and in the northern isles in late August and late September. Many of the commoner migrants only occurred in low numbers, however several astounding rarities were seen including 2 new records for the Western Palearctic and a new record for Scotland.

A **White-billed Diver** in Shetland and a **Pied-billed Grebe** in the Western Isles both summered. Seawatching in August and September produced **Cory's Shearwaters** off Gullane and Troon and 2 off Turnberry. **Great Shearwaters** were off Lewis and Caithness, but the only report of sizeable numbers of **Sooty Shearwaters** was 200 per hour off North Ronaldsay. Thirty-five **Leach's Petrels** passed Corsewall Point on 14th September and singles were caught on Noss and on a ship off Stromness. Inland **Manx Shearwaters** were in Speyside and 6 were on Loch Ness. Single **Little Shearwaters** rewarded seawatchers at Turnberry and Corsewall. A **Bittern** was at New Cumnock and the Carron Valley **Bean Geese** numbered 58 by mid-September. **Pink-footed Geese** reached early peaks of 16000 at Strathbeg and 6500 at Aberlady on 30th September. Single **Snow Geese** were on North Ronaldsay and at Meikle Loch, a **Bar-headed Goose** was at Aberlady in September and a **Barnacle Goose** on Fetlar in July, though 175 at Strathbeg in late September were more usual. Five pale-bellied **Brent Geese** were at Virkie in September and a dark-bellied bird was at Aberlady in July. A rash of **Ruddy Shelduck** in July and September brought 2 to Easter Ross, 1 to Aberdeenshire and 2 to East Lothian. The **Black Duck** summered in East Lothian, a **Red-crested Pochard** visited Strathbeg, the **Ring-necked Duck** summered in Shetland and a pair of **Ruddy Ducks** summered in Aberdeenshire. **Honey Buzzards** visited Tynninghame and Fair Isle, an **Osprey** was in Shetland, a **Hobby** in Aberdeenshire and **Saker** on North Ronaldsay. Fair Isle had a **Quail**, a **Corncrake**, and two **Spotted Crakes**, with another on North Ronaldsay. A Crane was seen at Caerlaverock. It was a good autumn for rare waders. A **Dotterel** was at Bogside and a **Lesser Golden Plover** on Fair Isle. **Little Stints** peaked at 23 at Aberlady but only 8 at Virkie. Aberlady had a **Temminck's Stint**. Two **White-rumped Sandpipers** were in Aberdeenshire and another in Caithness whilst a **Sharp-tailed Sandpiper** put in a brief appearance at Aberlady. **Curlew Sandpipers** reached maxima of 25 at Virkie, 9 on Fair Isle, 5 at Inverness, 7 on the Don, 7 on the Ythan and 23 at Aberlady. Single **Buff-breasted Sandpipers** were in Shetland and at Linwood. **Great Snipe** were on Fair Isle and more un-

usually in Caithness. A **Long-billed Dowitcher** was at Caerlaverock. **Spotted Redshanks** appeared in small numbers in the northern isles, but **Green Sandpipers** were seen in exceptional numbers in several areas. **Wood Sandpipers** also appeared in better than average numbers. **Wilson's Phalaropes** were seen at Inverness and Aberlady and 3 **Grey Phalaropes** were in Shetland and 2 off North Ronaldsay. Fair Isle had a **Pomarine Skua**, with 2 off North Ronaldsay and 2 at Inverness. **Long-tailed Skuas** were off Fair Isle, with 2 at Birsay and 1 off Barns Ness. A single **Mediterranean Gull** visited Musselburgh and a **Little Gull** was in Shetland with 5 at Strathbeg and 350 at Carnoustie. **Sabine's Gulls** were on Benbecula and South Uist with 2 off Corsewall Point. Single **Gull-billed Terns** were off Burnmouth in July and Barns Ness in August, but **Black Tern** numbers in East Lothian were poor. Early **Little Auks** were off Harris and Hoy in September. The Orkney **Scops Owl** died in July. A **Nightjar** was in Edinburgh in July when a **Bee-eater** visited several sites in Orkney. A **Hoopoe** was in Yell and **Wrynecks** were in the northern isles, with a peak of 10 on Fair Isle on 20th August. A **Great Spotted Woodpecker** was in Shetland, with another on Fair Isle.

Out Skerries had a **Richard's Pipit**, whilst Fair Isle had 3 and North Ronaldsay another. An unprecedented 3 **Pechora Pipits** were on Fair Isle, the first there since 1978. Fair Isle also had a **Citrine Wagtail** when another was in East Lothian, the third there in recent years. **Thrush Nightingales** were on Bressay and Noss in August. The only **Black Redstart** reported was on Copinsay, but **Siberian Stonechats** were at Quendale and on Fair Isle. Fair Isle also had a **Lanceolated Warbler** and a **Grasshopper Warbler** with another seen on Whalsay. Two **Aquatic Warblers** were on Fair Isle in August when a **Blyth's Reed Warbler** was caught on Noss. The only **Marsh Warbler** was on Fair Isle, but the late August fall brought good numbers of **Reed Warblers** to the northern isles. Four **Icterine Warblers** were in Shetland with 7 more on Fair Isle and another on North Ronaldsay. Fair Isle had 2 **Arctic Warblers**, the only others being on South Ronaldsay and in Caithness. A fall of **Yellow-browed Warblers** on 23rd September brought only 3 to Shetland but 25 to Orkney, 23 to Caithness and 9 to Aberdeenshire. **Red-breasted Flycatchers** were involved in the same fall with 1 on North Ronaldsay, 5 at Fife Ness and 6 at Barns Ness. A pair of **Golden Orioles** were seen during the summer in Aberdeenshire. New for the Western Palearctic was a **Brown Shrike** at Grutness in Shetland. The late August fall involved good numbers of **Red-backed Shrikes**, with 3 on Fetlar, 3 on Whalsay, 3 at Virkie, up to 8 on Fair Isle and 3 on North Ronaldsay. A **Tree Sparrow** in Shetland was unusual. An influx of **Siskins** occurred from late June. **Common Crossbills** also irrupted with peaks of 92 in Lerwick and 60 at Kergord. **Scarlet Rosefinches** were mainly in the northern isles as usual. A **Bullfinch** in Shetland on 10th August was a very unusual date. New for Scotland was a **Blackpoll Warbler** on Whalsay, but this was out-done by Fetlar which produced a **Chestnut-sided Warbler**, the first record of this American warbler in the Western Palearctic. **Lapland Buntings** peaked at 8 on Fair Isle, with several on North Ronaldsay and 5 on Papa Westray. Single **Ortolan Buntings** reached Yell and Fair Isle in August and Fair Isle again in September, where there was also a **Rustic Bunting**. Fair Isle also had 3 **Little Buntings** with others on Out Skerries, North Ronaldsay and the Orkney Mainland. Fair Isle had at least 3 **Yellow-breasted Buntings** whilst another was on North Ronaldsay. Also on Fair Isle were both **Black-headed** and **Red-headed Buntings**.

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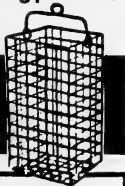


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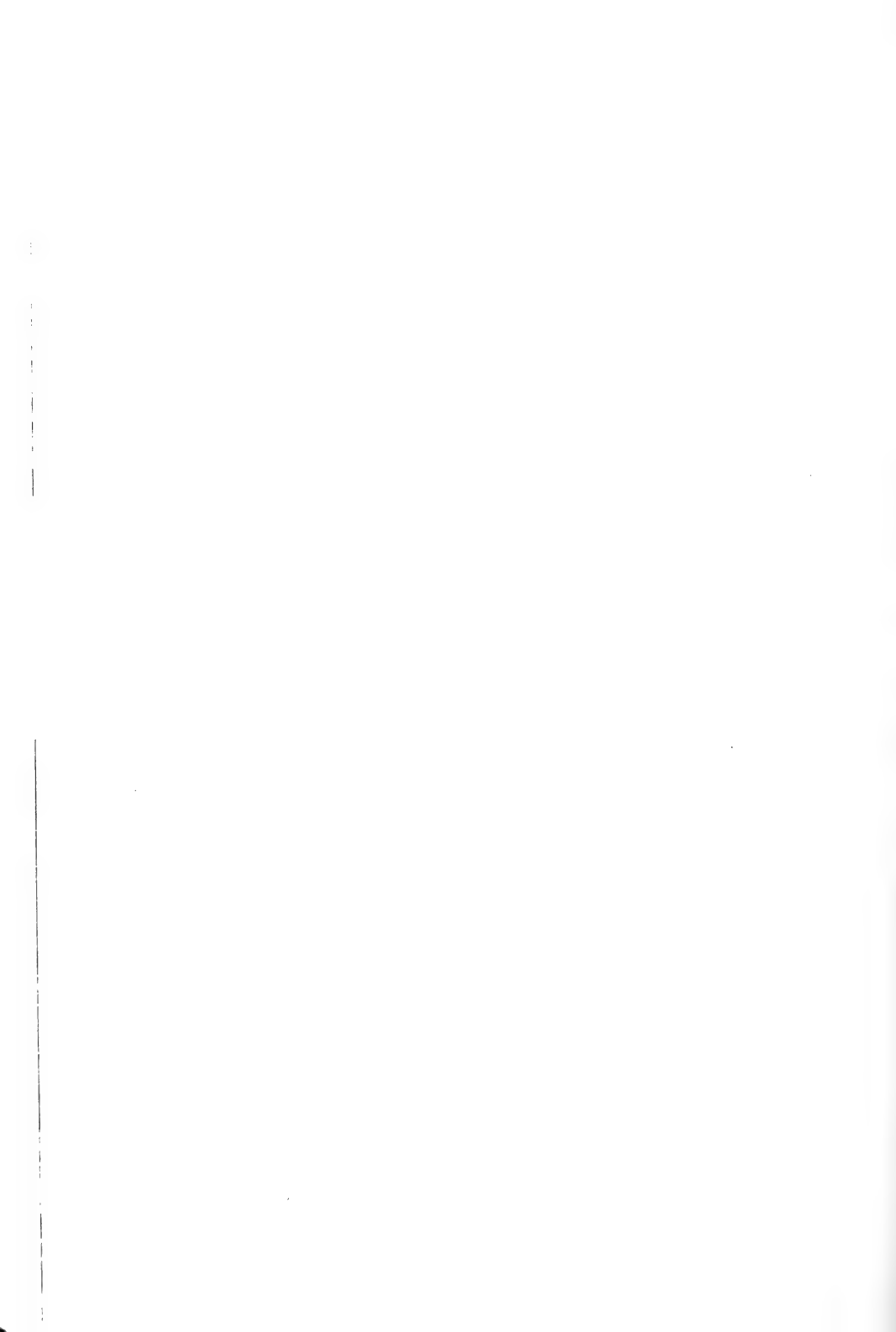
R. W. FURNESS, S. R. D. da PRATO & I. R. TAYLOR

Index prepared by S. R. D. da PRATO

Volume 13

1984 - 1985

(The *Scottish Bird Reports* for 1983 and 1984 form part of
Volume 13 but are paged separately and not indexed)



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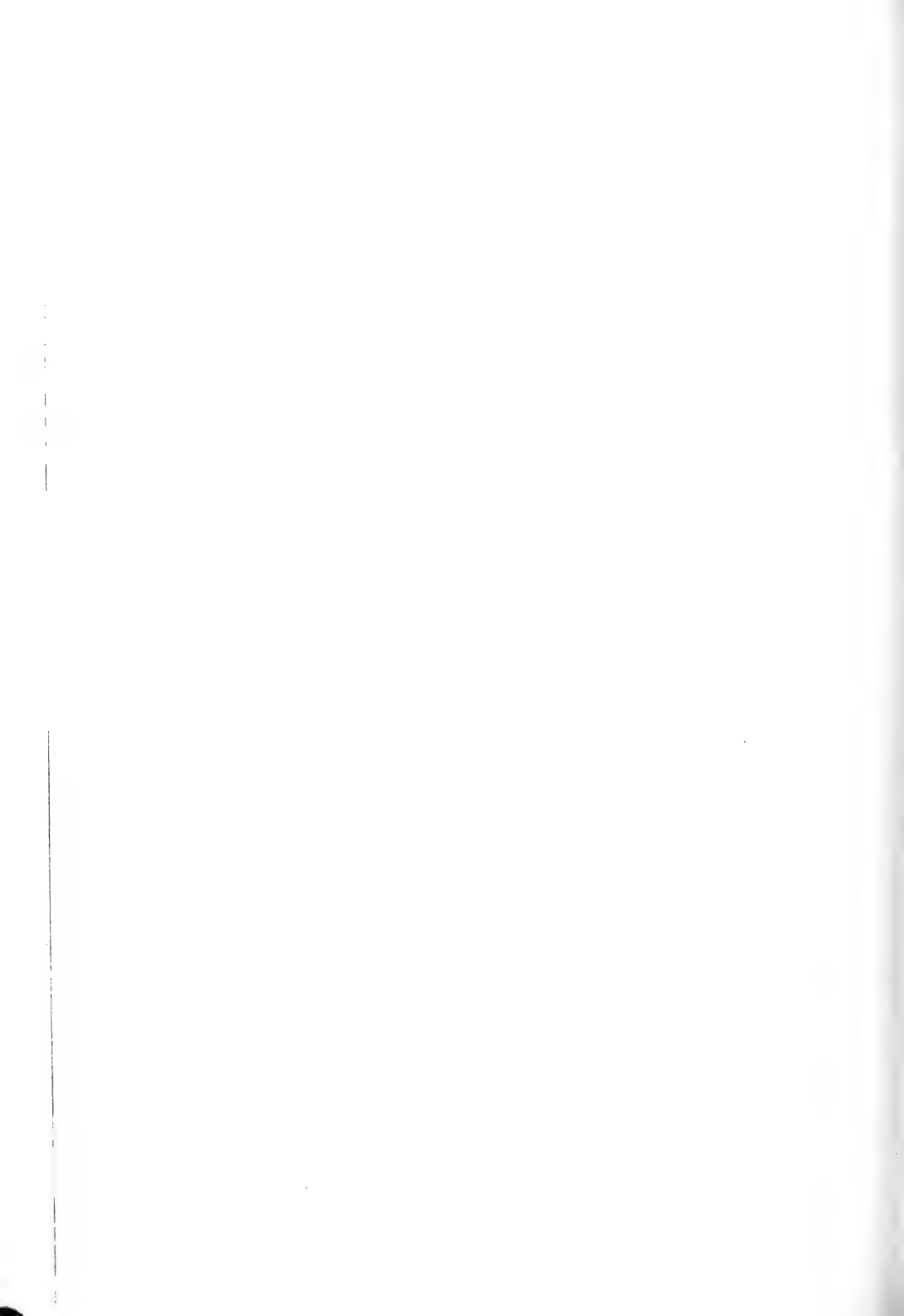
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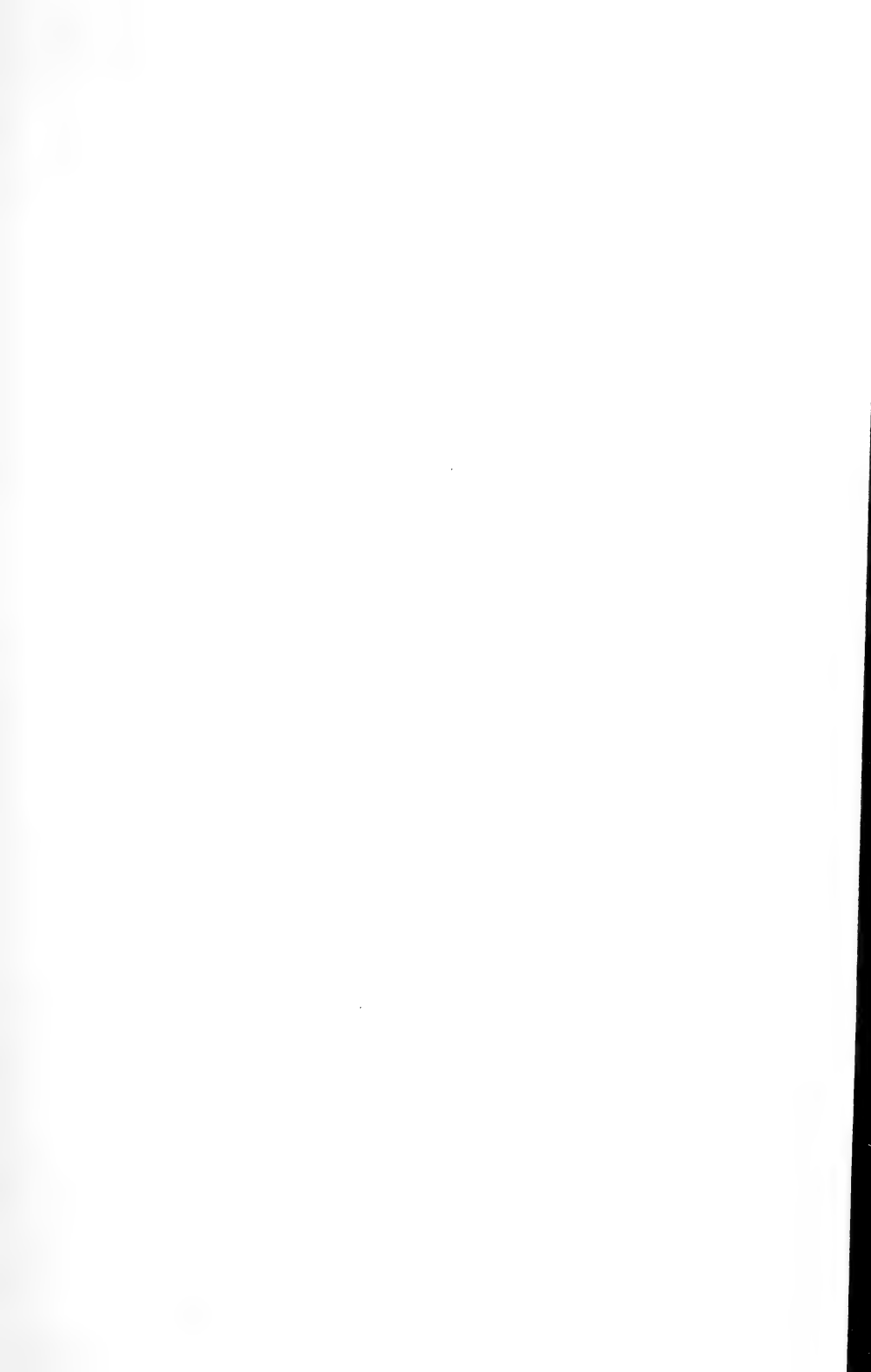












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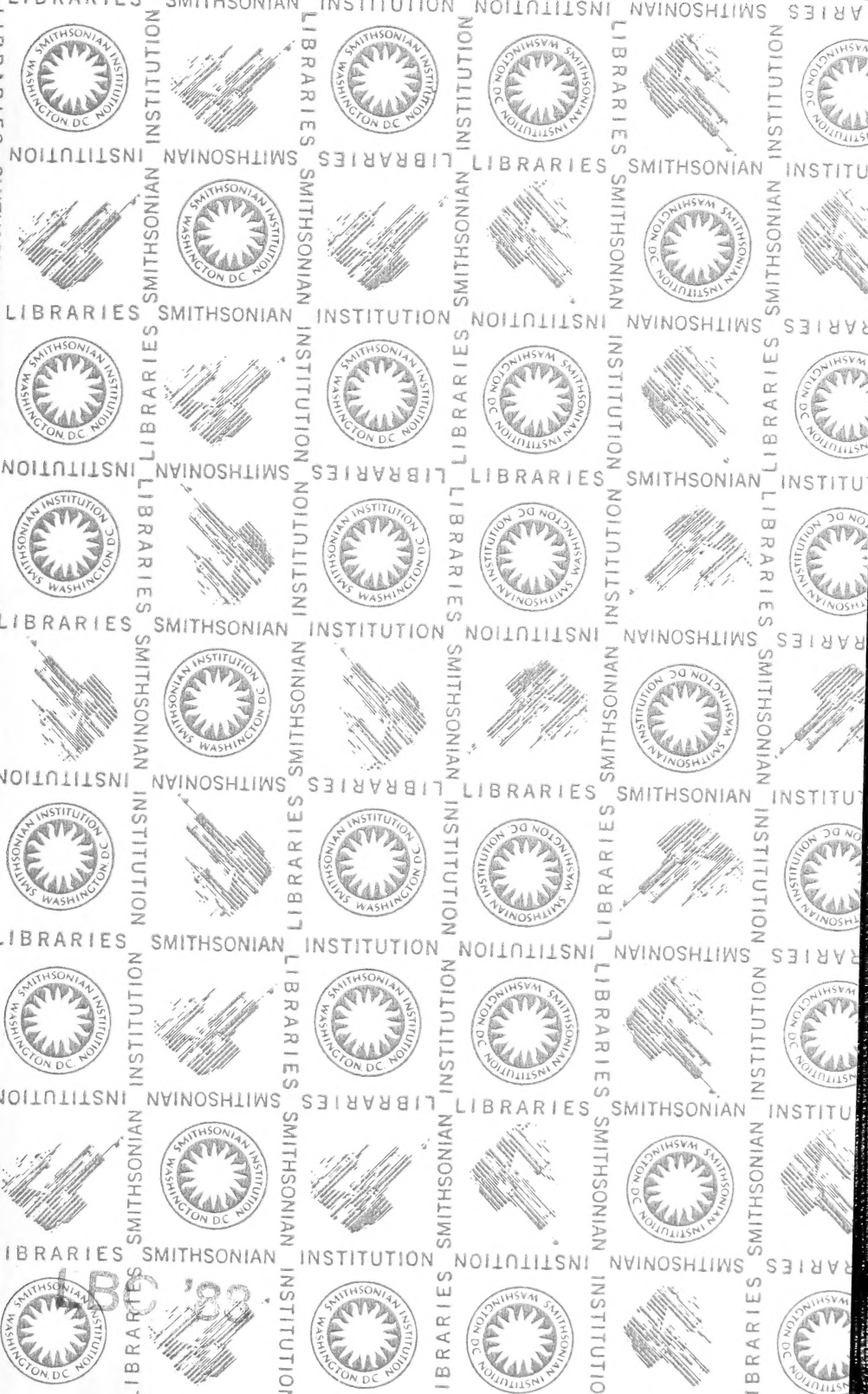
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