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THE JOURNAL OF THE SCOTTISH ORNITHOLOGISTS' CLUB

Vol. 8 No. 5/6 **Spring/Summer 1975**

Edited by D. J. Bates

Editorial

Scottish Birds Once again readers are owed an apology, this time for the comparatively small size of this issue. When it was decided to combine the journal for Spring and Summer this year to help bring it back on time, a double-sized number was promised. Unfortunately, printing sufficient material at this time would have meant further delay and the Management Committee has decided that earlier publication, regardless of size, would be more acceptable. We nonetheless expect to be functioning normally by early 1976.

New Club Group The formation of a new SOC Group in the Wigtown District is announced in the Club Section later in this issue. Any member in an area not already covered by an existing Branch or Group, who would like advice regarding the formation of a new Group, may write to the Club Secretary who will always be pleased to help. In order to encourage membership of the Club, Council agreed in 1963 that, with its approval, a number of members in an area not well covered by an existing Branch could be formed into a Group. At this stage, one or possibly two, lecturers would be provided for the winter session of monthly meetings; some financial help, and publicity in the form of notices in *Scottish Birds*, would be given, but the Group would not qualify for representation on Council. When numbers increased to about fifty the position would be reviewed with the intention of granting Branch status, thus entitling a full series of winter lectures to be arranged by the Club Secretary and also representation on Council.

Geese as pests The proposal of the Secretary of State for Scotland last autumn (on the advice of the Advisory Committee on the Protection of Birds for Scotand) to treat Greylag and Pink-footed Geese as pests (Editorial 8: 149-50) has now been withdrawn. The following quotation is from a letter dated 25th May 1975 to the Club from the Scottish Home and Health Department:

In view of the number and strength of the objections to the proposal which were received from conservationist bodies, the Secretary of State

again consulted the Advisory Committee, who decided to withdraw their earlier recommendation.

The Secetary of State has agreed that the order should not meantime be made but has accepted a proposal by the Advisory Committee that the Department of Agriculture and Fisheries for Scotland should, with other interested organisations, conduct an investigation into the losses sustained by farmers and advise on whether any practicable and economically worthwhile means of crop protection can be found.

This response was both reasonable and encouraging.

Local Recorders An updated list of local recorders will be found opposite page 340. Observers with records for the for the Inverness area should note that Dr Maeve Rusk's address is now 18 Morven Road, Inverness 1V2 4BU.

Current Literature. Recent material of Scottish interest includes :

Wildfowl Trust expedition to Spitsbergen 1973. E. E. Jackson, M. A. Ogilvie and M. Owen, 1974. *Wildfowl* 25: 102-16. (Study of Solway Barnacle Geese on breeding grounds).

Island of geese. R. Dawson, 1975. *Birds* 5 : 7 : 22-3 (Islay).

Common and Black-headed Gulls flight-feeding over ragwort. A. W. and L. S. Ewing, 1975. *British Birds* 68 : 44-5. (Study on South Uist).

Loch Lomond Bird Report (No.3) 1974. Annual report compiled by J. Mitchell, 1975.

Breeding success of Red-throated Divers on Fetlar. D. P. Cyrus, 1975. *British Birds* 68 : 75-6.

Unusual tameness of Robins. D. Merrie, 1975. *British Birds* 68 : 79. (Record from Tayside).

Fetlar's Snowies. B. Tulloch, 1975. *Birds* 5 : 8 : 24-7. (Snowy Owls).

Food of Nestling Crows in northeast Scotland. Y. Yom-Tov, 1975. *Bird Study* 22 : 47-51.

Fulmar occupying Ravens' nest. I. S. Robertson, 1975. *British Birds* 68 : 115. (Record from Shetland).

Sheep contaminated by Fulmar oil. I. S. Robertson, 1975. *British Birds* 68 : 115-6. (Record from Shetland).

Fulmar sitting on egg and two dead passerine nestlings. R. A. Hume, 1975. *British Birds* 68 : 116. (Record from Shetland).

Aspects of social behaviour in the Buzzard. D. Weir and N. Picozzi, 1975. *British Birds* 68 : 125-41. (Study from north-east Scotland).

Studies of breeding Sandwich Terns. A. J. M. Smith, 1975. *British Birds* 68 : 142-56. (Study from Sands of Forvie, Grampian).

Contrasting predator-reactions of two Oystercatcher chicks. R. Coomber, 1975. *British Birds* 68 : 157. (Record from Mull).

Choughs feeding on blow fly larvae at cow carcass. R. Dawson, 1975. *British Birds* 68 : 159-60. (Record from Islay).

Reed Warblers breeding in Shetland. G. Bundy, 1975. *British Birds* 68 : 210-1. (First Scottish breeding record; c.f. *Scot. Birds* 8 : 266).

Dispersal of First-year Gannets from the Bass Rock

A. LANDSBOROUGH THOMSON

Introduction

This is a more detailed study of a particular section of the data used in a reassessment (Thomson 1974) of the British and Irish ringing results for the Gannet *Sula bassana*. It is restricted to birds ringed up to 1968 as *pulli* on the Bass Rock, Firth of Forth (56°04'N 2°38'W), where many more birds have been ringed than at any other single colony. It is also restricted to birds recovered before 1st May in the calendar year following fledging; that is, up to the start of the breeding season. No focal point can be determined for the dispersal of immature birds in subsequent seasons.

First-year recoveries

The general picture is that of an autumn dispersal in northern European waters (taken as north of Ushant, 48°28'N), followed by migration southwards along the Atlantic seaboard of western Europe and Africa as far as about 12°N, with a minor lateral diversion into the Mediterranean. The main study (loc. cit.) has confirmed an earlier finding (Thomson 1939) that migration is most pronounced in the first year of life, as regards both the proportion of individuals participating and the distance covered. The migration, as distinct from the dispersal, is characterised by a well marked directional shift in the centre of gravity of the distribution. This paper concentrates on the dispersal aspect, to which can be assigned 291 viable first-year recoveries of Bass Rock birds (omitting those that had never flown); in addition, 215 first-year recoveries relate to migration south of Ushant.

The accompanying table gives the number of these records, month by month, in the following arbitrary sections of the dispersal and migration areas:

1. Local—the Firth of Forth, with the whole coasts of the Lothians and Fife.
2. Southwards on east coast of Great Britain.
3. Northwards on east coast of Scotland, including Northern Isles.
4. North and west of Scotland.
5. Irish Sea.
6. North, west and south of Ireland.

7. Continental coasts of the North Sea, from Belgium to southern Norway and including Baltic approaches.
8. English coast of English Channel.
9. French coast of English Channel.
10. Bay of Biscay (west France, north Spain).
11. West coast of Iberian Peninsula (west and south-west Spain, Portugal).
12. Mediterranean Sea.
13. North-west Africa (Atlantic coast, south to Tropic of Cancer).
14. Tropical West Africa (south to c. 12°N).

The table shows how the young birds disperse and migrate. Local recoveries (area 1) begin in July, are at peak figures in August and September, and tail off after October.

Table. First-year recoveries of Bass Rock Gannets

Area (see text)	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
1.	8	43	40	13	1	—	—	—	1	1
2.	—	5	22	14	2	1	2	—	—	1
3.	—	—	8	12	1	2	—	—	—	—
4.	—	—	2	8	2	2	—	—	1	—
5.	—	—	—	5	2	—	—	—	—	—
6.	—	—	5	8	3	—	1	—	—	—
7.	—	—	6	22	8	2	1	1	—	—
8.	—	—	—	6	4	—	—	—	—	—
9.	—	—	6	12	6	1	—	—	—	—
10.	—	1	10	62	16	1	1	1	2	—
11.	—	—	2	26	20	5	1	—	3	—
12.	—	—	—	—	7	3	—	—	1	1
13.	—	—	—	6	6	7	5	4	—	1
14.	—	—	—	—	3	9	7	2	1	1

Dispersal

A southward movement along the east coast of Great Britain (area 2) becomes evident in August and pronounced in September.

A northward movement along the east coast of Scotland (area 3) shows itself in September—with records as far as Caithness in that month, Orkney in October and Shetland in November. It is presumably this movement that continues round the north and west of Scotland (area 4), although the only two September records, being from the Firth of Clyde,

could conceivably indicate a short overland crossing; be that as it may, there is a September record from the Shamrock Bank (48°30'N, 7°20'W), south of Ireland and just above the latitude of Ushant (area 6), as well as records in that month from points far at sea south-west of Ireland (50°40'N, 13°30'W and 51°00'N, 13°40'W) (area 6). In October there are further records from the west coast of Scotland—including one off St Kilda—and from the Atlantic coasts of Ireland. There are records from the Irish Sea in October and November (area 5).

A substantial movement towards the continental coasts of the North Sea, from southern Norway to Belgium and including the Baltic approaches (area 7) also begins in September, reaches a maximum in October and tails off after November. Recoveries from the French coast of the English Channel (area 9) follow the same temporal pattern. Records from the English coast of the Channel (area 8) are fewer and confined to October and November.

Migration

From the Bay of Biscay (area 10) there are an isolated record in August, a number in September, a large number in October, fewer in November and thereafter only sporadic occurrences. Apart from August, the pattern for the west and south-west of the Iberian Peninsula (area 11) is similar. The first record from the Mediterranean (area 12) is in November; by March one bird had reached the eastern end, in the Gulf of Iskenderun (36°40'N, 36°00'E). Recoveries on the Atlantic coast of north-west Africa are frequent from October to February, and on that of Tropical West Africa from November.

By contrast, first-year birds from Grassholm, in the Irish Sea off Pembrokeshire (51°44'N, 5°29'W), are already present in numbers in west European waters in August and to a major extent in September. This earlier migration is doubtless due to the immediate southward exit from the Irish Sea, without an area of dispersal comparable with the North Sea. The pattern shown by the birds from Ailsa Craig, in the Firth of Clyde (55°23'N, 5°07'W), lies in between—with west European recoveries first in a majority in October. Figures supporting this summary statement are given in a table in the main study (Thomson 1974); but the numbers for the other two stations do not seem adequate for a detailed comparison with the Bass Rock birds.

Return movement

Records for any area become sparse after January, by which time the numbers at risk are obviously much reduced. The table, however, does show a distinct falling off after February in the number of records from Tropical West Africa and the Atlantic coast of north-west Africa; and March shows a minor peak in the records from west European waters that may well reflect a northward passage through that zone.

Apart from the question of a return movement, there are a few records from northern European waters throughout the winter, showing that some of the birds do not migrate even in their first year. And in June (outside the scope of the table) a bird hatched in the previous year, which may or may not have migrated meanwhile, was recovered off northern Norway (64°29'N).

On the other hand, some of the migrants remain in the wintering area during the next summer. There are records in May from Portuguese Guinea (11°52'N, 15°39'W), Senegal, western Morocco and the Bay of Biscay, and in June from Senegal and the western Mediterranean.

Acknowledgments

The records were provided by the British Trust for Ornithology through Robert Spencer; he, Dr J. B. Nelson and Dr W. R. P. Bourne have seen the paper in draft and have made helpful comments.

Summary

First-year recoveries of Gannets ringed as chicks on the Bass Rock show a wide dispersal in northern European waters from August to November; this extends to the northern and western coasts of the British Isles and, from September, to the continental coasts of the North Sea and the English Channel. Beginning mainly in October (later than birds from the Irish Sea), there is a migration to west European waters (south of Ushant) and the Atlantic coast of north-west Africa; from November there is a minor lateral movement into the Mediterranean Sea and a southward continuation of the main migration to the coast of Tropical West Africa as far as about 12°N. Although the migration is especially characteristic of first-year birds, some of these remain in northern waters throughout the winter. On the other hand, some of the migrants remain in the wintering area during the next summer.

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THOMSON, A. L. 1939. The migration of the Gannet; results of marking in the British Isles. *British Birds* 32: 282-289.

THOMSON, A. L. 1974. The migration of the Gannet: reassessment of British and Irish ringing data. *British Birds* 67: 89-103.

Sir A. Landsborough Thomson,
42 Girdwood Road, London SW18 5QS.

Wintering wader populations on the rocky shores of eastern Scotland

R. W. SUMMERS, N. K. ATKINSON and M. NICOLL

(Plates 21 and 23)

Introduction

The aim of this paper is to document the numbers and distribution of wintering waders on the rocky shores of eastern Scotland from Berwickshire to Morayshire, and also to show the relative importance of rocky shores and estuaries as wader habitats. Because of the exploitation of oil in the North Sea the coastline of eastern Scotland faces possible changes, and as there is little data on the wader populations of this region it was felt necessary to determine a base level against which future counts can be compared. The work also complements the BTO/RSPB Estuaries Enquiry.

Study Area

A total of 332 km of rocky coastline was censused. This included Morayshire (**1** Burghead to Lossiemouth), Banffshire (**2** Craigan Roan to the border with Aberdeenshire), Aberdeenshire (**3** border with Banffshire to Fraserburgh, **4** Cairnbulg Point to St Coombs, and **5** Peterhead to Rockend), Kincardine (**6** Aberdeen breakwater to St Cyrus), Angus (**7** Ferryden to Black Jack, and **8** Ethiehaven to Carnoustie), Fife (**9** St Andrews to Ruddons Point, **10** the rocky shore of Largo Bay, **11** Buckhaven to Pathhead, **12** Long Craig to Pettycur, **13** Burntisland to Aberdour, and **14** the Isle of May), East Lothian (**15** Gullane Point to Tynemouth, **16** Belhaven Bay to Bilsdean Creek) and Berwickshire (**17** Bilsdean Creek to the English border) (see figure).

Although the coastline has been categorised as rocky it also contains small areas of other substrata including mud and sand which are associated with estuaries and beaches. However, stones, boulders and bed rock were the predominant features (plate 21a and b). The composition of the rock varied through the study area and this has a marked effect on the distribution of the waders. The rocky shores of Morayshire, Kincardineshire (south of Stonehaven), Angus, Fife, parts of East Lothian, and Berwickshire are all composed of sedimentary rocks : Triassic Sandstone in Morayshire, Old Red Sandstone in Kincardineshire and Angus, Calciferous Sandstone in

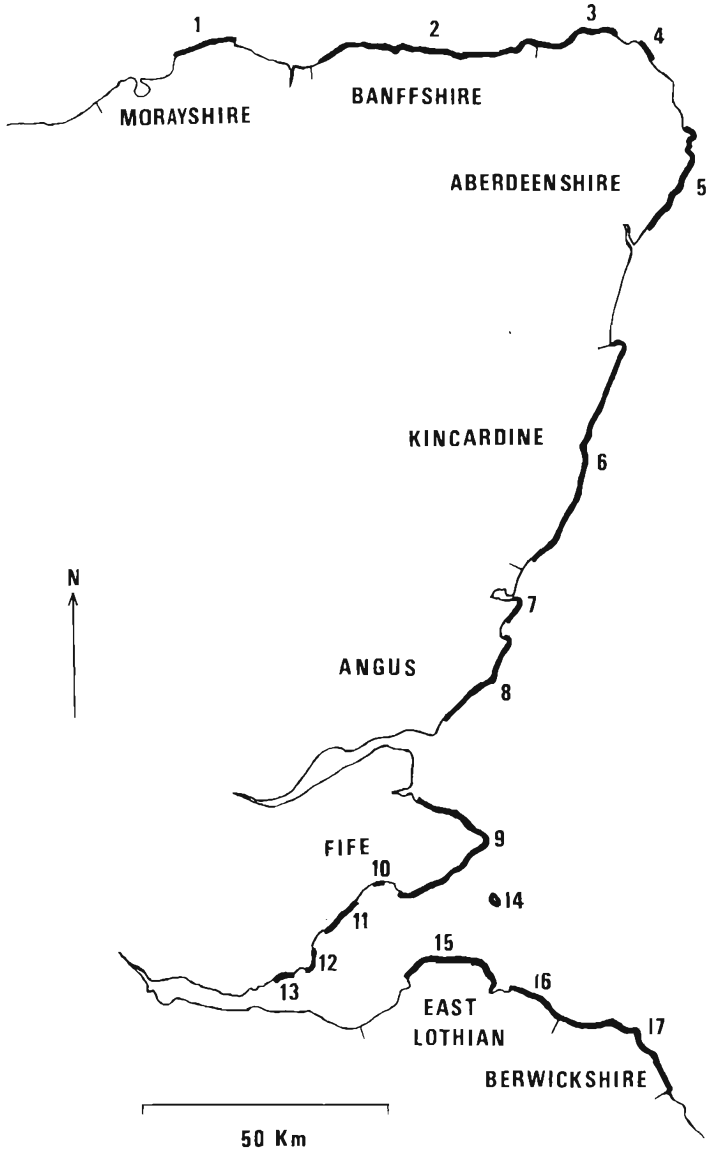

Figure. Eastern Scotland showing the censused coastline (heavy line). Also see text.

Fife and East Lothian and Silurian deposits in Berwickshire. The relatively soft sandstones have been weathered since glacial times to give a broad wave-cut platform with a large intertidal zone and out-lying reefs, though short stretches of cliff do occur between Arbroath and Ethiehaven (Angus) and south of Stonehaven (Kincardineshire). In contrast, the coastline north of Stonehaven through Aberdeenshire and Banffshire is either of metamorphic (Dalradian schists) or igneous (granite) rocks which are harder. The shore has therefore weathered less, resulting in a steep profile shore with a small intertidal zone which is more exposed to wave action.

Methods

Most previous counts of waders on rocky shores refer to counts at a given point. This method is unsatisfactory unless conditions of tide etc are stated, for it is difficult to repeat such counts. Counting birds at high tide roosts (plate 23) is also unsatisfactory as they usually occur on off-shore rocks where only a proportion of the sitting birds can be seen, and their roost sites may vary according to the weather.

The method used to census birds in this study involved walking along the shore at approximately mid tide level at low water (half ebb to half flood) and counting the birds that were flushed past and behind the observer. Those that flew up in front of the observer were not counted but their landing position noted so that they could be circled and flushed behind on the second approach. Where cliffs prevented access to the littoral zone the birds were counted from the cliff top. As the waders occurred in scattered groups an accurate count could be made. Only when large flocks of Knots* were encountered did numbers have to be estimated.

As only approximately 10 km of coastline could be covered by one person per day, three winters were required to census the eight counties, though Angus was covered in four winters. Counts were made between the beginning of November and the end of February. Daytime counts probably did not include all shore birds attached to a particular stretch of coast, since some, e.g. Redshank, Curlew and Oystercatcher, may obtain some of their daily food intake inland as has been shown for estuary-feeding birds (Goss-Custard 1969, Heppleston 1971). Conversely, counts made in the late afternoon are likely to include birds which return to the shore to roost at night. Thus considerable variability may be expected. To test the variability within a winter, a 22 km stretch of the Aberdeenshire

*Scientific names are given in the appendix.

coastline was censused twice in 1972/73 (table 1). The numbers of the truly rocky shore species (Turnstone and Purple Sandpiper) were similar in the two counts but the Oystercatcher, Curlew and Redshank showed greater variation, possibly due to the reasons as given above, rather than as a result of migration. These field-feeding species are also affected by frosty weather which drives them from coastal fields to the shore, though such weather did not occur during the two count periods.

Table 1. Number of waders found in two censuses between Rockend and Peterhead (Aberdeenshire), winter 1972/3

	28 Nov-10 Dec	27-31 Jan	The difference as a percentage of the lower value
Oystercatcher	182	285	56
Ringed Plover	4	16	—
Grey Plover	5	—	—
Golden Plover	—	1	—
Turnstone	612	687	12
Curlew	46	30	53
Redshank	157	235	49
Knot	1	—	—
Purple Sandpiper	531	582	10
Dunlin	35	30	17

Evidence from ringing also suggests that we were dealing with relatively sedentary populations at this time of year (November-February). Many Redshanks, Dunlins, Oystercatchers, Purple Sandpipers and Turnstones have been retrapped at the site of ringing within winters and in successive winters (Tay Ringing Group, unpublished data). However, individuals in a population will move around on a stretch of coast-line. In the case of the Turnstone population at Fife Ness the limits of its winter home range are known to be at least 53 km apart (ibid.). It is assumed that local movements in one direction are balanced by movements in the other, resulting in a numerically stable population over a particular stretch of shore.

To determine the variations between winters the Turnstone and Purple Sandpiper populations on the Angus coast were censused over four winters (table 2). It can be seen that the

Table 2. Population of Turnstones and Purple Sandpipers on the rocky coasts of Angus over four winters

	1970/1	1971/2	1972/3	1973/4	Difference between max. and min. values as% of the min. value
Turnstone	649	663	655	727	12
Purple Sandpiper	376	326	433	479	47

Turnstone population was similar each winter but quite large variations occurred in the numbers of Purple Sandpipers. There is an indication that variations in the latter are due to variations in breeding success, resulting in differing numbers of first year birds in the population (table 3).

Table 3. Percentage of first-year Purple Sandpipers in samples caught in eastern Scotland in different seasons

Winter	Percentage of first-year birds in the samples	Sample size	Angus population
1970/1	No data	—	376
1971/2	8	51	326
1972/3	38	63	433
1973/4	33	68	479

Results

The total number of birds censused is shown in table 4.

Table 4. Waders counted on the rocky shores of eastern Scotland

Winter	Moray 1972/3	Banff 73/4	Aber 72/3	Kinc 72/3	Angus 71/2	Fife 71/2 & 73/4	E Loth 73/4	Ber 73/4	Total
Oystercatcher	248	640	589	620	835	1017	6100	420	10469
Ringed Plover	—	64	60	17	25	108	220	21	515
Grey Plover	—	—	10	—	—	3	3	—	16
Golden Plover	1	—	1	290	591	21	90	—	994
Turnstone	165	1052	1503	1030	663	1759	1299	229	7700
Curlew	16	299	104	177	353	398	1140	45	2532
Bar-tailed Godwit	54	—	10	—	6	2	102	—	174
Redshank	43	320	1026	616	361	502	1540	170	4578
Greenshank	—	—	—	—	—	6	—	—	6
Knot	500	1133	110	—	2729	5028	1829	—	11329
Purple Sandpiper	196	596	911	588	326	576	688	39	3920
Dunlin	—	422	283	102	275	740	3253	49	5124
Total	1223	4526	4607	3440	6164	10160	16264	973	47357

In Morayshire small concentrations occurred at Lossiemouth/Branderburgh, near Hopeman and at Burghead. In Banffshire 54% of the birds occurred between Portgordon and Portessie with further concentrations in the bays at Banff, Portsoy and Gardenstown. The stretches of coastline between the towns were steep and few birds were found. In Aberdeenshire the picture was similar with 58% of its birds occurring between Fraserburgh and Rosehearty and around Peterhead. Again the regions of cliff supported few birds. Aberdeenshire held the largest number of Purple Sandpipers with flocks of over 50 birds encountered at Rockend, Whinnyfold, Buchan

Ness, north Peterhead, and along the Phingask shore at Fraserburgh. As with the last two counties the cliff area of Kincardineshire held few birds, for example only 245 were counted between Greg Ness and north of Stonehaven (20 km of cliffs). Concentrations were found at Girdle Ness, Stonehaven and between Inverbervie and Johnshaven. In Angus and the East Neuk of Fife (St Andrews to Ruddons Point) an even scattering of birds occurred over the length of the coastline, cliffs being infrequent. In southern Fife between Buckhaven and Dysart (9 km) the shore is sterile, perhaps as a result of the coal tips, and consequently only 24 birds were counted. It was not until Pathhead and south of Kirkcaldy that large numbers were again encountered. The Isle of May supported a population of 453 birds, primarily Turnstones and Purple Sandpipers, the population of the former being augmented at night, no doubt due to birds leaving the mainland shores for a safe roost. In East Lothian the numbers of birds, especially Oystercatchers, Curlews and Dunlins, far surpassed those in the other counties, though the Turnstone and Purple Sandpiper numbers did not show a corresponding increase. This shore is well mixed with stretches of sand and mud resulting in an alternation between depositing and rocky shores. As it was impossible to determine which birds were utilising each habitat, all birds have been included in the total. Perhaps the productivity of this shoreline is linked with sewage from Edinburgh. In Berwickshire the numbers were low due to the absence of wide intertidal areas.

Because of the problems of variability within and between winters, the total populations of most of the species cannot be reliably estimated. The figures in table 4 are therefore only an indication of the populations found on these shores. For the Turnstone and Purple Sandpiper, however, a reasonable estimate of the total population can be obtained. Assuming that fluctuation within the same winter is negligible (table 1) and that the variations between winters as seen on the Angus coast (table 2) are the same in the other counties, the expected populations in the winters for which counts were not made can be calculated from the winter in which each coastal stretch was censused. By this method we can calculate the expected maximum and minimum population values for the four winters 1970/1-1973/4 for eastern Scotland from Morayshire to Berwickshire (table 5). As all four winters were relatively mild the values may be regarded as an indication of the range within which the winter population will be expected to remain under such weather conditions.

Table 5. Calculated maximum and minimum populations of Turnstones and Purple Sandpipers

See text for explanation.

	Turnstone		Purple Sandpiper	
	Max	Min	Max	Min
Morayshire	183	163	217	148
Banffshire	1052	939	596	406
Aberdeenshire	1668	1489	1008	686
Kincardineshire	1143	1021	650	443
Angus	727	649	479	326
Fife	1904	1701	717	489
East Lothian	1299	1160	688	468
Berwickshire	229	204	39	27
Total	8205	7326	4394	2993

Comparison between rocky shores and estuaries

The estuary, defined by Day (1951) as that part of a river with a variable salinity due to the sea, is the winter habitat *par excellence* for waders, where flocks containing thousands of birds can be encountered. This study has shown that large numbers of shorebirds also occur on rocky shores. In order to directly compare the two habitats the densities of waders have been calculated for the rocky shores of Fife (St Andrews to Ruddons Point and the Isle of May), Angus, Kincardineshire, and Aberdeenshire, and the adjoining estuaries of the Eden (Fife), Ythan (Aberdeenshire) and the Montrose Basin (Angus) (table 6). The intertidal areas were measured from Ordnance Survey maps with a planimeter. The areas of the rocky shores will be slightly underestimated as they are three dimensional regions unlike mud and sand flats. The data show that the total densities on rocky shores are similar to those for estuaries, though the average for the three estuaries (1119 per km^2) is 38% higher than that for the four rocky shore regions (812 per km^2). However, a larger number of densities would have to be compared before the relative importance of each habitat could be gauged accurately.

The species composition was different for the two habitats, with Lapwings, Grey Plovers and Bar-tailed Godwits mainly in the estuaries and Turnstones and Purple Sandpipers on rocky shores. Other species, such as Oystercatchers, Redshanks, Dunlins and Knots were common to both.

Discussion

The study has shown that the rocky shores of eastern Scotland from Morayshire to Berwickshire support substantial numbers of waders living at densities not dissimilar to

Table 6. Density of wintering waders per km^2 on the rocky shores and estuaries of eastern Scotland. Their total intertidal areas are given in brackets.

	Rocky shores				Estuaries		
	Fife (8.3 km^2)	Angus (4.9 km^2)	Kinc (5.4 km^2)	Aber (5.2 km^2)	Eden Estuary (6.6 km^2)	Montrose Basin (7.3 km^2)	Ythan Estuary (1.6 km^2)
Oystercatcher	54	170	115	113	434	82	157
Lapwing	—	—	—	—	26	37	77
Ringed Plover	10	5	3	12	—	1	2
Grey Plover	—	—	—	2	14	—	3
Golden Plover	2	121	54	—	6	2	44
Turnstone	179	135	191	289	—	2	19
Curlew	42	72	33	20	16	22	9
Black-tailed Godwit	—	—	—	—	10	—	—
Bar-tailed Godwit	—	1	—	2	250	9	1
Redshank	38	74	114	197	231	110	248
Knot	46	557	—	21	241	550	2
Purple Sandpiper	55	67	109	175	—	—	—
Dunlin	41	56	19	54	513	96	143
Total	467	1258	638	885	1741	911	705

those found in estuaries. The birds are not evenly distributed but concentrated in regions where the shore has a low profile (sandstone coasts, rocky bays, and points) and are widely dispersed along steep profile shores, usually of metamorphic or igneous rocks.

In north-east Scotland (Aberdeenshire and Banffshire), where cliffs predominate, both birds and coastal towns are concentrated in the short stretches of low coastline and in bays between cliffs. In an area geared towards coastal developments for an oil industry the habitats of these birds are therefore vulnerable, more so than in a region where low profile shores predominate (e.g. Fife). Already in Aberdeenshire rocky shore has been lost in the creation of an oil rig service base at Peterhead. Another way in which oil exploitation can affect rocky shore waders is through oil spills. If they occur and slicks are washed ashore they will smother the invertebrate life which is the food of these waders. Such an occurrence can be widespread in its effect but fortunately not permanent. Some biological communities have been seen to recover from moderate oiling after three to four months. However, if dispersants are used to treat the oil on the shore, large scale mortality of the invertebrate populations will result, a situation which will take several years for recovery (Smith, 1968). This contrasts with reclamation which is localised in its effect but lasting. Oil is unlikely to have a direct effect on the waders themselves, as it does on auks (Greenwood *et al.*, 1971), though examples are known; a lighly oiled Purple Sandpiper was found on the Isle of May in December 1973, and during the pollution of January 1970 three Turnstones were seen at Carlingheugh Bay, Arbroath, with smudges of oil on their flanks.

It is felt that since relatively accurate data can be obtained on the population of Turnstones and Purple Sandpipers, these two species would be good indicators of environmental changes on rocky shores and future counts should therefore concentrate on them. The success of the previous breeding season would also have to be taken into consideration (see table 3).

Acknowledgments

We should like to thank D. L. Bell, K. Brockie N. E. Buxton and A. Grieve who assisted in part of the field work undertaken during the study, and J. Dunbar for providing data on the Montrose Basin. We should also like to thank Dr C. J. Feare for criticism and comments on the draft.

Summary

Census methods are described and the wader population wintering on the rocky coasts of Scotland from Morayshire to Berwickshire was assessed at 47,357. For most species variability of counts made it difficult to obtain accurate and comparable data, but relatively accurate data were obtained for Turnstones and Purple Sandpipers which totalled 7326-8205 and 2993-4394 respectively (minimum and maximum estimates) for the four winters 1970/1-1973/4. The majority of the waders were found on low profile shores and were sparse along regions of cliff. The density of waders on the rocky shores was not unlike that of three adjoining estuaries, showing that the two habitats may be equally important. The vulnerability of these populations is discussed in relation to forthcoming oil developments in and off eastern Scotland.

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Appendix—scientific names of species mentioned in the text

Oystercatcher *Haematopus ostralegus*
Lapwing *Vanellus vanellus*
Ringed Plover *Charadrius hiaticula*
Grey Plover *Pluvialis squatarola*
Golden Plover *P. apricaria*
Turnstone *Arenaria interpres*
Curlew *Numenius arquata*
Black-tailed Godwit *Limosa limosa*
Bar-tailed Godwit *L. lapponica*
Redshank *Tringa totanus*
Greenshank *T. nebularia*
Knot *Calidris canutus*
Purple Sandpiper *C. maritima*
Dunlin *C. alpina*

R. W. Summers, 353 Arbroath Road, Dundee, Angus.
N. K. Atkinson, 90 Bellevue Gardens, Arbroath, Angus.
M. Nicoll, 43 Bloomfield Gardens, Arbroath, Angus.

Scottish winter Rook roost survey - central and northern Scotland

J. H. B. MUNRO

(Plate 22)

Introduction

In 1946-7 the Midlothian Ornithological Club conducted an inquiry covering the Rook *Corvus frugilegus* roosts of the Lothians (*Scot. Nat.* 60: 20-9, 1948). In 1969-70 a pilot study was made to see if a survey covering the whole of Scotland was a viable proposition. The results were reported in *Scot. Birds* 6: 166-8. From this it seemed likely that there might be not more than about 150 winter roosts in Scotland and thus a Scottish survey appeared feasible. This survey was adopted as an SOC inquiry and a report covering southern Scotland was published in *Scot. Birds* 6: 438-43. Since publication three additional roosts have been found and details of these are given in an appendix to this paper.

The present paper records the position of roosts found up to the end of spring 1975 in central and northern Scotland north of a line joining Falkirk, Kilsyth and Greenock. While it seems probable that some roosts are undiscovered, it would take a considerable time to find every roost in this extensive area where observer cover is sparse.

It is therefore considered best to publish now the data already obtained and to record later any further roosts found.

Results

Eighty-two winter roosts were found in central and northern Scotland during 1970-5. The association of roosts with good-quality land found to exist in southern Scotland (loc. cit.) also applies in central and northern Scotland. The rich Aberdeenshire farmland supports some very large roosts, those at Hatton Castle (65,000 birds) and Straloch (49,000 birds) being the largest known in Scotland.

The spacing of roosts was again remarkably regular in areas where agricultural land predominated; in areas where the land is poorer, however, such as the north-west Highlands, roosts were more widely scattered. The map (plate 22) shows all roosts found in Scotland so far.

In the north and west two features of roosting behaviour were recorded which were not noted in southern Scotland.

First, short sea-crossings are not deterrents to roosting flights: many Rooks have been seen crossing from the Ayrshire and Cowal coasts to roost in Bute, and some birds from Kintyre cross to Gigha. Secondly, where there are rookeries near the head of a long isolated valley, it appears that the Rooks must either face a long flight back from their winter feeding grounds to roost up the valley, or roost far from their rookeries, possibly not visiting them for any length of time until early spring when feeding improves near the rookeries. For example on 15th January 1971 no Rooks could be found in the Dee valley between Aboyne and Ballater, and it seems likely that the birds that nest at Braemar may roost far down the glen at Potarch Bridge. In Strathdon I could find no Rooks during several winter visits. No evidence of a roost could be found in Strath Glass, where my wife and I were on holiday in October 1972, although Rooks nest far up this glen. Four winter visits were paid to the Tay valley—from Killin by Ballinluig to Dunkeld—and no roost was found, but on several occasions flocks at Aberfeldy and Ballinluig were seen in the afternoon to fly in the direction of Dunkeld, presumably making for Marlee Loch or Redgorton, a flight of at least 20 miles, suggesting that the feeding available in the Tay valley enabled the birds to forage at least some way up the strath in winter.

Distribution of roosts by counties

	Trees used	Estimated population (including Jackdaws *Corvus monedula*)	Roost known since
ABERDEENSHIRE			
Arnage, Ellon	—	21,500	1965/66
Dens of Peterhead	—	—	1965/66
Drum Castle	Scots pine	thousands	1971
Dunnideer Hill, Inch	Scots pine	thousands	—
Foveran, Newburgh	—	8000	1965/66
*Hatton Castle, Turriff	mixed	65,000	1949
Inver Fowlis, Alford	mixed	7-10,000	1958
Potarch Bridge	Scots pine	2000	—
*Rathen, Fraserburgh	—	—	1949
Straloch House, Old Meldrum	mixed	49,000	1949

*Not checked since 1965/66 but not known to have moved (Prof G. M. Dunnet in corres.). The Arnage roost may replace one at Haddo House, Methlick, known in 1949. The Foveran roost may replace one at Esslement House known in 1949.

It seems possible from the roost pattern that there are roosts in the Old Deer, Monymusk and Fyvie districts. There was a roost at Aden House, Old Deer, in 1949.

	Trees used	Estimated population (including Jackdaws)	Roost known since
ANGUS			
Hatton of Fotheringham	larch	13,000+	1945

The situation in Angus requires further investigation. If the pattern of roosts that exists in other counties with good agricultural land applies in Angus one would expect to find four or five roosts. There may be roosts near Kinblethmont and Balglassie.

ARGYLLSHIRE			
Bridge House, Bowmore, Islay	spruce	70	—
*Campbeltown Burgh	deciduous	thousands	100 years
Drimvore Farm, Kirkmichael Glassery	—	200	—
Achamore House, Gigha	deciduous	500-1000	—
*Glencreggan Farm, Glenbarr	pines	500	100 years
Glenbranter, Strachur	sitka	500	—
Glencoe Forest	conifers	100	10 years
Kilberry Castle	deciduous	1000	1935
Dunach, Loch Feochan	deciduous	4-500	—
Kilbride, Lagavulin, Islay	mixed	300	—
Loch Lossit, Islay	—	1300	—
South Shian House	deciduous	hundreds	—

*These very old roosts were reported by Mr Neil Mason in corres.

The figure for Drimvore Farm is for Rooks only; there are many Jackdaws in addition.

There are probably roosts near Strontian and Ardentinny. Rooks from the Kilcreggan rookeries fly across Loch Long at dusk in the direction of Ardentinny; it is possible, but unlikely, that they make for Glenbranter.

No roosts have yet been found in Mull, but it seems possible that two roosts exist, one in the Bunessan area, and the other near Calgary. An evening flight of Rooks south-east over Tobermory Bay suggests the presence of another roost near Lochaline. It seems therefore that there are about five roosts yet to be found in Argyll.

BANFFSHIRE			
Ballindalloch Castle	—	2000	—
Birkenbog, Cullen	—	15,000	—
Carron House	mostly conifers	25-30,000	70 years
Glen Rinnes Lodge	—	1000	—
Mountblairy House	mixed	—	—
Tarryblake, Rothiemay	conifers	5000+	—

It seems possible that there are roosts near Knock Hill, Inverkeithney and Botrophine. The Carron House roost appears to be the only major one and to serve a wide area. Local tradition holds that it has been in existence all this century.

BUTE			
Kerrycrusack Wood, Loch Ascog	mixed	8000	1927

	Trees used	Estimated population (including Jackdaws)	Roost known since
CAITHNESS			
Barrock House, Lyth	mixed	12,000	80 years
Castletown, Garth, Olrig	mixed	3000	80 years
Loch Scarmclett, Halkirk	mixed	1500	80 years
Bridge of Westfield, Forss	alder	5-600	—

There may be roosts near Thrumster and Latheron. The two main winter roosts are at Barrock House and Castletown/Garth; these house the whole population, and with the Loch Scarmclett roost are possibly about 80 years old (D. Stark, in corres.). It seems therefore that the other two roosts are only used occasionally.

DUNBARTONSHIRE			
Rossdhu House, Loch Lomond	oak/willow	500-1000	—
FIFE			
Balcaskie House, Pittenweem	mixed	—	—
Craigfoodie, Dairsie	—	—	—
Craighall, Ceres	conifers	1500+	—
Kippo/Carhurly, Kingsbarns	—	—	—
Kirktonbarns, Newport	conifers	1500-2000	—
Montrave	mixed	3-5000	1975
Otterston, Dalgety	mixed	1500-2000	—
Pitcairlie, Newburgh	mixed	—	—
Raith Park, Kirkcaldy	deciduous	3-5000	1975
*Ramornie, Ladybank	conifers	1500-2000	1949

*This roost was known to the Misses Rintoul and Baxter in 1949 when they recorded over 60,000 birds.

INVERNESS-SHIRE			
Borlum, Drumnadrochit	—	—	—
Cluny Castle	—	several hundreds	—
Coylum Bridge	conifers	1-5000	—
Culloden Moor	conifers	5-600	—
Dunvegan, Skye	larch	150	—
Lynedale, Loch Greshornish, Skye	mixed	2-300	—
Viewfield, Portree, Skye	conifers	200	—

As Rooks nest at Ardvasar in Sleat there should be a roost nearby, possibly at Ruthven.

KINCARDINESHIRE			
Westerton, Laurencekirk	birch/pine	5-10,000	—
KINROSS-SHIRE			
Barnhill, Saline	mixed	5000	—
Thorntonhill Farm, Carnbo	pines	800	—
MORAYSHIRE			
Gaich, Grantown	pines	—	—
Balnacoul Wood, Fochabers	conifers	Up to 20,000	—
Wester Manbeen, Elgin	pines	thousands	Pre-1949

	Trees used	Estimated population (including Jackdaws)	Roost known since
NAIRNSHIRE			
Dalmore Manse	deciduous	5-10,000	40 years
ORKNEY			
Berstane Wood, Kirkwall	sycamore	1000	20 years
PERTHSHIRE			
Battleby House, Redgorton	deciduous	10,000	—
Deanstone Farm, Doune	conifers	3-5000	1971
Marlee Loch, Blairgowrie	conifers	3-5000	3 years
Rossie Priory	mixed	5000	—
Westhall Farm, Highlandman	conifers	5000	—

It seems possible that the Blair Atholl birds use a roost to the south of their rookery, or they may fly much further south to Marlee Loch or Redgorton.

ROSS AND CROMARTY			
Carbisdale Castle, Invershin	mixed	5000	40 years
Conon House estate	conifers	8000	120 years*
Coulmore, Munlochy	—	1300-1400	—
Foulis Castle/Findon	deciduous	1-5000	1949
Geanies, Fearn	firs	3000-3500	—
Leckmeln, Ullapool	mixed	300	—
Pheasant Wood, Munlochy	—	2600	—
Poolewe	firs	170	—
Stornoway Castle woods	deciduous	200	15 years
Strathcarron Station	pines	250	—
Teaninich, Alness	mixed	5-10,000	20 years

*T. Barron in corres.

There were 10,000 birds at Foulis Castle in 1949 (Capt Patrick Munro in corres.). Coulmore and Pheasant Wood are parts of a split roost.

From the positions of known rookeries one would expect roosts in the Applecross, Kishorn and Dornie areas.

SHETLAND			
Kergord, Weisdale	conifers	80-100	1952
STIRLINGSHIRE			
Drumgoyne Station	conifers	5-8000	—
Dunmore House, Airth	conifers	2000	—
Stirling University, Airthrey	deciduous	3000	1975

The Drumgoyne Station and Dunmore House roosts were also listed under southern Scotland (loc. cit.) for roost distance purposes but not included in the roost total.

SUTHERLAND			
Lawson Hospital, Golspie	conifers	4500	—
Tongue	hardwoods	250	—

All entries in the **Roost known since** column are approximations. For brevity, qualifications such as before, about and at least have been omitted.

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Dr J. T. R. Sharrock very kindly gave details of Atlas squares in which Rooks were recorded nesting during the four years up to 1971; this information greatly simplified the finding of roosts, and I am especially grateful to him.

Summary

Eighty-two winter roosts were located in central and northern Scotland. Sixty-one have been found in southern Scotland, giving a total of 143 roosts found. From observations and the pattern of roost distribution it is believed that about twenty-one roosts remain to be discovered giving an estimated total of 164 roosts in Scotland.

Some observations on roosting behaviour not seen in southern Scotland are reported, and a county by county list of roosts is given.

Appendix—additional roosts found in southern Scotland

	Trees used	Estimated population (including Jackdaws)	Roost known since
MIDLOTHIAN			
Roslin Glen	deciduous	1000	—
ROXBURGHSHIRE			
Broomlands, Kelso	deciduous	500	30 years
Lustruther, Chesters	pines	1-3000	1971

The Lustruther roost is said to have moved from a wood now cut down, nearer Chesters, where it had been known for at least 40 years.

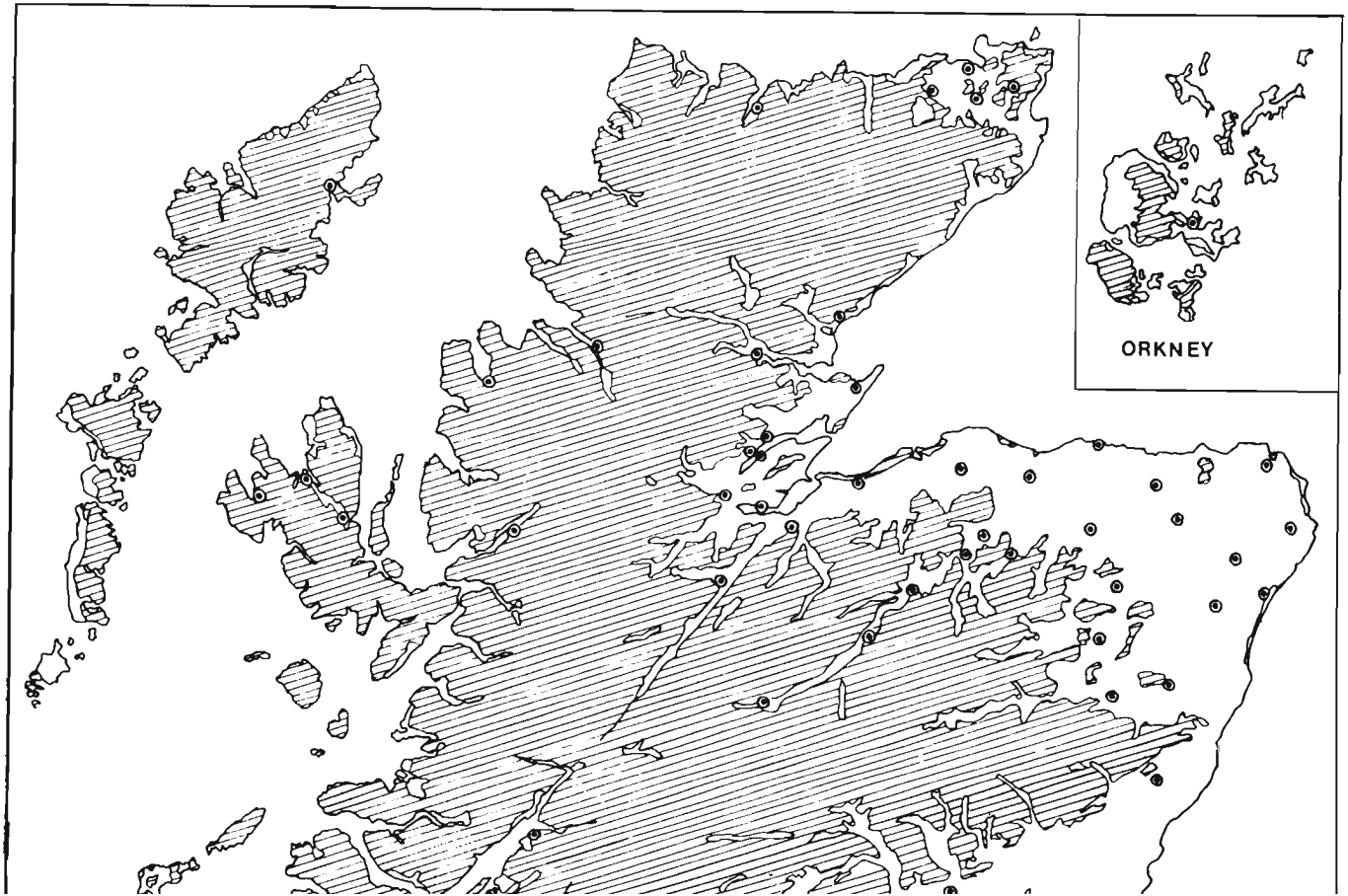
The three roosts above fit very nicely into the roost pattern for southern Scotland.

J. H. B. Munro, 9 Capelaw Road, Edinburgh, EH13 0HG.

PLATE 21 (a) Conglomerate shore with dense patches of fucoids at Johnshaven, Kincardineshire (page 299).

(b) Boulder shore at Peterhead, Aberdeenshire (page 299).

Photographs by R. W. Summers


ORKNEY

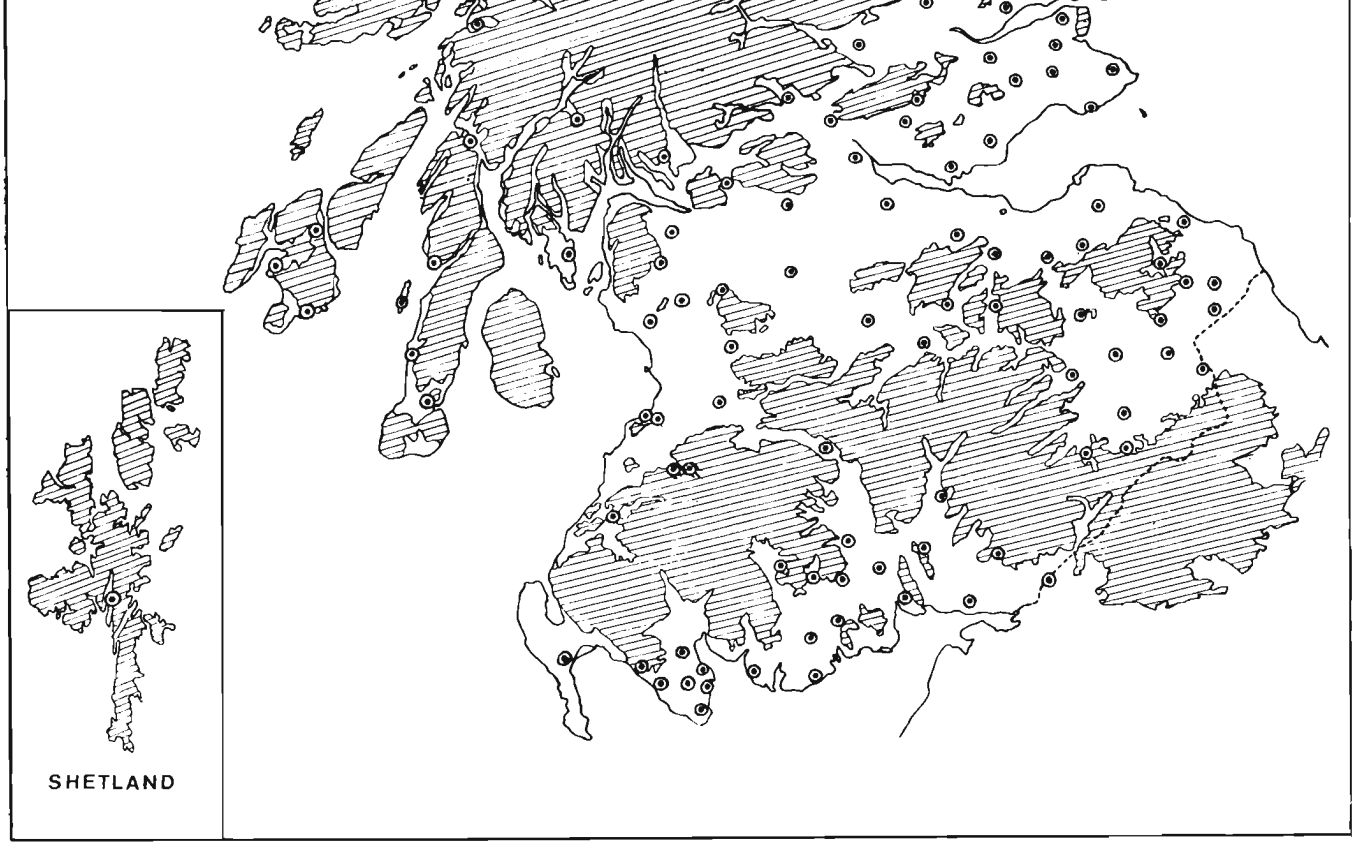


PLATE 22. Distribution of winter Rook roosts in Scotland 1970-5 (page 309). The hatched area shows poor-quality land (taken from Ordnance Survey Land-Classification map, 1945).

PLATE 23. Part of a roosting flock of purple Sandpipers and Turnstones on an offshore islet (page 301). *Photograph by R. W. Summers*

Short Notes

First days in the life of a Black-throated Diver

On 6th July 1974 a pair of Black-throated Divers and their chick were swimming on a loch near the north-west coast of Scotland. Two days earlier the egg was not chipping so the young bird cannot have been more than a day old. When first seen the birds were at least 200 yards from their small island; indeed they were at first invisible. When the parents at last approached the island, the chick was swimming so near them that it would be distinguished only with difficulty. On arrival, one of the parents swam carefully round the island to see that no dangers were present, and when he returned the mother at once landed and laboriously climbed to the nesting hollow. The young followed more easily—the large size of the webbed feet were already evident—and it was brooded for two hours before the male returned and the three birds took to the water, swam out of sight and had not returned before I had to terminate my watch at 7.45 p.m.

Next day I began my watch at 2.45 p.m. when there was no sign of the family. In 15 minutes I made them out swimming close to the shore, the chick keeping extremely close to its parents. At 3.30 p.m. they arrived at the island. Again the male diver made a most careful inspection as he swam round the island before the mother climbed to the nesting hollow. The young bird followed her and she settled down to brood it for four hours, and when I left they had, I think, settled down for the night at 8 p.m. During her brooding the male returned and, half aground on the stones, seemed to speak to her in a low voice. Once he brought a small fish, but he received a cool welcome and in the end swallowed it himself.

The following day the divers had left their island for another part of the loch but the chick may have been brought back to the island at dusk for the night. The weather was cool and overcast and it is interesting that although the young bird was at home in the water from the start it was at intervals taken back to the nest to be rested and I think warmed. I saw it fed at least once with small pieces of regurgitated food given it by the parent as she brooded over it.

SETON GORDON.

Fulmar behaviour

While tape recording Fulmars *Fulmarus glacialis* displaying on the ruined walls of Skelbo Castle, Sutherland, on the mor-

ning of 17th June 1974, I saw two types of behaviour which may be worth placing on record.

In the first type, at least two lone Fulmars kept alighting in the empty nests of Rooks *Corvus frugilegus* built in Scots pines at about 15 m above the ground. From these lofty perches the Fulmars then displayed with the usual cackling and head waving at others which flew close by and which often hesitated in flight as though about to join the displaying birds. None was seen to do that but later I heard at least two Fulmars apparently singing and duetting together in one of the trees of a small copse about 200 m to the north of the castle; that is, in the direction of the Fleet estuary. A number of Fulmars circled over this copse during my stay, but owing to the thick foliage the perched duettists could not be seen from the foot of the tree from which they sang. Although there were some Rooks about during these various episodes none was seen to pay any attention to the petrels and none was nesting in the vicinity.

The contents of the Fulmar-occupied Rooks' nests could not be examined, but it is thought unlikely that either contained Fulmar eggs. The birds involved behaved like typical members of the vociferous and active non-breeding or pre-breeding component of petrel colonies. The only bird known to have an egg sat quietly in its niche on the castle wall and paid no attention to the actions of several nearby displaying pairs and trios: all such activity appeared to be that of non-breeders.

Previous records of Fulmars in trees come from Golspie, about 6 km from Skelbo Castle. Pennie (1967) reported Fulmars in trees there, while Mylne (1973) recorded the short occupation of a Rook's nest by a pair of Fulmars.

Finding petrels in trees is not particularly unusual in other parts of the world. Species that nest in heavy forest may climb trees to gain height for take-off, like the Westland Petrel *Procellaria westlandica* (pers. obs.) and Pycroft's Petrel *Pterodroma pycrofti* (Bartle 1968). Others may accidentally land in trees and have to flop to the ground to reach their burrows. I have even encountered a Little Shearwater *Puffinus assimilis* singing from a perch in a tree. As this episode was noted twice in three days from the same place in the same tree, the bird too could have been the same, in which events its choice of landing site was presumably deliberate (Warham 1957). Otherwise I know of no other report of a petrel perisistently returning to a tree-top site and evidently going through the preliminaries of nesting there and this development seems to under-

line the adaptability of the Fulmar population and the pressure on breeding sites along the Sutherland coast.

The second behaviour pattern noted was a form of display in which flying birds rose slightly while holding their wings somewhat drooped and stiffened and then descended in a short curve as they cackled through the opened bill. This display was seen four times in as many hours, although, owing to my pre-occupation with tape recording, I was unable to watch intensively and failed to note whether the head was waved in accompaniment to the vocalizations. In at least three of these instances a second petrel was flying close to the displaying one and close proximity may have triggered off the action. The birds involved again appeared to be non-breeders.

This aerial display was particularly interesting as it seemed very similar to one used by giant petrels (or giant fulmars) *Macronectes* spp. which I described from Macquarie Island in the sub-Antarctic (Warham 1962). I have subsequently seen the display in use by both the Southern *M. giganteus* and Northern Giant Petrels *M. halli* and by some other large petrels.

I am grateful to Dr Robert Carrick for introducing me to the Skelbo Castle colony and to Chris Mylne for help with the literature.

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JOHN WARHAM.

(A note of Fulmars occupying a Raven's nest in Shetland and possibly evicting the owners appears in *Brit. Birds* 68: 115. —ED.)

Leach's Petrel breeding on Foula

Since the advent of mist-nets small numbers of Leach's Petrels *Oceanodroma leucorrhoa* have been caught in most years on Foula, Shetland, while trapping and ringing Storm Petrels *Hydrobates pelagicus*. D. R. Wilson caught the first in 1957 (Wilson 1958) and 59 were ringed between 1960 and 1972 by a number of people, though mainly under the auspices of the

Brathay Exploration Group. The most caught in a year was 14 in 1965 but throughout the period there was virtually no evidence of breeding.

The presence of brood patches on all 13 of the 1965 birds examined (Jackson 1966) led some to suggest that Leach's Petrels probably bred on the island. However, both breeders and non-breeders undergo loss of down on the brood patch and work on Storm Petrels on Skokholm, Pembrokeshire, has shown that it is usually not possible to assign breeding status to an individual on the state of the brood patch (Scott 1970). Studies on Kent Island, Canada, indicate that the pattern is basically similar in Leach's Petrel (Wilbur 1969).

Work on Storm Petrels has also shown that some birds will wander from island to island (Dennis 1969, Scott 1970, Spencer 1973) and may well visit islands that are not breeding stations (Munro 1974). The suggestion was therefore that the Leach's Petrels caught on Foula could be merely wandering non-breeders visiting from established colonies and the two recoveries to date would support this idea. The 1957 bird was caught at the North Rona colony (235 km south-west) the following year and one of the 1965 birds was caught there in 1972 and again in 1974. The Faeroes are only about 280 to 300 km to the north-west and there have already been interchanges of Storm Petrels between Foula and the Faeroes in both directions, so this could provide another source of wanderers.

In 1973 I tried to catch a higher number of Leach's Petrels by using an amplified tape recording of the flight call to attract the birds into the nets and perhaps to find a nest. No nest was found but 33 birds were caught. Three birds had mud on their feet and had almost certainly been in a burrow on the island. However, even a bird calling from a burrow would not be conclusive proof of breeding as non-breeders will occupy a burrow, usually in the year prior to breeding. Additionally, one bird regurgitated some fish on capture suggesting that it might be feeding a chick. The evidence of breeding was better but was still not conclusive, as nothing short of an egg or chick would be sufficient.

In 1974 I was accompanied by J. A. Love and making use of experience gained in 1973 we moved further up a steep, grassy, boulder-strewn slope, having increasing success at catching Leach's Petrels and on the night of 29th-30th July we located a nest 240-60 m above sea level. An adult bird called from a burrow in response to the tape recorded calls coming from a speaker which by chance had been placed about 15 m away. By playing the recording close to the burrow the bird

was enticed to the entrance and caught by hand. It was just possible to reach into the burrow and feel an egg in the nest chamber. The egg was examined and found to be slightly chipped and when held close to the ear a chick could be heard cheeping inside. Both egg and adult were returned to the burrow. The burrow was in a grassy slope among boulders and rock outcrops and went in nearly parallel to the surface so that although the nest chamber was 40-50 cm from the entrance it was only about 3-5 cm below the surface. The entrance was about 10-15 cm in diameter and had grass growing over it so it was well hidden. A second visit to the nest was made during the day on 4th August when the chick was 4 or 5 days old and weighed 11 grams.

On the night of 4th-5th August *churring* Leach's Petrels were heard briefly underground or on the surface in three places within 200 m of the original nest but no definite burrows were found. In 1974 a total of 41 birds was caught (including the breeding adult which was also later retrapped) and three of these birds had been ringed in 1973. The breeding population would not appear to be large, although efforts were concentrated in only one part of the island. Leach's Petrels have been caught at other sites and further work may result in more nests being located, though some suitable areas may be inaccessible.

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A. R. MAINWOOD.

(Only four other colonies of Leach's Petrels are known in the British Isles: St Kilda, Flannan Islands, North Rona and Sula Sgeir. There are few records of casual or possible breeding elsewhere, all in the Northern and Western Isles of Scotland and off western Ireland. These are summarized by Cramp *et al.* in *The Seabirds of Britain and Ireland* (1974) and the authors rightly point out that there may be yet undiscovered small colonies. These might be located on the most perilous slopes of remote islands.—ED.)

Another Kittiwake movement in the Firth of Forth

On 28th-29th October 1974 during strong north-west and north winds, a large movement of Kittiwakes was again observed in the Forth similar to that witnessed on 16th November 1973 (*Scot. Birds* 8: 77-8).

The 28th October was a fine day with a cold and strong north-west wind. While walking along the sea wall from the east breakwater of Leith Docks to Seafield, I noted parties of ten to eighty or more Kittiwakes flying past every 5-10 minutes between noon and 2 p.m. These parties closely hugged the south shores along Portobello bay, Seafield and Leith Docks and were moving purposefully west without any deviations. Some 400+ passed in two hours.

On Tuesday 29th October, it was again a brilliantly clear sunny day with a cold strong north wind. I went first to Silverknowes between Barnton and Cramond to see whether Kittiwakes were still moving and having seen at least one party of c.60 flying west past this area and Cramond Island I decided to see what was happening at South Queensferry. At about 1 p.m. I watched the area off Long Craig pier, east of South Queensferry and observed parties of Kittiwakes (as seen on the previous day) going towards Inchgarvie and North Queensferry. When they came to the Forth Railway Bridge they seemed to hesitate and would fly along the east side at varying heights for a while and then settle in a raft close to North Queensferry, and this raft grew in numbers to some hundreds. Having rested for a while these birds would then rise off the sea and fly around gaining height until I lost sight of them. I lost sight of about four lots in this manner at a great height over or west of the bridge. Some seemed to drift over or through the bridge westward and so I went along the south shore from South Queensferry to Hopetoun House to see what was happening there. Only one or two small lots of twenty to forty were seen flying low over the water going west, but when I looked back eastwards to the bridges there was a huge flock to be seen very high up above these bridges, circling and gaining height and they resembled a snow storm. I eventually lost sight of these at the height they attained and could only assume that they had moved west.

I decided then to cross the road bridge to North Queensferry and when there went up to the high ground where the Royal Navy Signal Station stands and spent the rest of the afternoon from 2-4 p.m. there, observing the Kittiwakes. I could see small parties coming up the Firth from Leith between Inchmickery and Cramond Island and past Hound Point to join

rafts of Kittiwakes on the water in Inverkeithing Bay and below North Queensferry. When these rafts had gained some hundreds of birds they would rise and circle round in a wide arc, gaining height, and as this happened the circle would decrease until the birds were towering upwards more compactly. About 10-15% of the flock were young tarrocks. I lost one or two of these flocks out of sights and the drift was westwards over the Forth bridges, but some may have gone more northwest over Inverkeithing. Again the heights reached were such that it was difficult to follow the flock and they would appear like tiny snow storms. Probably 4-5 rafts were seen doing this during which time other rafts which had been on the water had also gone. About 3.15 p.m. I concentrated on one lot of about 800 in Inverkeithing Bay which went through the motions described above and came overhead and still gaining height drifted west high over the bridges. When they seemed to be about the size of Starlings they made more purposeful speed westwards, parallel to the south shores of the river. The flock was now more stretched out and, facing into the north wind, was moving fairly rapidly due west and out of sight. Some 3-4000 must have arrived and departed in this manner between 1 p.m. and 4 p.m. none returning eastwards down the Forth. If the direction of westward flight was maintained it would bring these flocks overland via Loch Lomond and Loch Fyne into the Atlantic.

GERARD L. SANDEMAN.

A cause of decline in farmyard House Martin colonies

Since 1966, large numbers of House Martins *Delichon urbica* have been ringed in Fife, Angus and Perthshire, initially by myself and latterly by Tay Ringing Group. These birds have been caught at breeding colonies in farm steadings, mostly in entrance archways or in tractor sheds. It has seemed to us that over the last few years the numbers of House Martins breeding in these colonies has decreased, and in several cases the colony is now extinct. I have been rather concerned that ringing activity was partly to blame, but at one colony in Perthshire which is much-ringed, numbers of birds have, if anything increased. The following account is offered as an explanation, in the sincere hope that further investigation may be undertaken urgently by the appropriate organization.

On 11th August 1973, John Clark and I visited a colony at a farm in Crail, Fife, to attempt a pre-dawn catch of the House Martin colony. We were rather disappointed to find only two

birds flying around, where there had been a dozen pairs earlier in the season. In the courtyard there were several pools of bright blue-green liquid and around their edges the ground had become muddy. On asking the farmer, he told us that the substance was fentin hydroxide (brand name "Tubotin"), a tin-based fungicide, which is used for the control of potato blight. This compound is mixed with water and then sprayed on the crops, but in this instance the liquid had spilled out of the mixing tank, presumably a fairly common occurrence. He assured us that he had seen the martins drinking, and collecting mud from these pools, and noticed a decrease in flying birds shortly thereafter. Inspection of nests showed there to be dead adults and chicks or eggs in four nests, some of the adults though dead for some time, showed grotesque distortion of the mouth, as if dying in great pain. Two of the adults from this colony were sent for laboratory investigation, but unfortunately they were found to be mummified on receipt, the internal organs had dried out and no diagnosis of death was possible.

On this same date I visited another colony that we ring annually, near Kilconquhar, Fife. Where I had counted 23 pairs in the early season there were now only two nests with live birds in them. All the other nests contained dead adults, chicks or eggs, some chicks being at the flying stage. There were no fresher specimens that the Crail colony produced, indeed most seemed in a greater state of decay. On approaching the farmer he confirmed having used fungicide on his potatoes recently, the brand name was unknown, but it was the type supplied by Central Farmers Ltd to apparently all farmers in East Fife. On asking the Crail farmer, he assured me that the fungicide used on his land was supplied by Central Farmers Ltd and is the type used by all local farmers he knew of. The Kilconquhar man was unaware of any spillage during the mixing, but did not carry out the mixing himself.

In early summer 1974, I visited another House Martin colony at Fife Ness which had been the subject of early departures by the breeding birds for as long as we had known it. On my visit, I estimated there to be 30 pairs present, about average for the site, and most of them nest-building. On 30th August 1974, John Clark and I telephoned the farmer at this site to advise him that we would be trapping there before dawn next morning. I was rather alarmed to be told that the birds had all gone within the last few weeks—just as in previous years. A visit on 31st August 1974 confirmed my worst fears, with dead birds in every nest, mostly adults, some unfledged young and some juveniles of the year. Once again, specimens were sent off but

as before they were too long dead for analysis. I do not think that any of the adults survived and no House Martins were flying around the farm. The farmer had mixed up the same fungicide solution several weeks before this date, and the birds had gone very quickly thereafter. He admitted to spillage of the solution in the corner of a field where he watched the House Martins drinking and gathering mud. At this site, the colony is presumably being perpetuated by the juveniles of the first brood migrating before the fungicide is mixed, and returning to breed in the following year. It may be that the Kilconquhar colony was doubly unlucky, by having the first brood juveniles poisoned also, due to the earlier mixing of the fungicide at the farm. The farm in question is well known locally as producing the first potatoes of the year. By whatever means, the Fife Ness colony existed at least until this year in fair strength, whereas the Kilconquhar colony used to number over a hundred pairs.

This problem may have existed for some time, as Dr R. W. Summers in his paper on flat flies in these same colonies mentions finding dead adults and juveniles in nests together (*Tay Ringing Group Report* 1971) without any apparent explanation.

It must be said that this mortality is not deliberate, and is purely caused by a lack of care in the mixing process. The packets are marked 'Dangerous to livestock and animals', and the farmers involved are fond of their House Martins. However, the damage is being done, and if the position in Tay Ringing Group area is typical of the country as a whole, one can easily imagine the scale of damage. There is also the question of whether birds are drinking the solution from pools in the field after spraying, presumably affecting a considerable number of species. With House Martins, such mortality is obvious, but how does one measure a large drop in, say, Skylarks? Perhaps a more ominous note is struck in the journal *Copper* (No. 1 1973, issued by the Copper Development Association), which describes a proposal to use a copper based fungicide to fight the coffee leaf rust (*Hemileia vastatrix*) currently spreading in South America. In Brazil, for instance, 36,000 tons of fungicides would be needed, containing 18,000 tons of metallic copper, this being an annual consumption. As it is recommended that this fungicide be used during the dry season, the catastrophe which could follow with birds flocking to drink out of spray pools, may denude certain areas of South America of its bird fauna.

DAVID W. OLIVER.

Obituary

TOM PATERSON

The death of Tom Paterson at the beginning of August 1974 by a coronary thrombosis will leave a gap in Scottish ornithologists' circles. He came to birdwatching by way of wildfowling in his younger days and like all converts he then turned passionately against anyone who harassed or disturbed his beloved ducks and geese. It was sad that he did not live longer as he had looked forward so longingly for his retirement when he would be able enjoy his birdwatching to the full. He worked so hard to make himself fit again after an earlier massive coronary attack which would have left most men sitting in an armchair looking after themselves.

A shy and retiring man, Tom was not one to push himself forward but he was an authority on the birds of the River Forth. He knew the river as no one else did. He walked down there daily and had several exciting visitors to record, twice a Spoonbill and once a Black-winged Stilt. He was a kindly man, ever ready to lend a helping hand to anyone in need. He had a real interest in young people and many can be grateful to him for taking them out birdwatching and passing on information from his own large store. He was a pioneer of the duck and goose count in this area covering the Forth, Gartmorn Dam, Carsebreck and the Upper and Lower Rhynds.

R. M. RAMAGE.

A Stirling Conference

MURIEL DRAPER

The 27th Annual Conference of the Scottish Ornithologists' Club certainly promised to be different—January instead of October, Stirling instead of Dunblane. Round the branches there were gloomy predictions that it just wouldn't be the same.

Friday, January 24th, saw us driving through Stirling towards Bridge of Allan, and finally making the turn into the University of Stirling campus. Although the setting was as yet unfamiliar, one could once again anticipate the pleasures ahead—renewing old friendships, meeting new members at

their first conference, and perhaps, most important of all, gaining some new insight from the various speakers. A little hesitation about where to park and which door to enter was finally solved by consulting the campus map provided for this very purpose.

Any feeling of strangeness in the new surroundings was quickly dispelled by the usual warm welcome from Ruby Smillie and her husband, who were both on duty at the registration desk. On asking for George and Irene, we learned that unfortunately the Waterstons would not be attending the conference, owing to George's illness. Name labels pinned on, conference details clutched in one hand and luggage in another, several attempts were made to get from the checking-in desk to the bedrooms. Each time one was foiled by the arrival of yet more friends. The bedrooms in Murray Hall were warm and comfortable, simply yet well equipped. If anyone could not believe in the efficency of the duvets, blankets were available.

We then set out to cross the bridge to the conference centre, the restaurant and the bar. One soon learnt that it was not worth the effort of returning to collect anything left behind by mistake ! Meals were good, and self service proved quick and easy. No smoking either in dining room or lecture theatre seemed to win the approval of most members. A separate area upstairs from the dining room provided an attractive setting for a leisurely cup of coffee. There was just time to look round the well laid out displays of books (there seemed to be even more titles than ever), the binoculars, the RSPB and SWT stands, and the usual comprehensive exhibition of different styles of bird paintings. The familiar routine soon began to establish itself.

The informal programme of slides was organized by Chris Mylne and Bobby Smith and the usual high standard was maintained. Who will forget Miss Rowling's inquisition based on her slides of birds just on the British list ? This in turn produced amazement, amusement and finally disbelief. Theo Kay's historic black and white film showed Gannets plunging like arrows into the sea round the pier in Lerwick Harbour. Chris Mylne showed a preview of his current film work, whetting our appetites for the finished product. Afterwards people dispersed, some to the bar, some to bed, and others entertained in small parties in the kitchens attached to each hall of residence. Instant coffee, tea bags and milk were provided for the use of conference visitors. Efforts were made to keep the noise

down to a minimum but this proved rather difficult at times. (Did you ever get to sleep, Nan ?)

On Saturday morning the conference started in earnest. Andrew Macmillan took the chair in George Waterston's absence. His relaxed, informal manner did much to ensure the smooth running of the conference during the whole week-end. The lectures were held in the MacRobert Theatre and the tiered seats ensured that everyone saw the slides uninterrupted by silhouettes of the heads of those in front. The warmth and comfort threatened to overcome some of the audience but Stanley Cramp's dulcet bark kept us alert to the flourishing and expanding sea bird colonies on our cliffs. Bobby Tulloch conducted us around Shetland's ancient and modern civilizations and showed how the bird populations were coping with these changes. His own splendid photographs were supplemented by others taken by Dennis Coutts who was otherwise busy with *Up-helly-a* celebrations.

After lunch people went their various ways. There were meetings for RSPB members, for the local recorders, for the wader group and for ringers, but the appearance of the sun tempted the more hardy out on to the hills for a brisk blow. Andrew Macmillan presided at the AGM like a benign owl blinking gently in the lamplight and eased the business through effortlessly. It was unanimously agreed to send a telegram of good wishes to George Waterston.

The Annual Dinner was held in the Pathfoot Building on the edge of the campus. Some even found it worth while getting there by car. The after dinner speakers included Stanley Cramp, Christopher Headlam, Jim Flegg and Frank Hamilton, the latter giving a most entertaining speech which would have done justice to one of the better television comedians. A telegram was read out from George Waterston. Everyone present signed a menu which was to be sent to him. Eilidh Halliday from New Galloway, the youngest member at the conference, made the first draw of the raffle. Thanks to her a Prestwick member will spend a week in Fair Isle. The other prize-winners were reasonably scattered around Scotland. Altogether it was a very pleasant evening, the dinner was good and plentiful and it was served quickly and without fuss. Afterwards some of the more energetic members held an impromptu dance with the aid of Bobby Smith's cassette recorder. Like Cinderella we stopped at midnight, but the party spirit continued on in the various kitchens (did you **ever** get to sleep, Nan ?)

Luggage had to be packed up by 10 a.m. on Sunday, and for some this proved rather difficult in addition to getting breakfast and getting to the lecture theatre on time for the final lectures. These were short presentations reflecting the work of amateur and professional ornithologists in Scotland and managed to be both enjoyable and stimulating, provoking some brisk discussion. It was good to see the familiar figure of Dr Eggeling sitting with his wife in the audience.

All too soon it was time for Andrew Macmillan to thank everyone who had taken part in the weekend and contributed to its success. Friends said goodbye over lunch and the 27th Annual Conference was over. It certainly hadn't been the same as Dunblane. It had been BETTER.

Reviews

The Mitchell Beazley World Atlas of Birds, London, Mitchell Beazley Publishers Ltd, 1974. Pp. 274, numerous colour photographs and text illustrations, 30 x 24 cm, £10.95.

This is the latest in a series of expensive but richly illustrated books that survey the birds of the world. In spite of the term atlas this book is not really concerned with avian zoogeography but, like its predecessors, it gives a layman's guide to the 8600 species of birds in the world. There is some justification for using the word atlas, however slight it may be, in the new and refreshing approach to analyzing the world's avifauna. In the past books have usually used the classification system, beginning with ostriches and ending with crows. *The World Atlas of Birds* deals with birds by zoogeographic region and habitat. Thus, within the Palaearctic the major habitats, such as steppe, tundra or taiga, are described and then selected species of the habitat are discussed. Under each habitat five or six species are dealt with and a useful description and photograph of the habitat itself is included. The text is copiously and beautifully illustrated throughout with photographs, maps and diagrams. It is good to see that man-altered habitats are discussed where they occur within the main zoogeographic regions.

It is perhaps inevitable that minor factual and pictorial errors will occur in any encyclopaedic work of this sort but there is a much more important and disturbing factor underlying the whole book. In any survey of the world's avifauna, an important problem is selection. Which of the world's 8600+ species should be included and which discarded ? It is my feeling that the selection should be representative, but if the numbers of species examined in this book under each zoogeographic region is compared to the number of species that actually occur there, a relationship that is almost inverse will be found. The richest regions, the Neotropical, Ethiopian and Oriental, which have been between them two thirds of the world's species, have less than one third of the species described in this book; the poorest regions, the Palaearctic, Nearctic and Australasian, having the lion's share. Furthermore, within the Palaearctic section of the book, which discusses about seventy species in some detail, only *one* species is not European—the fascinating avifaunas of the Himalayas, western China and Siberia are ignored. Finally, if we include

those species that occur in Europe and are also found in, and in this book described under, other regions of the world, it will be found that over a quarter of the species discussed in the book could be called European. Thus an area which has less than one fifteenth of the world's avifauna has one quarter of this world survey of birds devoted to it.

While bearing in mind that the main market of this book will be in part of Europe I feel that the editor could have made this survey more representative. It is unfortunate that the section at the end of the book dealing with avian classification could not have been used to redress this imbalance, particularly since previous books on this subject have dealt quite effectively with this facet of birds. To someone with any knowledge of the world's birds the imbalance in favour of the Palaearctic may not be very useful. To the beginner this could be an asset as it would not only give him a grounding in the world's avifauna but also in that of his local region. It is to the beginner that this book is recommended.

R. D. MURRAY

Animals of Asia : The Ecology of the Oriental Region. By J. and K. MacKinnon. London, Peter Lowe, 1974. Pp 172; over 150 colour photographs, maps and paintings. 28 x 21.5 cm. £3.75.

This most recent addition to a series dealing with the ecology of different regions of the world covers what is probably the most diverse and intriguing of all the zoogeographic zones and contains much that is of interest to the bird enthusiast. Sundry birds or groups of birds, mostly exotic kinds, have important parts to play in the various ecosystems and receive due attention accordingly.

The authors are husband and wife. John MacKinnon is well known for his work on the orang-utan and both he and Kathleen are particularly interested in ecology. An account of the developments during the last 250 million years, through which the Oriental Region has reached its present form, sets the scene and this is followed by descriptions of the different types of habitat found in the region, with their respective climates, vegetations and animal communities. The diversity of environments, ranging from the tropical rain-forests of south-east Asia to the high tops of the Himalayas, with every sort of country in between, could indeed hardly be greater.

The final chapter discusses the influence, almost wholly disastrous, that man with his propensity for population explosions, thoughtlessness, wasteful agricultural practices and even religious taboos is having on the environment. This is perhaps nowhere more clearly demonstrated than in tropical Asia and, above all, in India, which seems to specialize in many of the worst of the problems.

The book is illustrated throughout with diagrams, maps, paintings and photographs, all in colour and carefully selected to demonstrate particular points, which are further emphasized in the full and informative captions by Michael Tweedie.

There are a few inaccuracies here and there, some of which are worth mentioning, if only for the sake of good order. For instance, the statement that the sloth bear is found only in southern India and Ceylon is quite incorrect. Attareekhat tea estate, situated about 75 miles east of Assam's Manas Wildlife Sanctuary, is actually the location where a specimen of the curious and little known hispid hare, thought to be extinct, surprisingly turned up in 1971, not Manas itself. The assertions made so positively in regard to the unique nesting habits of hornbills need

reconsidering with reference to the alleged re-sealing of the entrance hole after each fledgling leaves the nest. The same applies to the claims made for the superiority of the Indian Black or King Vulture, whose reputation for boldness and overbearing pugnacity accorded by earlier writers is nowadays generally considered to be spurious.

These and some other minor blemishes are not at all crucial, however. A modest bibliography, useful glossary and full index round off an eye-catching volume, whose whole format is designed for the considerable public that has a general interest in natural history and environmental problems and who like to have these presented in reasonably simple terms with lots of pictures. A nice book to be given.

JULIAN CLOUGH

The Life of Birds. By Jean Dorst. London, Weidenfeld and Nicolson, 1974. Two volumes. Pp 736; 24 pp photographs; 110 diagrams. 24 x 16.5 cm. £15.00.

Jean Dorst is Professor at the National Museum of Natural History in Paris, and well experienced to produce a work of this sort. He is a prolific writer, who has had two earlier books translated into English, namely *The Migrations of Birds* and *Before Nature Dies*. He is evidently one of those people who can read widely and assimilate an enormous amount of scattered information, then put it down again in digested and readable form. The present two-volume work has been translated by I. C. J. Galbraith, and (except for the plates) it has been nicely produced. It covers almost all aspects of bird biology.

Volume one deals with such topics as anatomy and morphology, flight, colours, feeding habits, physiology, sensory organs, voice, various aspects of breeding, population regulation, evolution, classification and distribution. Volume two deals with the different major environments of the World and their bird-faunas, with chapters on the sea, the polar regions, continental waters, temperate forests, deserts, tropical forests and savannahs, mountains and islands. Other chapters in this volume deal with migration, human exploitation of birds, and with the place of birds in the modern world. In short, a great deal of material, covering almost all aspects of bird study, has been compressed into these two volumes. This in itself is a considerable achievement, but the treatment of most topics is necessarily superficial and highly selective.

It is thus hard to be sure who will want to buy this book, especially as other books of similar type have appeared in recent years. For the serious worker, the information is insufficiently detailed; and for most amateurs it is far too broad. The books would, however, form good introductory reading for the student of bird biology, and would thus be a good source of reference for school and university libraries. But I doubt that most fellow members of the SOC will find enough of immediate interest to want to pay £15 for the set.

I. NEWTON

The Pocket Encyclopaedia of Birds' Eggs and Nesting Habitats. By Siegfried Hoeher, translated and adapted by Winwood Reade. Blandford Press, London, 1974. Pp 194; 32 colour plates, 19½ x 12 cm. £1.60.

If you are a central European traveller this could well be a useful pocket guide to identifying eggs and nestlings—if you do not travel then you might be buying a lot of unnecessary information. Of the 280 species mentioned a quarter do not breed in this country and a further 30 are either very scarce or very rare.

British breeding birds are marked by an asterisk in the main text and 'Guide to Nest Identification' but not in the 'Guide to Egg Identification'. Included in the list of British breeding birds are Red-crested Pochard, Rock Partridge and Night Heron, the latter on the basis that there is a free-flying colony at Edinburgh Zoo!

The guide on nest identification which could have been a useful aid to nest finders in this country is marred by being based on central European habitats. As British breeding birds are marked with an asterisk there is an inference that our own birds will nest in like situations; this is not necessarily so. It would have been helpful to have had an index of the various types of habitat headings in this section, instead of having to read through 22 pages to find them all.

The reference guide on egg identification would have been far better left at the four basic egg shapes as mentioned in the text and not broken down into twelve. There might then have been far fewer errors. As it is this guide is useless, and egg shapes in the text seldom correlate with those in the guide. There are many instances of discrepancies; suffice it to say that grebes and Nightjar do not lay short elliptical (spherical) eggs and Razorbill and Guillemot almost invariably lay marked eggs and not unmarked as indicated.

The main text is concise and, as far as can be ascertained, accurate, but would-be purchasers should treat with caution the nest identification guide, and ignore completely the guide on egg identification. The coloured illustrations (144 nests and eggs, 6 nests and nestlings and 106 eggs) are generally superb. All in all probably worth the modest sum of £1.60.

HARVEY J. BURTON

Bird Ringing. (BTO Guide 16). By Chris Mead. Tring, British Trust for Ornithology, 1974. Pp 64 (including four pages of plates); numerous figures, tables and maps. 21 x 14 cm. 50p.

This, the latest guide in the BTO's excellent series, might be taken to be purely for the bird ringer. However it is the ordinary birdwatcher that will benefit most from this guide. Most of us have heard about ringing but possibly few of us have actually seen it in operation apart from on the TV. Perhaps because of this there has often been an air of suspicion surrounding ringing. It is only recently that much of this suspicion has disappeared and this was mainly due to increased publicity, in particular to ringing and subsequent recoveries of rare birds like Ospreys. This guide is another major step along this line. It deals effectively with the art of catching and ringing birds and stresses throughout the care taken and skill and long training of the ringer. Perhaps the most important aspect of this guide is the section dealing with the results of ringing. This is after all what ringing is all about. Recovery details for 24 species are mapped showing how wintering areas, summering areas, migration routes, and sex and age differences can be detected by ringing. The recoveries tend to concentrate on the spectacular; little mention is made of the more local recoveries—the bread and butter ones. My main criticism of the guide is that it concentrates too much on the migration studies and pays scant attention to other equally important studies such as measurements, weights, moults and mortality rates and to ecological and behavioural studies. The guide is full of useful information that will benefit both the bird ringer and the birdwatcher and shows the importance of ringing as a research and conservation tool.

ROBERT L. SWANN

Natural History Photography. Edited by Derek Turner Ettlinger. London, New York and San Francisco, Academic Press, 1974. Pp xxviii + 396; 64 black-and-white plates; 23 x 18 cm. £8.80.

Eighteen specialists in their own fields have contributed to this composite book and illustrated their own contributions. The editor defines it as a book for "the naturalist with a camera". The subject comes first, the photography second. Wisely, cine photography is omitted so that the book aims to be "a standard work of world-wide relevance . . .on all natural history still-photography subjects which have a widespread appeal". This emphasis will appeal to many bird-watchers and ornithologists as the book seeks to avoid mere pictorialism without serious regard for scientific accuracy, as much as it aims to go beyond ad hoc biological illustration. There are eighteen contributors, all British, including five women and five professional biologists. They write for those naturalists who have mastered the basic photographic processes and know something of cameras and optics, or for photographers with an intelligent interest in nature.

From this point of view the book will satisfy a need though its major drawback must at once be noted. It is illustrated entirely in black and white and so is bound to have a restricted appeal. The pictures are extremely good and well chosen as examples of many of the subjects covered, but colour should have been one of them. Refreshingly the book rejects some fashionable pictorial techniques—grain, an accent on the out-of-focus, montage etc.—and welcomes such pictorial assets as composition and dramatic use of scale or format to enhance the subject. It lays special stress on capturing the 'jizz' (in birdwatcher's terminology) of a subject and on the ethics of doing so, within the guidelines of 'The Nature Photographer's Code of Practice'. A strongly worded warning is issued against amateur photography dominated by pictorialists "quite properly concerned with such things as design, human interest and social message" who may still neglect things significant to the naturalist such as accuracy of detail, colour, pose or habitat. While acknowledging the heavy debt of the conservation movement to photography, the golden rule still remains "that the welfare of the subject is more important than the photograph".

The classical style of bird photography is covered by an old friend of the SOC, Arthur Gilpin, under 'Birds at the Nest'. He rightly stresses the attraction of hide-work, sitting close to a bird unaware of your presence. Knowledge of the subject is the essential prerequisite. Unfortunately such knowledge is often best gained by the practice, so Gilpin quite rightly advocates starting on the very common birds to learn the technique. This chapter is full of practical detail on the hide technique as applied to many different situations. Two points are especially important—safeguarding the subjects from any unnecessary disturbance or intrusion, and the importance of using a tripod wherever possible. Working in pairs is strongly recommended to ensure the first essential of hide-work—someone to see the photographer both into and out of the hide.

By contrast the Bottomleys who write on 'Birds away from the Nest', condemn the use of a tripod as firmly as Gilpin recommends it. This chapter will be of special interest to those who like a good rarity and need a good picture of it as a record or an aid to identification. They favour a 400 mm lens on a 35 mm single lens reflex camera using fast film and as fast an exposure as practicable. Practical details of the technique are however distressingly few, and when they suggest that 1/125th of a second may be a fast enough shutter speed. I feel there will be many

readers who will end up sorely disappointed. That the Bottomleys themselves can do it has been proved many times, but how do they avoid that fatal bugbear, camera movement? They even suggest a 1000 mm lens (mirror-reflex type only considered possible) but the only hint they give as to how it can be used is the shoulder-pod, preferably with a finger trigger to fire the camera.

Two of the most valuable chapters are those by Frank Blackburn on the use of playback tape, and by David and Katie Urry on 'Birds in Flight'. Both show the value of good pictures in the study of display and flight respectively. The use of tape to attract birds to the camera (in practice a loud speaker) is a fairly new technique and still largely experimental. The chief feature it reveals is the variability of response between different species. Blackburn's observations on 'peak' and 'secondary' rresponse and the differences between them are quite fascinating and revealing. Perhaps here more emphasis should have been put on the care required not to overdo the artificial stimulus in order to exploit the bird's natural reactions for the photographer's convenience. With flight, although the problems are clearly spelt out and the difficulties explained, it is again clear that the only real answer is experience and the skill born of constant practice. If the text doesn't really tell you how it's done, the illustrations certainly stimulate you to try. One answer is of course electronic flash and David Cook's chapter on this technique is invaluable if specialized.

There are useful chapters on many other topics, (such as Pat Whitehouse's fascinating and encouraging account of her do-it-yourself type of stereo photography) which will be of value to ornithologists, especially those who like to cover other disciplines and do not concentrate entirely on birds. The chapters on plants, insects, underwater techniques, aquaria, caves and bats all open up new worlds to camera owners. It is all essentially practical even if some of it is indeed rather expensive. But at least the emphasis is right throughout this new and important book—nature is too valuable and vulnerable to put at risk for the sake of a mere picture.

C. K. MYLNE

Flight Identification of European Raptors By R. F. Porter, Ian Willis, Steen Christensen and Bent Pors Nielsen. Berkhampstead, T. and A. D. Poyser, 1974. Pp 184, 78 figures, 80 black-and-white plates. £4.80.

Here in book form are the recent *British Birds* papers on raptor flight identification by four experienced authors of complementary abilities. All 38 diurnal species regularly found in Europe are treated in seven main sections, each beginning with a description of a group of closely related and superfically similar species, with head-on drawings of typical flight shapes. Next a page of drawings of the undersides of all the group accompanies a page of short descriptions and comparisons of field marks and notes on European distribution. Headed by a vignette, a page of text for each species follows, describing shape and manner of flight, plumage characters and variations, and making comparisons with other species. This is matched by drawings of up to eight different undersides and up to four uppersides, in varied soaring and gliding attitudes. Detailed footnotes to the drawings are often cross referenced, as is the text, to the section of black and white photographs, which gives three to nine illustrations per species, again with footnotes.

Ian Willis's drawings are very good, although sometimes too dark. His vignettes are both pleasing and useful. The photographs are well chosen

for their identification value but the emphasis on species varies: there are nine of the rare, distinctive Black-winged Kite and three of the widespread Goshawk, which has a notoriously variable flight shape. The illustrations are nearly all in plan, from the front or from the side, with few of the difficult, oblique going-away attitudes. The general layout is excellent for ready reference to different parts of the book in field situations, as on the Bosphorus in autumn, where many birds are visible at the same time. The penalty of this layout is some repetition. The text is very good and thorough with few errors or omissions. The larger falcons may be slightly less well treated than are other groups and the treatment of age variations and definitions of age classes are uneven.

A short section on the protection of raptors and owls throughout Europe is interesting but irrelevant. It might be replaced by a section on escapes: western European workers are more likely to encounter a Red-tailed Hawk or a Laggar than some of the indiginous species. A lengthy review of an identification guide implies that it is good and this one is easily the best of its kind, well worth the money.

DOUGLAS WEIR

Butterflies of the World. By H. L. Lewis. London, Harrap, 1974. Pp xvi + 312; 208 colour plates. 30½ x 21½ cm. £10.00.

Brigadier H. L. Lewis is one of the many soldier naturalists who have added so much to our knowledge of the world's natural history. He has spent most of his life collecting butterflies and this, the first portrait gallery of the world's butterflies ever attempted, is the result of his life's work. The major part of the book consists of colour plates of over 5000 of the world's 10,000-odd species. All the photographs are taken from the collection in the Department of Entomology at the British Natural History Museum and the quality of reproduction is superb. The plates are arranged geographically and each carries a small distribution map. This is followed by a textual section giving scientific names, local names where known, distribution and in some cases descriptive details. Brigadier Lewis stresses that he is an amateur and that this is a book to enable the amateur to identify the world's butterflies without having to wade through a mass of scientific data. Not only has he succeeded in this aim but he has produced a book which will also be a delight to the armchair lepidopterist.

HARRY GREIG

Seal Song. By Michael Clegg. Montrose, Standard Press, 1974. Pp 129; 21 x 13½ cm. £3.00.

This is the story of a young Common Seal from its birth on a sand bank in the Tay to its return there eight months later. Journeying to the Orkneys and back with the pup we encounter many forms of marine life and seabirds. The author is a naturalist with a special knowledge of the sea, and his detailed descriptions of the seabirds and their behaviour will be of special interest to the ornithologist. Told without too much sentimentality this story highlights some of the present day hazards facing all forms of life in the sea, particularly the ever present and increasing threat of oil pollution.

HARRY GREIG

Request for Information

Night Herons The free-flying colony of Night Herons at Edinburgh Zoo and its baleful influence on British records of this species is well known. The actual movements of these birds is in fact unknown and any records outside Edinburgh, and any evidence of breeding anywhere, would be gratefully received by Mr David Owen, Edinburgh Zoo, Edinburgh EH12 6TS.

The Scottish Ornithologists' Club

NEW GROUP IN WIGTOWN DISTRICT

The Council of the Club announces the formation of a new Club Group in the Wigtown District. The Group has the full support and recognition of Council, although it is not yet sufficiently large to be recognized as a Branch nor have representation on Council. Notices of its meetings and activities will be published with those of Branches.

Details of the office-bearers and meetings, which during the coming winter will be held in both Newton Stewart and Stranraer, will be published in the journal. In the meantime all who live within reach of these towns are asked to contact Mr Angus Maciver, 1 Colt Houses, Penninghame, Newton Stewart.

The Council welcomes the formation of this new Group and extends its good wishes for the future. It hopes that members in the District will be encouraged to participate in fieldwork as well as attend indoor meetings.

BRANCH MEETINGS 1975/76

Will members please note that the dates of the first Meetings of Branches next winter will be as follows :

September 22nd Glasgow
23rd Edinburgh
24th Ayr, Dumfries, St Andrews and Thurso
25th Dundee and Stirling
29th Aberdeen
30th Inverness

The venue for the two Branches below has been changed, but that for all other Branches is the same as last winter and the starting time for Meetings of all Branches is unchanged.

Dundee Branch will meet in Lecture Theatre T9, University of Dundee.

Edinburgh Branch will meet in Lecture Theatre 1.01, Mountbatten Building, Heriot-Watt University, Grassmarket, Edinburgh.

NEW SECRETARY—INVERNESS BRANCH

Members are asked to note that the new Secretary of the Inverness Branch, elected at the Branch Annual General Meeting in April 1975, is Mr W. G. Prest, 70 Culloden Road, Balloch, Highland Region, IV1 2HH. Tel. 046 372 412.

WINTER EXCURSIONS—AYR BRANCH

Sunday 5th October IRVINE FLATS. Leader: W. R. Brackenridge. Meet Wellington Square, Ayr 1 p.m. or Bogside Racecourse 1.30 p.m.

Saturday 15th November CAERLAVEROCK. Leader: J. K. R. Melrose. Coach leaves Wellington Square, Ayr 9 a.m. Bring picnic lunch. Bookings with fare (£2.50), and s.a.e. for confirmation of booking, to Ayr Branch Secretary by 31st October.

Sunday 7th December MARTNAHAM LOCH (by kind permission of Colonel Bryce Knox). Leader: J. Miller. Meet Wellington Square, Ayr 1.30 p.m. or lodge gates 2.00 p.m.

Saturday 10th January 1976 BARR LOCH & ROWBANK RESERVOIR. Leader: Peter Bowyer. Bring picnic lunch. Meet Wellington Square, Ayr 10 a.m. or Lochside station approach 11 a.m.

Sunday 8th February DIPPLE SHORE, near GIRVAN. Leader: R. H. Hogg. Meet Wellington Square, Ayr 1 p.m. or Dipple layby 1.30 p.m.

Saturday 27th March STAIRAIRD ESTATE, near MAUCHLINE (by kind permission of Lord Glenarthur). Leader: R. M. Ramage. Meet Wellington Square, Ayr 1.30 p.m. or at beginning of estate drive 2 p.m.

PLEASE NOTE : All excursions except November will be in private cars. Any further information may be obtained from the Ayr Branch Secretary, Mr R. M. Ramage, 57b St Quivox Road, Prestwick, Ayrshire KA9 1JF, tel. Prestwick 79192 or send s.a.e. if writing).

WINTER EXCURSIONS—DUNDEE BRANCH

Saturday 15th November LOCH LEVEN NATURE CENTRE, VANE FARM, KINROSS.

Sunday 14th December LEVEN & LARGO BAY. Leader: Mrs J. A. R. Grant.

Saturday 17th January 1976 LINTRATHEN & BACKWATER. Leader: Dr D. Shepherd.

Sunday 22nd February DUNKELD AREA. Leader: A. B. Ritchie.

Saturday 20th March EDEN & CAMERON LOCH. Leader: Mrs G. Anderson.

Sunday 18th April ANGUS COAST. Leader: D. B. Thomson.

All excursions leave City Square, Dundee at 10 a.m. by private car.

Any further information may be obtained from the Dundee Branch Secretary, Mrs A. Noltie, 14 Menteith Street, Broughty Ferry, Dundee DD5 3EN (tel. 0382 75074 or send s.a.e. if writing).

ENDOWMENT FUND

Members are reminded that the Club's Endowment Fund was established for the advancement of ornithology in Scotland. Any legacy or donation will be gratefully received and should be sent to the Club Secretary.

The Fund is administered by the Council of the Club which is empowered to make grants from the accumulated free income. Applications for a grant should normally be submitted to the Club Secretary by 31st December each year, so that they can be considered at a Council Meeting usually held in March. Applications received after 31st January will not be considered for a grant given in the financial year ending on 30th June followng.

NATIONAL ROOKERY SURVEY 1975

This important survey, conducted by the British Trust for Ornithology and adopted as an official Club inquiry, took place in Spring 1975 with the aim of locating and assessing the size of rookeries throughout the British Isles. Organization was on either a county or area basis, and a total of 44 local organizers were each responsible for recording within their own particular part of Scotland. The survey was well publicized in the local press, on the radio and in ornithological journals. As a result, helpers in the field were recruited from the SOC, RSPB, SWT and many natural history societies.

Results are now arriving (June 1975) but it will be many months before a full and detailed analysis can be completed. The first county return was for Sutherland which had 31 rookeries containing a total of 2110 nests. In marked contrast, one 10 km square in Ayrshire had 2580 nests in 21 separate rookeries. The small county of Banffshire recorded over 80 rookeries with the largest at Tarryblake North containing 1196 nests.

At this early stage it appears already that the survey has been worthwhile. Final results will be submitted to *Scottish Birds* for publication, and in addition a full set of the Scottish data will be retained in Edinburgh in the Club Library for future reference. All the data will also be transferred to a set of ordnance maps that will form the master record.

The organizers are deeply grateful to the many people who ably tackled the counting of the rookeries, and thus enabled a full coverage of Scotland to be made.

Dr M. E. CASTLE,
Scottish Organizer.

LOCAL RECORDERS

Shetland (except Fair Isle) R. J. Tulloch, Reafirth, Mid Yell, Shetland.

Fair Isle R. A. Broad, Bird Observatory, Fair Isle, Shetland.

Orkney D. Lea, Easter Sower, Orphir, Orkney, KW17 2RE.

Outer Hebrides (except St Kilda) Dr P. G. Hopkins, Leurbost Schoolhouse, Leurbost, by Stornoway, Isle of Lewis.

St Kilda Dr I. D. Pennie, Varkasaig, Scourie, Lairg, Sutherland.

Caithness Mrs P. Collett, Sandyquoy, East Gills, Scrabster, Caithness, KW14 7UH.

Sutherland, Ross-shire (except Black Isle) D. Macdonald, Elmbank, Dornoch, Sutherland.

Inverness-shire (within 18 miles of Inverness) Ross-shire (Black Isle only) Dr Maeve Rusk, 18 Morv en Road, Inverness IV2 4BU.

Inverness-shire (mainland more than 18 miles from Inverness) R. H. Dennis, Landberg, Kessock, Inv erness IV1 1XD.

Nairnshire, Morayshire, Banffshire J. Edelsten, 14 South High Street, Portsoy, Banffshire, AB4 2NT.

Aberdeenshire, North Kincardineshire Alan Knox, Zoology Department, Aberdeen University, Tillydrone Avenue, Aberdeen, AB9 2TN, and W. Murray, Culterty Field Station, Newburgh, Aberdeenshire, AB4 0AA.

South Kincardineshire, Angus G. M. Crighton, 23 Church Street, Brechin, Angus.

Perthshire R. L. McMillan, 29 Lewis Place, N. Muirton, Perth.

Kinross-shire Miss Bridget H. Moore, Vane Farm Reserve, Kinross.

Isle of May J. M. S. Arnott, East Redford House, Redford Road, Edinburgh, EH13 0AS.

Fife D. W. Oliver, East Cottage, Balass, Cupar, Fife.

Clackmannanshire, East Stirlingshire Dr C. J. Henty, 3 The Broich, Alva, Clackmannanshire.

West Lothian, Forth Islands (except May), Midlothian R. W. J. Smith, 33 Hunter Terrace, Loanhead, Midlothian.

East Lothian, Berwickshire K. S. Macgregor, 16 Merchiston Avenue, Edinburgh EH10 4NY.

Peeblesshire, Roxburghshire, Selkirkshire A. J. Smith, Glenview, Selkirk, TD7 4LX.

Argyllshire, Inner Hebrides, Skye M. J. P. Gregory, Duiletter, Kilmory Road, Lochgilphead, Argyllshire, PA31 8NL.

Dunbartonshire, West Stirlingshire, Renfrewshire, Lanarkshire, Ayrshire, Arran, Bute R. W. Forrester, 19 Woodside Avenue, Lenzie, Dunbartonshire G66 4NG.

Dumfriesshire D. Skilling, 86 Auchenkeld Avenue, Heathhall, Dumfries and R. T. Smith, Applegarthtown, Lockerbie, Dumfriesshire.

Kirkcudbrightshire, Wigtownshire A. D. Watson, Barone, Dalry, Castle Douglas, Kirkcudbrightshire.

1975
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