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THE JOURNAL OF THE SCOTTISH ORNITHOLOGISTS' CLUB

Vol. 11 No. 1 SPRING 1980

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SCOTTISH BIRDS
THE JOURNAL OF THE SCOTTISH ORNITHOLOGISTS' CLUB

Vol. 11 No. 1 Spring 1980

Edited by D. J. Bates

Beached birds at selected Orkney beaches 1976 - 8

P. HOPE JONES

Oil in slicks and blobs on the sea, in contrast to the refined variety in the petrol pumps, seems to have increased alarmingly in the last year. This survey was done at an early stage in oil developments in Orkney and so provides baseline data for assessing subsequent damage to birds.

In 1975 only a few of Orkney's extensive beaches were being regularly covered for the national beached bird survey, and it was considered that an area with such substantial breeding populations of seabirds should be better monitored, and throughout the year if possible. Additionally, it was felt that spillages at Occidental's oil terminal on Flotta could increase the amount of seaborne oil in Orkney waters, Scapa Flow in particular, leading to a concomitant increase in the frequency of oiled birds on beaches.

The Nature Conservancy Council commissioned the Royal Society for the Protection of Birds to carry out a series of seabird projects in Orkney between March 1976 and February 1978, and this paper reports on some of the results obtained from beached bird surveys carried out during this period. Copies of the raw data and of the final report are lodged at the Huntingdon and Sandy headquarters of the respective organizations.

Aims and methods

The project's main aims were to carry out beached bird surveys in order generally to increase Orkney coverage for the national scheme, and in particular to monitor a selected sample of Scapa Flow beaches throughout the year.

Twenty-three sites were chosen: four on the west coast, facing the Atlantic; five on the east coast, facing the North

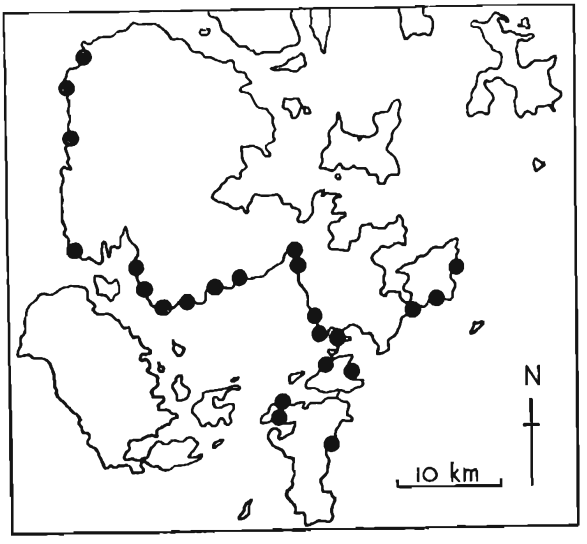

Fig. 1. Map of southern Orkney showing the location of the 23 sample beaches.

Sea; one facing into the Pentland Firth; and thirteen on the shores of Scapa Flow (fig. 1). The total length of shoreline was 34 km. Only a few of the beaches were sandy; most sites comprised angular cobbles or flattened stones resulting from the erosion of Orkney's sandstone slabs, and there were extensive drifts of decaying seaweed in places.

The survey method was based on the national scheme, but was not identical. Essentially, for each of the 23 sites, it comprised a relatively slow walk along a beach and back again, looking at the spring high tide mark once a lunar month for two years, and recording all corpses of birds and wild mammals and all live beached birds. It was early decided that a degree of standardization was preferable in order at least to reduce the numerous variables present in the system. The first standardization was to carry out the counts on the spring tide lines when it would be necessary to cover only the highest fresh tideline on the beach. The choice between new moon and full moon spring tides was arbitrarily resolved in favour of the latter, and the first day's counting took place on the day of the full moon or the day after it, with the remaining counts following immediately, the whole series normally taking between four and six days for completion.

Each tideline was walked in two directions from the access point. Beached birds having been noted, the corpses were then

thrown well above the highest tideline or else removed for further study. Additional birds found on the return walks were recorded separately; in this paper the grand totals are used. The spring tideline was usually easy enough to follow, and the two journeys were made at a moderate to slow walking pace—a speed anyway necessitated by the difficult nature of the terrain. All bird remains were identified where possible, the specimens being divided into categories of one wing, two wings, and whole birds (this last including everything with more than two-wings-plus-sternum).

Pattern of arrival through the year

Monthly details for the two years are set out in table 1. The very high figures in late summer are due largely to the arrival of corpses of juvenile Kittiwakes (discussed later), but even when these are omitted, it is still evident that the basic pattern was of low numbers in winter, increasing through spring to high numbers in late summer.

Table 1. Numbers of beached birds per kilometre, totalled for 23 Orkney beaches monthly, March 1976-February 1978

	First year	Without juvenile Kittiwakes	Second year	Without juvenile Kittiwakes
March	2.6		4.3	
April	4.7		1.8	
May	5.0		4.6	
June	—		—	
July	6.9	6.9	22.7	6.2
August	31.8	8.0	20.9	6.8
September	8.1	4.5	3.8	3.4
October	2.1		1.7	
November	2.8		0.4	
December	1.7		1.9	
January	1.4		2.7	
February	2.1		2.4	

One of the most interesting results to emerge from these surveys is evident from a comparison of Orkney data with those for the whole country (fig. 2). In both cases there is a peak of beached bird arrivals in August—and perhaps for both this reflects a mortality of juvenile birds—but whereas the national picture shows an even greater peak in midwinter, this is completely absent from Orkney. This, of course, assumes that the two years of the Orkney contract were normal in terms of beached bird arrivals; this cannot be proved, but there were no indications to the contrary.

The simplest explanation for this divergence is that many of Orkney's breeding seabirds are summer visitors, and so the

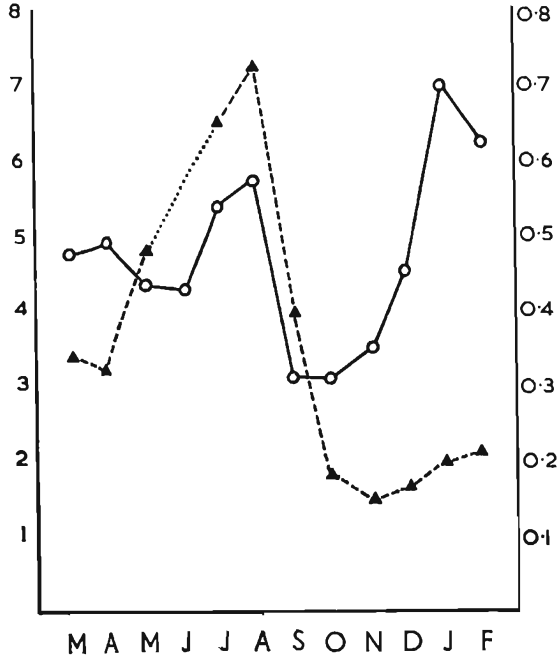

Fig. 2. Mean numbers of beached birds per kilometre per month: Orkney data (left-hand scale) compared with the national pattern (right-hand scale). National: solid line and circles. Orkney: dashed line and triangles (note (a) juvenile Kittiwakes excluded; (b) June data incomplete).

numbers present in the area are much lower during the winter, whereas the trend is reversed around many coasts further south in the rest of Britain and Ireland. The Orkney monthly figures (even without juvenile Kittiwakes) were often about ten times higher than the national ones. This must, to an unknown (but large) extent, be an artefact due to the more intensive surveillance during the contract: *all* birds and wings counted, birds recorded also on the return trip along each beach, etc., and fig. 2 must therefore be used mainly in comparing the two areas in terms of through-the-year pattern.

Species patterns

In sum, 57 species were recorded on the surveys; numbers of species per month varied between 19 and 28, averaging 24, but this parameter did not show any obvious patterns with season of the year. The overall Orkney picture—a late summer peak and a midwinter trough—hides several variations

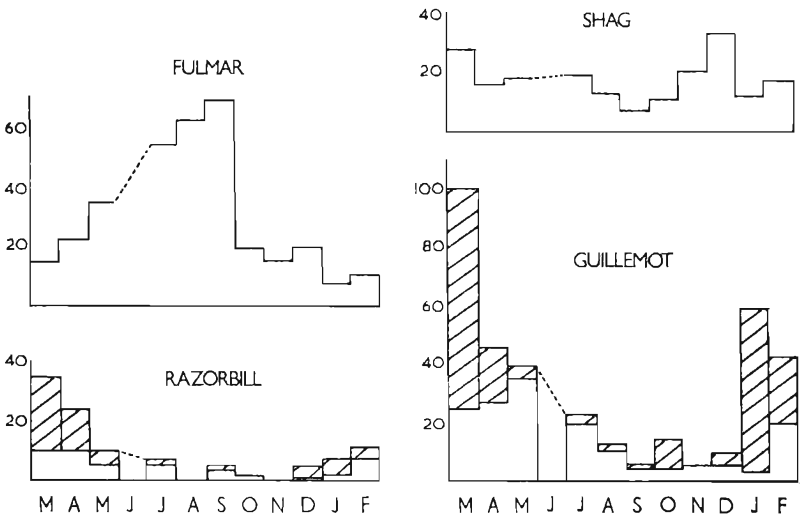

Fig. 3. Monthly totals of beached birds (from the Orkney sample sites) for two years combined for Fulmar, Shag, Razorbill and Guillemot. June data incomplete. Cross hatching (auks only) indicates oiled birds.

between species, and so monthly patterns for Fulmar, Shag, Razorbill and Guillemot are shown in fig. 3.

Fulmar numbers show a very obvious build-up through the spring to late summer—presumably peaking at the time when many young birds are fledging. Shags, on the other hand, show a more diffuse pattern, though in both years there was an early winter peak and another, smaller, one in early spring.

Razorbill and Guillemot are similar in showing a distinct early spring peak, whilst Guillemot in the second year also produced good numbers in January (Guillemots occur occasionally in Orkney waters in winter and early spring, but Razorbills are apparently scarce then). With these two species, any natural mortality pattern is almost bound to be hidden by the periodic arrivals of oiled birds, but since one cannot normally say what proportions were dead before oiling, the problem is insuperable. However, fig. 3 also shows the proportion of oiled birds in the monthly totals for the two species, and evidently much of the late winter/early spring peak was due to oiling. The histograms for unoiled birds peak at different times from those for all birds, but it still seems as though there was a spring peak in arrivals of Razorbills and Guillemots.

Kittiwakes are a special, and very interesting, case. There was very little oiling in this species and the arrival pattern for beached adults is an obvious build-up to a midsummer peak with a complementary winter trough. There was little variation between years, either in numbers or in monthly distribution. From July to September, in both study years, the summer peak was stretched upwards by massive arrivals of corpses of juveniles on the beaches, particularly the west coast, to give the patterns shown in fig. 4. The reason for one August peak in 1976 and joint July/August peaks in 1977 is simply a function of the dates of the beached bird surveys in relation to the hatching/fledging times of the Kittiwakes: in 1976 the counts were in mid July when only few Kittiwakes were at the advanced fledging stage, whereas in 1977 the counts were very late in July, by which time the fledging season was well advanced. Mortality in pre-fledging Kittiwakes is considered by many to be mainly due to the young birds falling from nests before becoming capable of full flight (Hodges 1975), and with tens of thousands of young Kittiwakes being produced in Orkney each summer it would be surprising if there were *not* several hundreds found dead, so the phenomenon is probably quite usual, though it may vary quite considerably from one year to the next in the number of young birds beached.

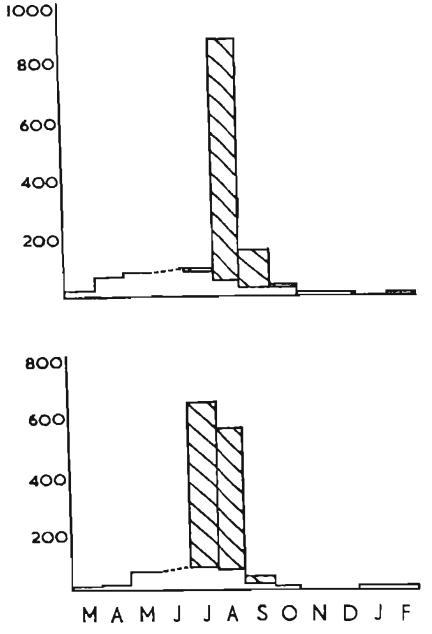

Fig. 4. Monthly totals of beached Kittiwakes at 23 Orkney sites in two years. Upper: 1976/7; lower: 1977/8. Cross-hatching, July-October, indicates juveniles.

Numbers varied greatly with the locality, the west coast beaches heading the league, presumably because of their close proximity to massive breeding colonies. The average number found per kilometre of searched beach (July to October totalled) was very similar at 28 in the first study year and 31 in the second, but the value differed considerably with area—122 and 152 per kilometre in the two years on the west coast, to between two and four per kilometre in both years within Scapa Flow. This brief, but very intensive, flurry of beached juvenile Kittiwakes inflates the annual totals of beached birds very dramatically, so various of the analyses have been made with the express omission of this group.

Oiled birds

One of the main aims in beached bird work is to establish the proportion of oiled birds amongst the corpses and live beached birds found on the tideline. In this Orkney study, the gross figures were 279 birds oiled out of a total of 4,979 birds found, that is, a very low oiling rate of 5.6%. However, of the grand total of birds found, nearly half were juvenile Kittiwakes, so when this category is removed, the oiling rate rises to a more realistic 9.4% (279 out of 2,982). Bourne & Bibby (1975) calculated the proportion of oiled bodies from beached bird surveys, 1967-73, to be 45% in eastern and 10% in western Scotland, though with up to 80% in parts of south-east England and on the Channel and North Sea shores of continental Europe. The Orkney figure can be further broken down, as shown in table 2, where the two species Guillemot

Table 2. Total numbers of oiled birds found on beached bird surveys of 23 Orkney beaches, March 1976 - February 1978

	Total birds found	Total oiled	% oiled
Red-throated Diver	1	1	—
Great Northern Diver	3	1	—
Fulmar	378	3	0.8
Gannet	42	2	4.8
Shag	199	1	0.5
Eider	63	1	1.6
Long-tailed Duck	18	6	—
Velvet Scoter	2	2	—
Redshank	9	1	—
Common Gull	153	1	0.6
Herring Gull	291	2	0.7
Kittiwake	765*	7	0.9
Guillemot	403	190	47.1
Razorbill	108	56	51.9
Black Guillemot	36	3	8.3
Little Auk	2	1	—
Puffin	39	1	2.6

*omitting juveniles, July to October

and Razorbill comprise 88% of all oiled birds among the 17 species affected by this form of pollution. For both these auk species, about half the beached birds found were oiled, whereas no other species (for which over 30 individuals were recorded) could muster 10%. In the national situation (Cadbury & Meyer pers. comm.) 55% of auks are oiled (about half, as in Orkney) and 64% of divers and 39% of seaducks, but for these two groups the Orkney sample was not large enough for valid comparison, though out of 63 Eiders found in the 1976-8 counts only one was oiled.

In both years the west coast sites turned up about half of all the oiled birds found, even though the beaches in that area comprised only one-fifth of the shorelines examined. This proportion was similar for both years, even though there was a four-fold increase in arrivals of oiled birds in the second working year, due in large measure to the impact of three specific incidents off the west coast.

In March 1977 there was a spillage of North Sea crude oil from the terminal in Scapa Flow, and if such oil normally has the appearance shown in that incident, then it is easy to identify on beached bird corpses by virtue of its tawny cinnamon colour—which contrasts markedly with that of the black or brownish-black tarry covering resulting from contact with some other crude oils and fuel oils. Between October and December 1977, a small series of feather samples was taken from oiled birds found on Orkney beaches, and this was forwarded to the Laboratory of the Government Chemist by K. T. Standring of the RSPB's Edinburgh office. The main components were fuel oils, often with admixtures of other oils, and if this is typical of the pollution shown by most of the Orkney oiled birds then the main cause of oiling during the study period was fuel oil and bilge washings. Pollution by North Sea crude oil was restricted to the effects of two out of several spillages within Scapa Flow in 1977, one serious enough to warrant a published report (RSPB 1977), the other of no great consequence.

Observations and experiments

(a) Relative durability of corpses in the sea

Of the auks, 89% arrived as whole corpses, whereas only 25% of the Kittiwakes did so. These figures reinforced my impression in the field that the gulls as a group were more fragile and disintegrated more quickly in the sea than chunkier, thicker plumaged birds such as auks and divers.

During the summer (here an arbitrary period of April to September inclusive), the proportion of corpses of adult Kitti-

wakes that came ashore whole was between 18% and 31% for three groups of beaches; in juveniles, the proportion changed from 67% on the west coast, through 40% on the east coast, down to a mere 16% within Scapa Flow. This I interpret as a rapid disintegration of juvenile corpses as they are moved, in seawater, away from their natal colonies; it would appear that these juveniles were much more prone to come apart rapidly than were adults that died during the same period.

The durability of corpses in seawater and their ability to withstand the wave pounding (and perhaps destruction by seaweed fronds) are thus very important in interpreting the numbers of different species washed ashore whole or in bits, but as yet one can only point to this factor without being able to quantify it in any constructive manner.

(b) Corpses found on the return walk

Figures were kept separately for the numbers of beached birds found on returning along the same tideline as that examined on the outward walk. The major conclusion was that up to one fifth of the birds present on a tideline were missed by an observer who was looking hard for beached birds. And this cannot, of course, include those birds that must have been missed on both trips. Figures were remarkably constant from year to year, even though they varied slightly from one set of beaches to another.

This percentage is not necessarily universally applicable, since it applies only to the Orkney beaches sampled, and to only one observer, whose capability in spotting beached birds may, or may not, have been near the national average. However, it does highlight the existence of yet another variable, and shows that observers, however conscientious, can miss a considerable proportion of the beached birds actually present on any given site.

(c) Beached birds and wind direction

West and east coast sample beaches totalled 5.9 and 5.7 km respectively. An analysis was carried out comparing, for each month's counts, the wind direction (weighted according to its speed) at three-hourly intervals for one, five and ten days before the count. For five winter and five summer counts each year, the indices for both westerly and easterly component winds were compared with the numbers of corpses. The only correlation at the 5% level was that numbers on the west coast in winter were negatively correlated with east winds in the period ten days before the count (Kendall's rank correlation coefficient). For the rest, one must conclude that, at the 5% level tested, there was no correlation.

However, the total numbers of corpses found on west and east coast beaches was 1,613 of which 951 (59%) were on the west coast and 662 (41%) on the east. If all the wind indices are added for ten-day periods prior to counts at these sites, the totals are 1,400 (59%) for west winds and 959 (41%) for east winds. This is a chance concordance because the figures for separate years are slightly different, but it does suggest that the link between wind and numbers of corpses is more likely to be in the nature of a long term phenomenon than an immediate one, and that immediate correlations for single counts are perhaps often overridden by the changeable nature of the wind and by corpses remaining for quite a time on the tideline.

(d) Length of corpse stay on the tideline

Corpses can remain visible for quite a while if left high and dry at the top of a beach after a particularly high spring tide. However, many corpses brought in on neaps or ordinary springs will be disturbed by subsequent tides, and a series of counts was made on marked individual corpses to discover how many would be refound. Of 56 corpses set out in three tests on neap tidelines, and examined daily, 28 (50%) were still visible on the same beach after the next series of spring tides, seven (12%) were hidden under seaweed, six (11%) were shifted away some distance by the tides, one (2%) was removed by a scavenger, and the remaining 14 (25%) had disappeared without trace.

(e) Corpse disintegration

Corpses of beached birds obviously disintegrate over the course of time, and in fact many of them are well on the way by the time they are cast ashore. In two series of corpses put out above the high water mark it was found that a five month interval through the late winter and spring was sufficient to make five out of eight corpses almost unrecognizable, though two divers seemed hardly to change in this period—perhaps their feather structure and tough skin slowed the process of decay; on the other hand, a three month interval over the midwinter period seemed to effect relatively little change in the state of six more corpses. Although some of these carcasses may have mummified to some extent, an examination of two Guillemot corpses left for four months over the 1977/8 winter suggested that they would be very fragile, and likely to fall apart if moved. Thus corpses remaining at one place can last several months (and perhaps for a longer period in winter than in summer) but only if left almost completely undisturbed. Corpses moved about by seawater are likely to

disintegrate much more quickly, though this was not tested. A variety of tideline scavengers hastens the process of disintegration: in Orkney, gulls, Great Skua, Hooded Crow and Common Rat *Rattus norvegicus* were all heavily involved, together with invertebrate carrion feeders. Changes caused by chemical action and by microscopic organisms were not investigated.

Conclusions

The main value of the two year survey may perhaps only become apparent when there are sufficient data with which to make valid comparisons, that is, when the project has been repeated in the future.

The first essential in 1976-8 was to establish the pattern of beached bird arrivals at a variety of Orkney sites, and insofar as this was possible within the relatively short time of two years, it was done. Whilst the details will perhaps change considerably from year to year, it seems likely that the basic system of high numbers of beached birds in spring and summer, low numbers in winter, is the normal state of affairs for Orkney.

The second essential was to establish the oiling frequency amongst the beached bird arrivals. This showed the great disparity between the rates for Razorbills and Guillemots on the one hand, and a variety of different species on the other hand. One conclusion here was that it would be misleading to quote just one figure for the oiling rate for Orkney, but again if the project is repeated or continued, the figures for individual species can validly be compared.

As more oil is removed from below the North Sea (and possibly the Atlantic) there is an increasing likelihood of seaborne pollution from that source, and it will be valuable to know—in the event of an almost inevitable increase in bird oiling in Orkney waters—whether the increase is due to North Sea oil as such or to bilge water and tank washings from the greater volume of shipping associated with oil developments in northern British waters.

This two year survey forms the basis for monitoring numbers of beached birds ashore at selected sites in Orkney. Despite the variables involved in the collection and interpretation of data, I believe the system to be invaluable in providing indices to numbers of corpses arriving, species composition, and percentage oiling in different species, thus contributing to surveillance of the important seabird populations in the physically and economically turbulent waters of northern Scotland.

Acknowledgments

David Lea was of very great practical help throughout my beached birding stint in Orkney and it is a pleasure to thank him formally for all his assistance and support. James Cadbury gave considerable moral support and was most constructive with advice and suggestions at all stages of the project; this backing was greatly appreciated. Ian Lyster confirmed the identity of some very tatty beached bird specimens; Kevin Standring arranged for the analysis of several oil samples; Bill Bourne, Clare Lloyd, Peter Kinnear, Roger Mitchell, Andrew Ramsay, Alex Simpson and Tim Stowe were very helpful in discussing various aspects of the project. To all these people I tender my grateful thanks for their help. This work was commissioned by the Nature Conservancy Council as part of its nature conservation research programme.

Summary

From March 1976 to February 1978 beached birds were recorded monthly at 23 sites in Orkney. The basic pattern of arrivals was of low numbers in winter (contrasting with the national picture) increasing through spring to high numbers in late summer, though the pattern varied with individual species. There were massive arrivals of corpses of juvenile Kittiwakes, especially on the west coast, in July and August. The overall oiling rate was 9.4% (omitting juvenile Kittiwakes), but 52% of Razorbills and 47% of Guillemots were oiled.

Up to at least one fifth of visible tideline corpses could be missed by an observer, and a good proportion may anyway be hidden under seaweed. Wind direction, very changeable in Orkney, perhaps had a long term influence on numbers of corpses beached.

There is likely to be an increase in oiling of northern waters, perhaps by North Sea crude oil, but more likely by bilge water and tank cleanings from the great increase in shipping connected with the oil industry; this survey will provide a yardstick for comparing basic parameters, such as numbers of corpses, species composition and percentage oiling, with future data.

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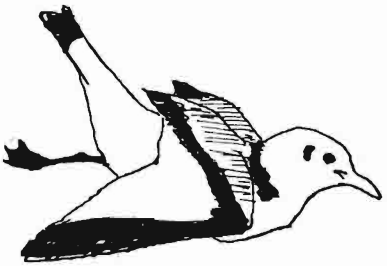

KITTIWAKE
John Busby

The seabirds of Berwickshire

S. R. D. and E. S. da PRATO

(Plates 1-4)

The Berwickshire seacliffs (fig. 1) have long been recognized as an important seabird breeding area with the added advantage of easy access from the land. The cliffs themselves include the highest on the Scottish east coast while the adjacent sea area is amongst the least polluted anywhere around North Sea coasts, and in spring and early summer the cliff tops are rich in wild flowers. Together these features combine to create an area of great conservation value and the Nature Conservancy Council (NCC) has designated the richest stretch, from St Abbs Harbour to the west of Fast Castle Head, as a Grade One Site of Special Scientific Interest. St Abb's Head itself which holds many of the breeding seabirds and receives the greatest visitor pressure has recently been declared a reserve of the Scottish Wildlife Trust (SWT) and is wardened throughout the summer.

It is perhaps surprising that such well known seabird colonies have been so little studied. Few counts of the Berwickshire cliffs have been made, unlike the Farne Islands to the south and the islands in the Firth of Forth to the north, where most sites are censused annually. This paper summarizes the present status of Berwickshire seabirds using data obtained in May and June 1978. It also compares present numbers and

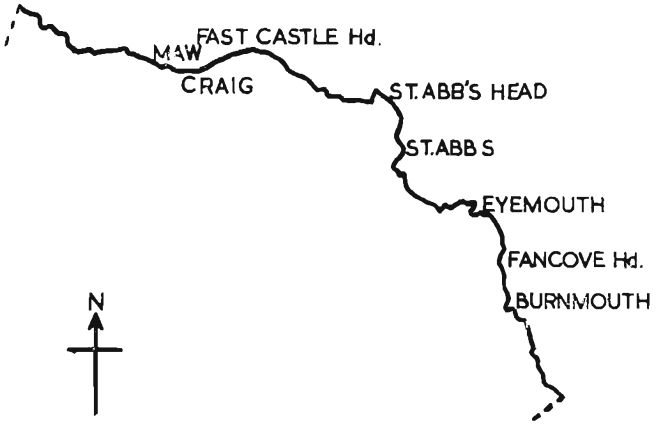

Fig. 1. The Berwickshire coast showing places mentioned in the text.

distribution with previous censuses and with regional and national population figures to determine the relative importance of the Berwickshire colonies and where possible to identify population trends. Finally some suggestions for further seabird work in the area are made.

There are many problems associated with the methods and subsequent interpretation of seabird counts (Lloyd 1975, Harris 1976). A much fuller account of the 1978 and earlier surveys together with site descriptions, count totals and sections and detailed maps of distribution are contained in an NCC Report (da Prato & da Prato 1978). In addition approximately 100 10 x 8 inch black and white photographs of the major seabird cliffs, mostly taken from the sea, are being prepared to allow future comparisons of gross changes in distribution. Sets of these prints will be held by the NCC in Edinburgh, and by the SWT.

Surveys and methods

I. J. Patterson covered the whole of the Berwickshire coast between 26th May and 7th July 1957 (some Herring Gulls not counted) and again between 25th May and 12th July 1958, the bulk of both counts being done before mid June (Patterson 1958 and in da Prato & da Prato 1978). Being a local person familiar with the terrain he obtained good coverage; the main problem in interpreting these early counts is that Guillemots were counted as pairs rather than the modern practice of total birds on breeding ledges. The next complete census was Operation Seafarer in 1969-70 when of the four counters R. S. Baillie must take the credit for counting the major colonies at and to the north of St Abbs. Unfortunately several sections were not counted till late June or July and some of the count figures seem rather low—lower in fact than those of 1957-8.

In 1976 and 1977 the NCC commissioned counts of the St Abbs-Fast Castle stretch. The 1976 survey (Nisbet & Fraser 1976) was rather late and largely exploratory. A revised programme in 1977 gave a good series of counts for St Abb's Head and much higher figures for the difficult ground to the north (da Prato, da Prato & Ewins 1977). These surveys led to a monitoring programme at sample sites on St Abb's Head which started in 1978.

Although repeat counting of sample sites increased accuracy it is not practical on really big areas and it fails to provide information on the total distribution or magnitude of colonies. The 1978 survey was planned to be a direct comparison with the 1957-8 and 1969-70 counts. Methods were those established by Kinnear and Hope Jones in Orkney and Shetland (Hope Jones 1977) except that Razorbills were counted as

apparently occupied sites as well as total birds on ledges. With Guillemots all birds on breeding ledges were counted; with other species nests were the count unit except for the relatively few Puffins whose inaccessible burrows meant that total birds ashore had to suffice. Counts in 1978 were timed to coincide with the peak incubation/young chick stage of auks and Kittiwakes and took place between 07.00-15.00 BST from 4th to 17th June with additional counts up to 20th June for stretches without auks. An extra count of Herring Gulls on St Abb's Head was made in May.

Results and assessments or ornithological importance

This section shows how the most recent counts of Berwickshire seabirds compare with those for the Firth of Forth, the Farne Islands and estimates of the total populations breeding in Britain and Ireland (table 1). Figures for Britain and Ireland are from Cramp *et al.* (1974) which uses data collected in 1969-70 during Operation Seafarer. More recent counts at certain sites, notably the difficult northern colonies, have shown that Seafarer tended to understimate populations (see,

Table 1. Comparisons of seabird populations between Firth of Forth, Farne Islands and Berwickshire coast against total British Isles estimates

	British Isles total (1969-70)[1]	1% level	Berwickshire coast (1978)	Firth of Forth[2]	Farne Islands[3]
Fulmar	306,000	3,060	1,271	1,140	76
Cormorant	8,100	81	33	200-250	193 (usually 200-250)
Shag	31,600	316	281	500-1,000	430
Lesser Black-backed Gull	47,000	470	7	900	) (Reduced to 2,620)
Herring Gull	333,000	3,330	2,615	13,000+	)
Kittiwake	470,000	4,700	18,101	5,000	3,540
Guillemot	577,000	5,770	14,790	12,000	2,394 'pairs'
Razorbill	144,000	1,440	702	1,000	17
Puffin	490,000	4,900	<100 ?	4,750	c.13,000

Notes. All figures are for pairs except Guillemot which refer to birds ashore on breeding ledges. Seafarer considered 577,000 to be the British Isles population in pairs but since they assumed each bird ashore represented half a pair the figures can be compared directly.

1. Data from Cramp et al. (1974).
2. Data from Campbell (1978).
3. Data from Galloway & Meek (1977).

for example, Harris 1976) while genuine increases are known to have occurred since 1969 in several areas. This means that the totals quoted for Britain and Ireland are almost certainly too low and this should be borne in mind when assessing the relative importance of the Berwickshire coast.

The period since Seafarer has seen considerable interest in the assessment of wintering populations of waders and wildfowl in northwest Europe, including Britain, and international conventions in 1971 and 1974 established that any site holding 1% or more of the known west European population was considered of international importance. Birds of Estuaries Enquiry Reports published by the British Trust of Ornithology have also used 1% levels in determining criteria whereby populations can be said to be nationally important within the British Isles. When summarizing census work done in the Forth estuary in recent years Campbell (1978) also applied 1% levels in assessing the significance of seabird populations breeding in the Forth. Berwickshire populations that exceed 1% of the Seafarer total are Kittiwake (4%) and Guillemot (3%) while Shag and Herring Gull are near to the 1% mark.

In comparing the Firth of Forth and Berwickshire it should be remembered that no terns or Gannets breed in Berwickshire but important colonies of both do so on Forth islands, while terns also breed on the Farnes. Guillemot and Kittiwake emerge as the two obviously important species while Shag, especially in view of fluctuations at other colonies, clearly merits further censusing.

The most important stretch of cliff for breeding seabirds continues to be from St Abbs Harbour to Maw Craig. Most of the auks (over 90%) breed on St Abb's Head and the cliffs immediately to the north. Kittiwakes are more generally distributed with important colonies scattered from St Abbs to west of Fast Castle. The only other area with numbers of auks is Fancove Head. Fulmars and Herring Gulls are much more widely distributed but their total numbers are considerably smaller than the Kittiwakes and Guillemots. Cormorants are confined to stacks west of Fast Castle. Shags nest in pockets, the majority on stacks near Fast Castle.

The high numbers of the cliff breeding species contrast with the relatively low populations of birds preferring more broken ground and the very small numbers of cliff top nesters, i.e. Puffin and Lesser Black-backed Gull. This pattern is very different to island colonies in the Forth where both gulls and Puffins are numerous. The only reasonable explanation is the effect of ground based predators in Berwickshire which are absent on the islands. Foxes *Vulpes vulpes* are often seen on the Berwickshire cliffs and local fishermen have seen young

PLATES 1-4. The seabirds of Berwickshire by S. R. D. and E. S. da Prato (pages 13-20).

PLATE 1. (a) Kittiwake, the most numerous Berwickshire seabird.
(b) Guillemot, the second most numerous species.

PLATE 2. (a) Shag; this species would repay further censusing.
(b) Puffin; unlike island colonies Berwickshire cliffs have a small population confined to inaccessible slopes.

PLATE 3. (a) Cormorant, a recent colonist.
(b) Foul Carr (St Abb's Head), the biggest concentration of Guillemots in Berwickshire with 2,500-3,000 birds normally present. Shortly before this picture was taken on 26 June 1977 3,600 were counted. Even offshore stacks at St Abb's Head can be easily counted from the clifftops.

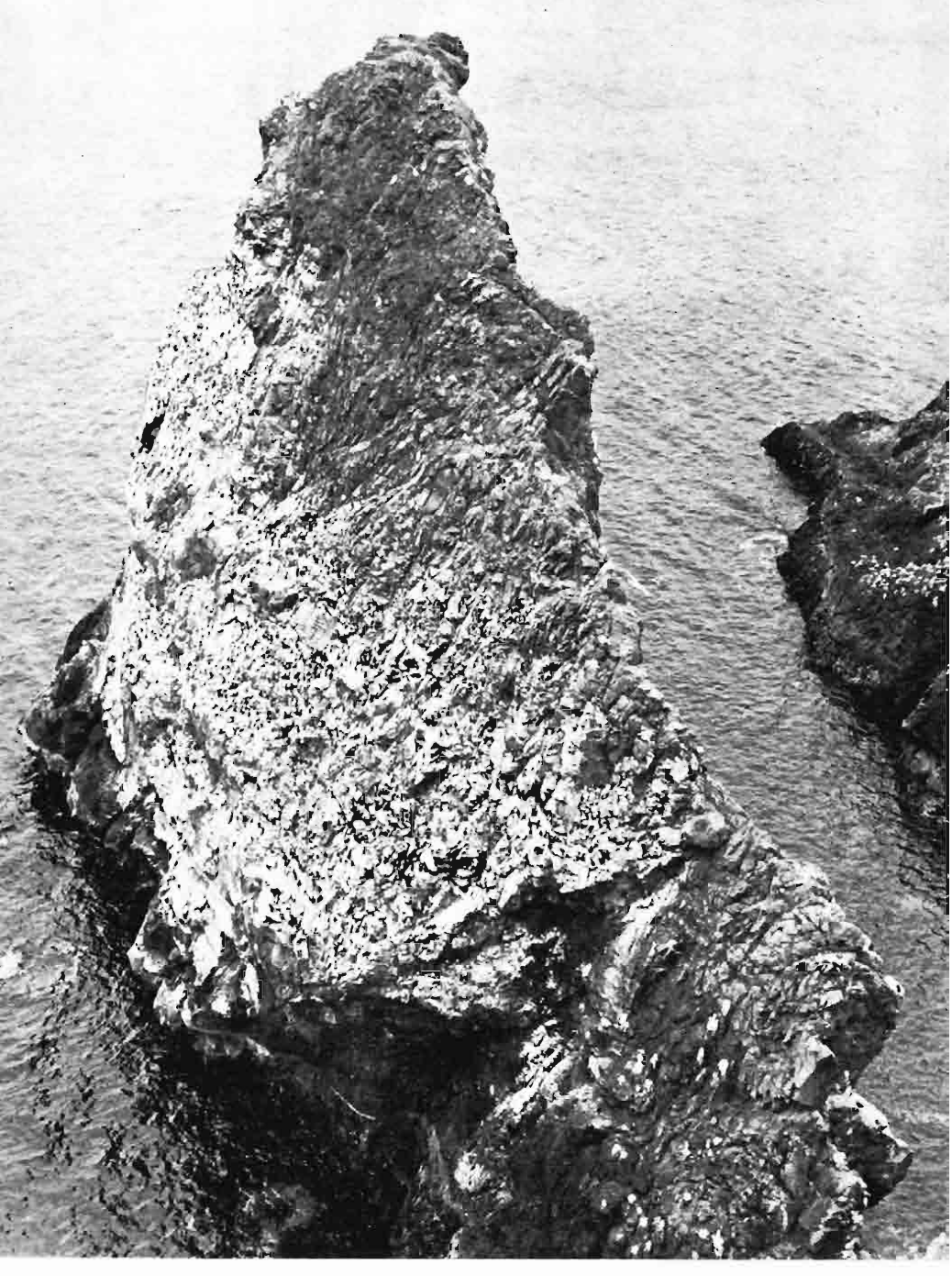

PLATE 4. Cleaver Rock (St Abb's Head) northwest face from clifftop. This face holds around 1,400 Guillemots in June.

gulls being taken by Foxes. There is one record of a Fox eating a young Shag (G. Evans pers. comm.). Whether other mammals are also involved is not known except for the two legged species. Regrettably egg collecting and vandalism still occur, especially at St Abb's Head, although the problem seems largely confined to a few weekends in early summer and the presence of a warden may now act as a deterrent.

Changes in status

Table 2 shows the 1978 census results compared with those of Seafarer in 1969-70 and the 1957-8 counts. In 1976 and 1977 only part of the coast was censused; as this is the most important stretch and holds nearly all the auks, figures for all species except Fulmar and Herring Gull have been included for these two years. The only other sizeable concentration of auks and Kittiwakes is between Eyemouth and Burnmouth, especially at Fancove Head. In 1978 this stretch held 1,423 Kittiwake nests, 55 Razorbill sites and 130 Guillemots ashore on ledges.

Table 2. Berwickshire seabird counts 1957-78

	1957	1958	1969-70	1976*	1977*	1978
Fulmar	536	590	759	—	—	1,271
Cormorant	0	0	0	31	37	33
Shag	273	291	124	307 (max)	302 (max)	281
Lesser Black-backed Gull	—	7	6	5	5	7
Herring Gull	—	3,635	1,516	—	—	2,615
Kittiwake	6,365	6,601	10,820	12,176	15,223	18,101
Guillemot	5,580	5,123	6,731	11,424	12,280	14,790
Razorbill	291	287	257	443	528	702
Puffin	79	84	20	70	c.60	<100?

Notes. For count details see text.
*Incomplete coverage : St Abbs-Fast Castle only.

Given the difficulties of interpreting seabird counts any discussion of changes in status based on single counts can only proceed with caution. However the increases recorded for Kittiwake, Guillemot and to a lesser extent Razorbill are so large that genuine expansion must have occurred although it would be unwise to quantify this, especially with the auks. Apart from the higher totals obtained in recent counts, more species now nest to the west of Fast Castle Head where only gulls and Fulmars were recorded 20 years ago. The increase in Berwickshire totals is paralleled in the Firth of Forth where certain small island colonies can be counted accurately R. W. J. Smith pers. comm.).

The contrast between the fortunes of cliff and slope nesting species has already been mentioned. The increase in Puffin and large gull populations so apparent on island colonies in southeast Scotland has no parallel in Berwickshire. Indeed the reverse may have happened with Herring Gulls although the June count dates were rather late for this species which has usually finished incubation by then. If control of gulls is indeed the work of Foxes this is no bad thing even if they also limit the Puffins. The destruction of Foxes would not necessarily help Puffins since other mammals like Rats *Rattus* or Stoats *Mustela erminea* may be at work. A number of headless Fulmars have been found, again indicating Fox predation; the big broken cliffs seem very suitable for Fulmars which occur in relatively low numbers compared to northern colonies.

Cormorants are recent colonists at a time when new colonies have appeared on islands in the Forth. Since the main Forth colonies probably originated from Farnes birds (Smith 1969) it is surprising that Berwickshire was not colonized sooner. There is a potential conflict here given the freshwater angling interests in the county. Berwickshire Shags occupy an important position being intermediate between the Forth and Farnes. Shag populations are known to fluctuate and in the Farnes crashes in their numbers in 1968 and 1975 have been linked to red tides, more specifically paralytic shellfish poisoning caused by *Gonyaulax*, since not all red tides are toxic to birds (Coulson *et al.* 1968, Armstrong *et al.* 1978). It is certainly tempting to ascribe the low Seafarer count of Shags to the 1968 outbreak but the late (13th July) count date chosen for the important Fast Castle area which holds the bulk of the Shags could be the real culprit. The 1978 figure of 281 nests is remarkably similar to that of 20 years previously but we simply do not know for certain what fluctuations have occurred in between.

The future

We now have adequate data on the distribution and approximate size of Berwickshire seabird populations. St Abb's Head is a particularly advantageous site for seabird studies since no boat trip is needed to reach it and the topography is such that most ledges can be easily examined from an opposite promontory. Under NCC auspices a monitoring scheme started at selected sites on St Abb's Head in 1978; this should provide an indication if events at sea are harming the Guillemots or Kittiwakes. Continued coverage of at least some of the Berwickshire colonies must be maintained in view of the increase in oil pollution incidents reported around Scottish coasts. The increases in the auk and Kittiwake populations

are impressive but could easily be reversed. Oil from a Liberian registered tanker killed Guillemots at St Abbs in April 1979, while if the Ekofisk blowout in 1977 had occurred in July or August Berwickshire auks would almost certainly have been caught as they moved across the North Sea. The oil menace is well known but the effect on seabirds of overfishing may in the long term prove even more serious.

Ornithologists often comment on our dearth of knowledge of seabirds in the non-breeding period. Clearly there are genuine difficulties with birds at sea but the question of Guillemot attendance at colonies through the winter could be particularly well studied in Berwickshire where birds visit the cliffs from October. Shag numbers also seem a suitable study although a whole colony would need to be chosen rather than the sample ledges appropriate for the commoner Guillemots.

Many species of seabirds are seen passing the Berwickshire cliffs. The commonest is the Gannet but none were recorded ashore until local fishermen noticed a single bird on a ledge for several weeks at St Abb's Head in summer 1979. Another species that might breed in the near future is the Great Black-backed Gull as a pair held territory near Fast Castle in 1978.

Acknowledgments

Dr I. J. Patterson kindly provided details of the 1957-8 counts. Mr C. O. Badenoch of Southeast Region NCC made available details of Seafarer, 1976-7 counts and the monitoring programme. NCC also helped with transport, typing and duplicating. Mr Peter Hood allowed us to photograph seabird cliffs from his fishing boat.

Summary

In June 1978 the whole of the Berwickshire coast was censused for seabirds. The major concentrations were found from St Abbs Harbour north past Fast Castle Head to Maw Craig and around Fancove Head. Berwickshire totals are compared with the latest available national, Firth of Forth and Farne Islands figures. Kittiwakes (4%) and Guillemots (3%) are both nationally important as to a lesser extent are Shags. Berwickshire holds lower totals of Puffins, Fulmars and gulls than island colonies, probably due to predation by Foxes. Comparisons are made with earlier counts and cliff nesting species show increases but others do not. The colonies around St Abb's Head are particularly suitable for monitoring due to their topography and easy access. Suggestions are made for future studies.

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Birdwatching at Loch Garten

STEWART TAYLOR

Loch Garten - Ospreys: Ospreys - Loch Garten, to most people they mean one and the same. In 1976 we were refused permission to erect the AA Osprey directional signs because the official road signs now say Loch Garten, and that in effect means Ospreys. Even now there are still a few locals who think we will sell the reserve should the Ospreys fail to return to breed. In this article I will give my reasons why Loch Garten and the surrounding area is a reserve in its own right, with a breeding pair of Ospreys as a worthy bonus.

The reserve, which comprises 614 ha, is situated on the floor of the Spey Valley between the Cairngorms in the south and the Monadhliaths in the west, and forms part of the larger Abernethy Forest. The topography of the area was formed during the last Ice Age, the valley floor being ground smooth by the moving glaciers, with the softer areas of rock scooped out a lot deeper to form hollows. As the ice retreated these hollows became lochs, and quite often the surrounding land, because the natural drainage had been changed by the ice and debris, became waterlogged. This situation is typical of the Loch Garten area, where two lochs form the centre of an area dominated by peat, which in many areas is quite waterlogged. Two thirds of the reserve is in the peat dominated category, with the other third made up of sands and gravels, the finer particles of glacier debris.

This mix makes the reserve rich in habitat diversity, covering four main types: Scots Pine *Pinus sylvestris* woodland, moorland, bog, and open water. This diversity helps to maintain a rich bird life, covering a total of about 110 species annually, of which about 60 regularly breed. The whole reserve is a Grade I Site of Special Scientific Interest, and, being part of Abernethy Forest, contains many of the older, natural Caledonian pines. A short walk from the road by Loch Garten, along the western shore, will take you through a mixture of pine types, from dense naturally regenerated pine to open mature pine about 80-100 years old, and with a fringe of trees along the loch side in the 150-180 year old range, natural descendants from the ancient woodland that once covered the whole of the Highlands. By working through pollen deposits in the peat it has been found that Scots Pine has been present in the Loch Garten area since the vegetation re-formed after the last Ice Age, 7-8,000 years ago, and many of the relict species dependent on native pine woodland occur, usually in good numbers.

A morning walk early in the year from the roadside by Loch Garten along the western shore and on to the second loch within the reserve, Loch Mallachie, would probably reveal the smaller woodland resident birds still in their winter flocks. Coal Tits will be the commonest, with varying numbers of Goldcrests, Crested Tits, Treecreepers and the occasional Blue Tit. Blue Tits, whilst joining the winter flocks in the woods, do not stay there to breed. They favour the birch *Betula* woodland around the farms. If the cone crop is good, Scottish Crossbills will usually be in residence and if your visit is in late March they will probably be sitting on eggs. If there is snow on the ground, evidence of the less obvious residents will be found. Foxes *Vulpes vulpes* have regular routes on the paths between the lochs, as their tracks will show, and both Roe *Capreolus capreolus* and Red Deer *Cervus elaphus* tracks will be seen. If the snow is late in lying, Capercaillie tracks will show that the males have started lekking, as their footprints will be accompanied by evidence of their wings, held down from the body, trailing in the snow.

At whatever time of year a visit is made, a walk down the track to Loch Mallachie will probably be the most rewarding. From April to June I carry out a common bird census (CBC), covering different areas of the reserve, and the mature woodland on the way to Loch Mallachie contains the densest breeding populations. Our commonest breeder by far is the Chaffinch, followed by Coal Tit or Willow Warbler, and, depending on the severity of the winter, Goldcrest, Treecreeper and Wren. As yet, there has not been any detailed census

work on the moorland section of the reserve, but in any year the Meadow Pipit would feature well up the list.

Apart from the commoner residents, the woodland holds good breeding numbers of summer visitors. The Siskin, a summer visitor in this part of the world, has bred in good numbers in some years, and up to 30 pairs of Redstarts are spread fairly evenly over the woodland part of the reserve. Spotted Flycatchers tend to like the more mature open woodland, and though not as common as the Redstart they are well represented. Pied Flycatchers, a rare species locally, have attempted to breed in two years recently, the first attempt failing due to predation by a Red Squirrel *Sciurus vulgaris*, and the second attempt failing because of the lack of food during a very cold summer. Whinchats also breed, usually close to the Osprey hide, and Tree Pipits, though not common, liven up the more open areas in the woods with their parachuting song flights.

In any year the reserve supports four species of First Schedule protected birds. Three of these comprise the birds most sought after by visitors to the reserve, namely Osprey, Scottish Crossbill and Crested Tit, the fourth in this group being Sparrowhawk. The Osprey is relatively easy to see, the present nest site having been used since 1959. A large hide at the site is fully equipped with powerful binoculars to allow visitors intimate views of the birds throughout the breeding season. But for Scottish Crossbill and Crested Tit more effort is required. Again, the best area being from the road end of Loch Garten down the track to Loch Mallachie.

Crossbills, though often overlooked, are easiest to find when they are feeding in noisy family groups or later in the year when they have gathered into small flocks, when their constant harsh *chip* call and constant cascade of empty pine cones help to locate them. Probably the best time is late May and through June when the cones are ripe and the small flocks have started to form. Crested Tits on the other hand are usually quite easy to locate, either in the winter flocks or during the breeding season. The call is a high pitched trill, very obvious once heard, and with the birds almost oblivious to the quiet visitor, very good views can be obtained. The early part of the breeding season—April and May—is perhaps the noisiest as the birds call to one another during nest building and courtship feeding and to proclaim their territory, and again in late May and June as the young are being reared. As mentioned earlier, these birds are specially protected and a licence is required to visit their nests.

One other species that is looked for, often in vain, is the Capercaillie. Early morning walks in the woodland around

Abernethy should reveal a bird, though usually a tail-end view as it crashes off through the trees. Probably the best way to see these elusive birds is to use a car as a hide and drive round the roads in the hope that a bird feeding on grit by the roadside can be found. A careful approach, remaining in the car, will usually afford the best views without disturbing the bird. Its status in the reserve appears to be quite healthy and each year 13-15 nesting territories are located. But the most impressive Capercaillie sighting so far occurred in 1978 when 26 birds were seen attending one lek, six of which were males in full display. There is usually one case each year of a male Capercaillie landing on the Osprey nest to display. If the female Osprey is on eggs she does not take readily to this kind of intrusion and either the male will chase the Capercaillie off or she will do it herself. During an incident in 1976 the female hit the displaying Caper so hard that he fell to the ground stunned, injuring himself so much that we had to put him down.

During the breeding season both lochs are fairly quiet, with only a handful of Mallard breeding, along with Tufted Duck, Teal and occasionally Wigeon. Water Rail probably breed on Loch Mallachie, with the odd pair of Reed Buntings and a single pair of Sedge Warblers. However, during the autumn and winter, until they freeze that is, the lochs are used by roosting wildfowl, both during the day and at night. Over the last couple of winters at dusk the traffic in and out from Loch Garten has been busy. Up to 1,000 Greylag Geese have been roosting on the loch each night, and as they fly in 300-400 Mallard are just flying out, heading for their feeding areas. Goldeneye, Goosander, Wigeon, Teal and Pochard are also regulars at this time of year, and family groups of Whooper Swans regularly drop in, probably on route to Insh Marshes. Loch Garten is also a regular roosting site for up to 3,000 Black-headed Gulls during late March and April, the birds flying in from all the local breeding sites for what sounds like an all-night talk-in.

If on your walk to Loch Mallachie you look down for a while instead of up, you will find that the ground is covered by three dominant plants, Heather *Calluna vulgaris*, Blaeberry *Vaccinium myrtillus*, and Cowberry *Vaccinium vitis-idaea* the main constituents of the ground flora of many pinewoods. If your visit is in late summer when the bird populations are becoming less obvious have a closer look at the ground and you may find pinewood species such as Creeping Ladies Tresses *Goodyera repens*—a small orchid—or Intermediate Wintergreen *Pyrola media*, the commonest of three wintergreens to be found on the reserve. The list of plants to date

covers some 240 species, including a scarce pinewood plant, the Twinflower *Linnaea borealis*.

The status of beetles, moths and dragonflies has been assessed and in each case local and rare species have been found. Many of the rarer beetles are dependent on native pine and are excellent indicators of how well you are managing your woodland. Some of the local dragonflies occur because the reserve has, in places, the right association between mature timber and open water and moss covered pools. The track to Loch Mallachie is a good place to look for them. Two regulars will be the Common Blue *Enallagma cyathigerum* and Large Red Damselflies *Pyrrhosoma nymphula* but the local Northern Emerald *Somatochlora arctica* also occurs here, often resting on the pine trunks.

In such a short article I can hardly do justice to the reserve as so many things have to go unmentioned, but if you are tempted to visit you are welcome. There are no formal visiting arrangements unless a party is to be accompanied. Access is only restricted in a sanctuary area around the Osprey site during April to August. The Osprey observation post is open to the public from late April until the birds depart, usually at the end of August, from 10.00 to 20.30 daily.

Stewart Taylor, RSPB, Grianan, Nethy Bridge, Inverness-shire PH25 3EF

Short Notes

Lesser Golden Plover in Dumfriesshire

On 23rd November 1975 at Eastpark wildfowl refuge, Caerlaverock (Dumfriesshire) our attention was drawn to a 'grey' plover amongst the Golden Plover flock. Although superficially the bird resembled a Grey Plover it was obviously not that species. After detailed observations we concluded that the bird was a Lesser Golden Plover of the American race *Pluvialis d. dominica*.

Description A little smaller than nearby Golden Plovers and noticeably slimmer. Overall coloration medium grey, the back appearing darkest. Underparts pale grey. Head well marked with distinct off-white supercilium; forehead white, especially just above beak; dark line from ear coverts to upper breast. Underwing pattern appeared similar to Golden Plover, but axillaries medium grey.

Similarities between this bird and the Fair Isle specimen (1: 68-70) were remarkable, but in view of recent observations of aberrant Golden Plovers (see following note) we urge great caution in identification of this species.

This was the third Scottish record of the species and the second of the American race. It was reported by other observers as remaining until 26th February 1976, the first British record of wintering.

ALAN BROWN, R. H. HOGG

Aberrant Golden Plover

In late July 1979 we were informed that a Lesser Golden Plover was present at Musselburgh (Midlothian) and we understood that grey axillaries, diagnostic of the species, were said to have been seen. Close observations over the following week, however, proved the bird to be an aberrant Golden Plover.

It was strikingly grey and could easily be picked out from the flock of Golden Plovers at a considerable distance. The pale supercilium was more prominent than the Golden Plovers' but overall the bird was the same size and shape. Good views of the underwing showed it to be completely white, including the axillaries. The flanks beside the join of the wing were grey, however, and it is possible that observers who obtained a brief view of the bird in flight may have mistaken this area for grey axillaries.

It is clear that observers faced with a bird superficially resembling a Lesser Golden Plover should first of all satisfy themselves that it is not an aberrant Golden Plover (see also note on similar bird on Islay, *British Birds* 71: 271-2).

ALAN BROWN, PETE ELLIS

Calandra Lark on Fair Isle

On 28th April 1978 R. A. Williams found a Calandra Lark at Field, Fair Isle. Together with other observers I arrived at the site shortly afterwards and with the aid of a tripod-mounted telescope very good views were obtained.

Description A large pale lark, perhaps a third larger than Skylarks alongside. Upperparts mid brown, pale buff edges to feathers giving streaked appearance; crown darker than mantle and more heavily streaked. Sides of face warm rufous buff contrasting with crown; pale spot between eye and malar region; inconspicuous buff supercilium from base of bill to rear of ear coverts; broad white moustachial stripe bordered beneath by thin dark brown stripe ending on sides of throat. Throat pure white; upper breast washed warm buff, darker streaks becoming heavily streaked in centre, forming pectoral band; two black crescentic neck patches blended with streaks on lower edge of pectoral band; belly white, flanks off white with a few dark streaks. Median coverts dark brown with broad buff edges forming a wing bar; greater coverts similar with broader edges; tertials pale buff with darker centres; secondaries dark brown with broad buff

edges and white tips; primaries darkest brown with narrow buff edges. Tail dark brown with prominent white outer feathers. Underwing blackish with paler axillaries and white trailing edge to secondaries. Bill heavy and bunting-like, pale horn above, straw colour beneath; eye appeared dark and legs dark flesh.

It did not call often but a *churrreep* note was heard in flight, when the large size and black underwing with white trailing edge afforded easy identification; the legs dangled in the manner of a Corn Bunting. The flight was heavy and floppy compared with that of Skylark, with broad based wings with blunt tips.

The bird frequented fields of newly sown oats and was seen to feed on oat grains and small insect larvae and earthworms. It was well camouflaged against the earth and generally kept a low stance but when alert stood erect, the white belly and dark neck patches then making it quite conspicuous. It was watched till late in the afternoon but not seen subsequently.

This would appear to be the first Scottish record and the second for the British Isles, the first being at Portland, Dorset, on 2nd April 1961. Peter Davis in Williamson's *Fair Isle and its Birds* (1965) gives a record for Fair Isle in spring about 1925 but no details were known. The species breeds throughout the Mediterranean region to Afghanistan and the northern Caspian; northern populations winter in southern parts of the range and in Egypt.

I. S. ROBERTSON

Obituary

FRANK FRASER DARLING

(23 June 1903 - 22 October 1979)

Sir Frank Fraser Darling was a Yorkshireman by birth and a Scot by adoption. His name has been synonymous for half a century with natural history and land use in the Highlands and Islands of Scotland. For 30 years he was a leading figure in the world conservation movement, travelling widely in North America and Africa to repeat in foreign settings what he first did in Scotland. His ecological work possessed visionary as well as scientific qualities and his advice was stamped with an authority born from a rare insight into natural processes as well as experimental results. He was a pessimist in the world of human devastation, to the relief of which he devoted his life and which he could never bring himself to eschew in favour of the optimistic speculator.

Frank Fraser Darling saw his life as an odyssey in the world of interaction between man and nature, fired by the ecology of Elton and conservation of Leopold. His work in Scotland which produced such classics of natural history as *A Herd of Red Deer* (1937), *Bird Flocks and the Breeding Cycle* (1938), *A Naturalist on Rona* (1939) and *Natural History in the Highlands and Islands* (1947) saw the progressive development of the naturalist-extraordinary who sought in the world of human affairs to integrate rather than separate mankind from nature. *Crofting Agriculture* (1945) and earlier works on the seasonal activities of farmers and fishermen and the care of farm animals were a contribution to human ecology which culminated in the *West Highland Survey* (1955). Though he did reach great heights thereafter, he always looked upon this as the work for which he should be remembered and was disappointed that it did not receive greater acclaim in Scotland.

The war found him isolated, reclaiming derelict land on Tanera and embittered by the social and political scene in Britain. This he describes in *Island Farm* (1943) in an unsettled period which later saw the West Highland Survey and the disruption of his family life. In 1945 he was a member of the Ramsay Committee set up to provide a blueprint for National Parks in Scotland. Nothing came of it, but he took consolation in the setting up of the Nature Conservancy in 1949 in the work of which he was to play a part as Director of the Red Deer Survey in the early 1950s.

Disenchanted with the reception of his work and ideas in Britain, Fraser Darling turned at this time to a much more sympathetic scene in America where he filled a gap left by the prototype philosopher-ecologist Aldo Leopold who died in 1948 and of whom he was a devotee. Leopold propounded a conservation ethos in the fast industrialization of the USA and Fraser Darling translated this into the environmental impacts of the industrial revolution in Britain, particularly the devastation of the Scottish Highlands, and into the excesses of exploitation of colonial territories by imperial powers which he described for Northern Rhodesia in *Wildlife in an African Territory* (1960).

He already had a well-established international reputation when in 1959 he was appointed Vice-President of the Conservation Foundation in Washington DC and played a wide ranging international role with Julian Huxley, Max Nicholson and Peter Scott from Britain, Jean-Paul Harroy from Belgium, Harold Coolidge and Edward Graham from the US, and others, in promoting the activities of the now powerful International Union for the Conservation of Nature and Natural Resources (IUCN) of which he later became a Vice-President and the recipient of IUCN's highest award, the John Philips Medal

(1975). At this time he was also created a Commandeur of the Order of the Golden Ark, Netherlands.

Though he had kept his home and family in Britain, it was not until the late 1960s that Fraser Darling moved back into the British scene. The troubles of the '40s and '50s that had marred his life had drifted away. The late '60s were marked with the countryside movement in Britain culminating in Prince Philip's Study Conference 'The Countryside in 1970'. Fraser Darling was received back like a lost elder statesman. He was appointed to the Nature Conservancy (1969-73), delivered the Reith Lectures *Wilderness and Plenty* (1969), was Knighted (1970), became a member of the Royal Commission on Environmental Pollution (1970-3) and had honorary degrees conferred by the Universities of Glasgow, Heriot-Watt, Ulster and Williams College Massachusetts, USA.

After an absence of some 30 years from Scotland except on short business visits, Sir Frank and Lady Fraser Darling returned to live in the Scottish Highlands which throughout his life he always regarded as his first laboratory. It was here successively as a student of genetics of Scottish Blackface sheep, Chief Officer of the Imperial Bureau of Animal Genetics and as a Leverhulme and Carnegie Fellow in the '30s, he had made his name as a scientist and naturalist. His most important ornithological contribution was in the social and breeding behaviour of seabirds, particularly gulls, postulating a relationship between the size of breeding assemblies and breeding success.

His health declined in the mid 1970s soon after he came back to live in the Highlands which he loved more than any other part of the world. During this time I had the privilege of sitting with him, recalling vignettes of Treshnish and North Rona, of the Great Smokies and Yosemite, of Amboseli and the Serengeti. I come again upon his words in *Island Years* which show his love of birds and Scotland: 'This morning had brought the welcome sound of common sandpipers to the lochans, that long-continued piping which is as moving to me as any music Pan himself might make . . . and then the ecstatic, vibrant flight over the lochan with a paean of his piping.'

JOHN MORTON BOYD

Review

Bird Families of the World edited by C. J. O. Harrison, illustrations by A. Cameron. Oxford, Elsevier-Phaidon, 1978, pp. 264, 31 x 23 cm. £9.95.

This is not just another glossy bird book, but a well thought out presentation covering description, distribution, behaviour, feeding, nest-

ing and young, economic importance, and composition of each bird family of the world, living and extinct. In most cases a representative member of the family is used as an illustration. Forty two authors have contributed to the book, many being recognized authorities. Only one bird artist is involved, but Ad Cameron has made a massive contribution with coloured illustrations of great clarity of over 900 species.

W. G. HARPER

Notice

Survey of breeding terns in Orkney and Shetland Recent localized surveys of breeding Arctic Terns in Orkney and Shetland suggest that numbers may have decreased since the last major census during Operation Seafarer. A survey is planned for 1980 and, although we will be employing two surveyors, extra help would be welcomed to ensure that coverage is comprehensive. We will be contacting counters known to visit particular colonies but anyone else who may be in these islands (or indeed any other remote part of Scotland) during June and July and who would be willing to help is asked to contact the RSPB Research Department or our local representatives David Lea (Orkney) and Bobby Tulloch (Shetland) who will be able provide instructions and recording cards. Dr L. H. Campbell, RSPB, The Lodge, Sandy, Beds.

The Scottish Ornithologists' Club

SCOTTISH BIRDS 10(7)

We are very short of copies of the autumn 1979 number of the journal and if any member does not want to keep their copy it would be most helpful if it could be handed to a branch secretary, or posted to the club secretary at 21 Regent Terrace, Edinburgh EH7 5BT; postage will be refunded. This will be greatly appreciated and may save the club having to reprint that number.

SIR LANDSBOROUGH THOMSON'S AUTOBIOGRAPHY

The typescript of Sir Landsborough Thomson's autobiography, which he entitled *The Romance and Science of Birds*, has now been deposited by his literary executors in the club library where it may be consulted. Besides giving a detailed account of the long and distinguished career of one of the founding fathers of modern ornithology, the text is an invaluable source of information on the development of ornithology and conservation over the first three quarters of the twentieth century.

Conference News

SOC conference, North Berwick, October 1979 The theme of the 1979 conference was Scotland and the Arctic which, despite recent winters, are not synonymous. It seemed a popular choice judging by the number of contributors to Friday's informal slide show who chose to dwell on

their own Arctic experiences. I suspect that Friday evening is often the highlight of the weekend for many members because it captures the informal club atmosphere so well. The SOC is greatly indebted to Bobby Smith and his team who work the projector while the rest of us relax. The quality and variety of the slides improves every year and a record 14 members participated. Unfortunately the commentaries did not always match the photography. Some people overran their time and a few had trouble focusing their slides along with their jokes, probably due to the limited optical qualities of brewer's glass.

On Saturday morning Jeremy Greenwood introduced the theme of the Arctic and how wildlife adapts to its rigorous conditions. The introduction is probably the hardest talk to give but after a detour through the tropics he presented a comprehensive and lucid review of the themes that interest biologists in the Arctic as well as his own work on Snow Buntings. Malcolm Ogilvie followed with the birds common to both Scotland and the Arctic. This remit was really too wide to allow in-depth discussion of species such as Barnacle Geese that have been intensively studied. Harry Green rounded off the morning on Greenland waders in Britain and showed remarkable composure for someone speaking at his first SOC conference with his best slides somewhere in the post.

Sunday morning started with John Innes on the Cambridge expedition to Norway's Hardangervidda to study breeding waders. The main Scottish connection was colour ringed Purple Sandpipers and at least one of these birds visited North Berwick ahead of the speaker. We saw many interesting slides of habitat and nesting waders but not enough of the expedition's results. Next, Chris Spray gave a well presented talk on Mute Swans in the Hebrides. Although introduced, these are now wilder than mainland birds and large neck collars are needed to identify individuals in the field. So far they have escaped the effects of vandalism and pollution but not overhead cables which kill many birds from non-breeding flocks. David Merrie then described how, with a variety of helpers, and materials ranging from plastic containers to lumps of turf, he has created nest rafts for divers. These are most useful on lochs where the banks are subject to human disturbance or fluctuating water levels. Both Red- and Black-throated Divers have used the rafts and the scheme seems very promising.

Finally Hugh Boyd introduced a Canadian Wildlife Service film on Greater Snow Geese which combined good photography with a rather banal soundtrack. This was remedied in his follow up talk which concentrated on problems of censusing geese and the influence of shooting on American wildfowl management.

Conference closed with President Valerie Thom proposing the customary, but entirely justified, thanks to the contributors and staff. It was the third successful North Berwick conference but a few doubts remain and some surfaced at the AGM. Not everyone secured places and many of the younger and more active Scottish ornithologists weren't there. The talks concentrated too much on the Arctic and we heard little on what the birds do when in Britain. Why not, just for a change, have a conference on those local birds that are within reach of everyone ?

STANLEY DA PRATO

Scottish ringers' conference, Glasgow, November 1979 For the second time a format of a day and a half proved very effective. The series of talks on Saturday and Sunday was complemented by an informal gathering in the University College Club on the Saturday evening. This gave the opportunity for renewing acquaintances and discussing topics of mutual interest. As usual the talks ranged over a wide variety of species. The main emphasis was on raptors and seabirds together with a strong

interest in waders and a couple of passerines thrown in for good measure.

Sparrowhawks (Mick Marquiss), Kestrels (Gordon Riddle and Andy Village) and Merlins (Brian Little and Eric Meek) have all been the subject of intensive study with techniques such as radio telemetry as well as superbly organized team efforts. Items on House Martins (David Bryant) and Grey Wagtails (Mike Nicholl) made sure passerines were not forgotten and the seabird contributions were on Arctic Skuas (Bridget Furness), Storm Petrels (Eddie Maguire) and Shags (Hector Galbraith and Bob Swann). Peter Evans outlined the Durham University studies of waders at Teesmouth, providing much food for thought for the increasing number of Scottish ringers interested in waders. Keith Brockie gave us a feast of breeding waders from the high tops in Norway.

A feature af all the Scottish ringers' conferences has been 'The view from headquarters' and this year it was Bob Spencer's turn to travel north from Tring. The major recent development has been the computerization of handling recoveries which should enable the BTO staff to undertake more analyses in future.

Altogether a most enjoyable weekend and full marks to the Clyde Ringing Group for efficient organization and excellent domestic arrangements. This was in spite of considerable uncertainty caused by so many people arriving virtually unannounced, and causing some headaches with the catering. One hopes that ringers will show consideration by booking in good time for the 1980 conference in Dundee to be organized by the Tay Ringing Group—who started the whole thing going with the first conference in 1975.

A. R. MAINWOOD

Current Notes

These notes include unchecked reports and are not intended as a permanent record, nor will they be indexed. Please send reports via local recorders at the end of March, June, September and December.

Good numbers of thrushes arrived in October with a sprinkling of rare warblers such as Blyth's Reed, Booted and two Radde's. Both Isabelline Wheatear and Isabelline Shrike also occurred. Exotic wildfowl including Black Duck, Red-crested Pochard, Canvasback and Barrow's Goldeneye appeared in autumn and winter, although the enjoyment they provided was tarnished by the inescapable possibility of captive origin.

Cory's/Great Shearwater Peterhead (Aber) 3 Oct. **Sooty Shearwater** 350 Fair Isle 8 Sep, 300 on 10th. **Storm Petrel** one trapped in wader net at night, Dalmeny (W Loth) 1 Sep. **White-fronted Goose** European *A. a. albifrons* Collieston (Aber) 14 Oct. **Snow Goose** 6 Ythan-Strathbeg (Aber) October; one Aberlady (E Loth) December. **Barnacle Goose** Fair Isle max 65 on 1 Oct; 550S Strathbeg and 100S Drums (Aber) 5 Oct; Fife max 60S Fife Ness 5 Oct. Six species of goose in one flock at Rattray (Aber) 6 Oct: **Greylag, Pink-footed** (one biscuit coloured) 30 **Barnacle, Brent** Pale-bellied *hrota*, 2 European **Whitefront,** blue (intermediate) **Snow. Black Duck** Paisley (Renf) late Dec (1st for Scotland). **Red-crested Pochard** Kilconquhar (Fife) into November at least. **Canvasback** ♂ West Linton (Peeb) 8 Oct (1st British if accepted as wild bird). **Steller's Eider** still resident South Uist (O Heb) September. **Surf Scoter** Southerness (Kirk) mid Dec-Jan. **Barrow's Goldeneye** Irvine (Ayr) Nov-Dec (same comment as for Canvasback). **Quail** Rattray 13 Oct. **Dotterel** Fair Isle 5th and 20 Sep. **Temminck's Stint** Fair Isle 14-19 Sep. **White-rumped Sandpiper** Musselburgh (Midl) c.19 Oct. **Pectoral Sandpiper**

Fair Isle 11 Sep. **Curlew Sandpiper** small influx September. **Jack Snipe** 15 Fair Isle 14 Oct. **Woodcock** 50 Fair Isle 22 Oct, 110 on 29th. **Whimbrel** late one Musselburgh 29 Oct. **Greenshank** 33 Eden estuary (Fife) 25 Aug. **Red-necked Phalarope** Fair Isle 16 Sep. **Grey Phalarope** Vallay Strand (N Uist) 19 Sep; Fair Isle 26 Sep; 2 L Bornish (S Uist) 2 Oct. **Arctic Skua** Ythan 10 Nov. **Long-tailed Skua** Lochmaddy (N Uist) 15 Aug. **Mediterranean Gull** Seafield (Midl) 2 Jan. **Sabine's Gull** Fair Isle 16 Sep. **Ring-billed Gull** Irvine 1 Jan (3rd for Scotland). **Sandwich Tern** Musselburgh 17 Nov; Yellowcraig (E Loth) 2 Dec. **Turtle Dove** singles S Uist 28 Sep-10 Oct. **Short-eared Owl** 11 Fair Isle 29 Oct. **Wryneck** odd ones Fair Isle-St Abbs (Ber) early Oct. **Short-toed Lark** Fair Isle 3rd, 15-21 Oct. **Shore Lark** St Abbs 7 Oct; Fair Isle 18 Oct; Bridge of Don (Aber) 17-23 Nov. **Swallow** Inverallochy (Aber) 1 Dec. **House Martin** Old Aberdeen 6 Nov. **Richard's Pipit** 53 bird-days Fair Isle 1-26 Oct, 10+ individuals, max 5 on 6 Oct; one Girdleness (Kinc) 13 Oct. **Citrine Wagtail** Fair Isle 2-4 Oct. **Waxwing** 2 Ythan 13 Oct; 2 Stonehaven (Kinc) 24 Nov; 3 Hillhead (Aber) 25 Nov. **Robin** 50 Fair Isle 6 Oct. **Black Redstart** Rattray 28-29 Oct; Peterhead 29 Oct; Girdleness 27 Oct-5 Nov, 2 on 30 Oct; Fife Ness 5 Oct; St Abbs 7 Oct; (but none Fair Isle all autumn). **Redstart** 25 Fair Isle 6 Oct; 50 Rattray 6 Oct; 25 Foveran (Aber) 7 Oct; late one St Abbs 27 Oct. **Stonechat** Siberian *maura/stejnegeri* Foveran 1 Nov. **Isabelline Wheatear** Girdleness 17 Oct-10 Nov, trapped 23 Oct (1st Scottish, 3rd British). **Wheatear** 200 Fair Isle 8 Sep. **Ring Ouzel** 7 Fife Ness 2 Oct; 12 Fair Isle 14 Oct. **Blackbird** 300 Fair Isle 14 Oct, 500 on 29th. **Fieldfare** 2,000 Fair Isle 14 Oct, 8,000 on 29th. **Song Thrush** 2,000 Fife Ness 2 Oct; 1,400 Fair Isle 13 Oct. **Redwing** 1st 3 Garynahine (Lewis) 27 Sep; 1,000+ Fife Ness 2 Oct; 15-20,000 'thrushes' Brent Field (North Sea) 13 Oct; 65,000 Fair Isle 14 Oct (most ever). **Lanceolated Warbler** Fair Isle 20 Sep, **Blyth's Reed Warbler** trapped E Mainland (Ork) 5-8 Oct (1st for Scotland since 1928). **Reed Warbler** (or Marsh) 4 Aberdeen area 3-8 Oct; St Abbs 6-7 Oct, late 3 on 27th. **Booted Warbler** Newburgh (Aber) 13-16 Oct. **Icterine Warbler** Fair Isle 8 Sep; Fife Ness 2-7 Oct. **Subalpine Warbler** Fair Isle 4 Oct. **Barred Warbler** 5 Fair Isle 8 Sep, singles 29 Sep, 1 Oct; Orkney early Oct. **Garden Warbler** 22 Fair Isle 7 Sep; late one St Abbs 27 Oct. **Blackcap** 20 Drums (Aber) 5 Oct; 20 Rattray 6 Oct; 100+ Fife Ness 5-7 Oct; 60 Fair Isle 29 Oct. **Arctic Warbler** Fair Isle 30 Sep; possible Strathbeg 5 Oct. **Pallas's Warbler** Fair Isle 6 Oct; Girdleness 16 Oct. **Radde's Warbler** trapped Fife Ness 5 Oct; Cruden Bay (Aber) 7 Oct; (4-5th for Scotland). **Chiffchaff** 35 Rattray 6 Oct. **Goldcrest** low numbers, max 60 Rattray 6 Oct. **Spotted Flycatcher** late one Girdleness 27 Oct. **Red-breasted Flycatcher** only reports Girdleness 5 Oct, Drums 6 Oct. **Pied Flycatcher** low max 17 Fair Isle 7 Sep. **Isabelline Shrike** Fair Isle 26 Oct (3rd Scottish). **Red-backed Shrike** Fair Isle 8 Sep; Drums and Sandford Bay (Aber) 7 Oct. **Great Grey Shrike** few: 5 Orkney-Fife; (none Fair Isle all autumn). **Jackdaw** 270 Fair Isle 22 Oct. **Siskin** 40 Foveran and 60 Whinnyfold (Aber) 7 Oct. **Scarlet Rosefinch** 7 Fair Isle during 1 Sep-6 Oct; Drums 6 Oct; Cruden Bay mid Oct. **Bullfinch** Brent Field c.13 Oct; 2 Northern *P. p. pyrrhula* Don (Aber) 27 Oct. **Lapland Bunting** 8 Fair Isle 29 Oct; Girdleness 2-5 Oct and 24 Oct; Don 9-10 Oct; 9 Greg Ness 20 Nov, 3 on 24th; Musselburgh max 30+ on 16 Dec. **Little Bunting** 2 St Abbs 2-4 Oct; Fair Isle 6-8th, 13th Oct. **Yellow-breasted Bunting** Fair Isle 9 Sep, two 29-30th, one 1 Oct.

Late news—**Ring-necked Duck** ♂ Woodend L, Coatbridge (Lan) from 19 Jan; ♂ L Ryan (Wig) 27 Jan. **King Eider** ♂ L Ryan from Dec.

D. J. BATES

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