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Vol. 11 No. 8

Winter 1981

Edited by D. J. Bates

Seabird populations of Foula

R. W. FURNESS

(Plates 28-30)

Foula has one of the biggest and most diverse seabird colonies in the British Isles but the spectacular cliffs make many species difficult to census. Dr Furness, who has been to the island every summer since 1971, puts Foula's seabirds in perspective against a background of oil and fisheries developments.

The first description of the seabirds of Foula (Shetland) dates from a visit in 1774: 'All the flights I had seen before were nothing to this: as far as the eye can stretch the whole precipice swarms, the sea around is covered, and the air in perpetual motion, flocking either to or from the rock' (Low 1879). Even the most recent surveys of Foula seabirds have tended to use similar language. Puffins were described as 'abundant' (Harris 1976) and 'present in countless thousands' (Jackson 1966). The sheer and unbroken nature of the huge cliffs of Foula, rising to 376 m at the Kame, the extensive steep grassy slopes, boulderfields and caves, many of which are accessible only from the sea and under exceptional weather conditions, make quantitative assessments of seabird numbers on the island very difficult.

Ornithological observations up to 1965 were reviewed by Jackson (1966). Few reliable estimates of numbers of cliff nesting species were available but the histories of the inland nesting species, particularly skuas, had been well documented. Two Dutch birdwatchers visited Foula in late June 1965 and published estimates of seabird numbers (Fabritius 1969) but many of their estimates have to be regarded as pure conjecture, particularly those for the nocturnal species. In 1968 Foula resident J. Holbourn made a detailed survey of seabird numbers but did not publish his results. During Operation Seafarer in 1969 (Cramp *et al.* 1974) counts of all seabirds on Foula were made by a Brathay Exploration Group expedition.

Unfortunately they grossly underestimated the numbers of most species as their counts were made late in the season (mid July) when many birds have left, and were only made from the clifftops so many colonies could not have been seen. Because they were the first ones published, these counts have been quoted on a number of subsequent occasions. In 1974 Harris (1976) made an extensive survey of Shetland seabird colonies, and included a brief visit to Foula during which he estimated seabird numbers from a circumnavigation and cliff-top counts.

In view of the severe limitations of these surveys and the major discrepancies between them I made a detailed census of all diurnal seabirds between 4th May and 6th August 1976, most counts being made in late June and early July. This paper presents a summary of this survey and incorporates published counts for other years.

Methods

A scale drawing of the entire cliff face coastline of Foula was made on a roll of paper using vertical and horizontal scales of 1:500. The cliff coastline was divided into 172 sections of 100 m. These were numbered onto a 1:10,000 map. In the field the position of each group of nesting birds was determined from the 1:10,000 map and sketched onto the scale drawing together with a note of the breeding habitat they occupied. Counts were made from the island wherever possible, and the remaining areas not visible from land were counted from a boat. The main counts were made between 15 June and 5 July and included three trips round the island in a small boat. Under the prevailing weather conditions several boulder colonies at the foot of cliffs were inaccessible, making estimation of bird numbers in these areas very difficult. All accessible boulder colonies were entered and examined in detail. Inland nesting species were censused by mapping onto a 1:10,000 map each year from 1975 to 1980. All the census maps are held by the author. A limited amount of monitoring of particular cliff colonies has been carried out by the author over the last ten years using both direct counting and photography.

Where possible counts have been made on similar dates each year to improve comparability. Optimal dates for counts, estimated from the author's experience on Foula, are given below for each species. Count methods and units largely follow Harris (1976) and were as follows.

Red-throated Diver Nesting pairs, 10 July. All lochans on Foula were checked for evidence of nesting. Sites where breeding has failed can be recognized by the presence of a nest platform and slipway even though adults may no longer be present. Trapping adults on Foula has shown that birds return to the same lochan each year and do not change site to lay a replacement clutch.

Fulmar Apparently occupied nest sites, 5 July.

Gannet Completed nests, 15 July.

Shag Apparently occupied nests, 1 July. For inaccessible colonies the number of adults visible on rocks and adjacent sea was taken as the census unit.

Eider Males and females on sea, late July. Nests are dispersed over the island and hard to find. Numbers of males around the coast remain

fairly constant all summer. Numbers of females on the shore increase from a very low level in May (when most are on eggs) to a consistent total late in July. On the assumption that little interchange occurs between Foula and other parts of Shetland between May and July these maximum counts are taken as a population index.

Arctic and Great Skuas Occupied territories, 20 June. Many individuals do not attack an observer entering the territory so the census method recommended by Cramp *et al.* (1974) is inappropriate. Counts were made from a distance overlooking undisturbed sections of the colonies.

Common, Lesser Black-backed, Herring and Great Black-backed Gulls Nests, 20 June. On Foula these species nest in isolation or in small sparse groups so the location of each nest can be recorded on a map.

Kittiwake Apparently occupied nests, 15 June.

Arctic Tern Incubating or brooding adults, 20 June.

Guillemot and Razorbill Birds on apparent nesting sites, 15 June. Where possible counts were made mid morning.

Black Guillemot Nests, 15 July.

Puffin Burrows, 19 July. A proportion of the Puffins nest in boulder areas or in fissures in the cliff face, particularly towards the tops of the cliffs. In these areas a subjective comparison was made of the numbers of fish-carrying adults with the number that would be seen in an area where nesting occurred in burrows.

Results

The Foula coast can be divided into 14 contiguous sections, each representing a stretch of fairly homogeneous habitat; inland areas are grouped as section 15 (fig. 1). Numbers in each coastal section are given in table 1. Accuracy of the count totals is not known, but varies between species. Black Guillemots are often very difficult to census, but on Foula most colonies are in accessible boulder beaches and the nests can be found, allowing an accurate census. In contrast, most

Fig. 1. Coastal sections of Foula used in seabird counts (table 1): divisions between sections are (clockwise from section 1) Skerries of Strem Ness (1/2), North Geo of Northveedal (2/3), Head o da Taing (3/4), Head o da Baa (4/5), Da Doon Banks (5/6), Granny Geo (6/7), Lamatuns (7/8), Byre o Hoevdi (8/9), Holterhols (9/10), Da Rokness (10/11), Da Clay Pool (11/12), Soberlie Hill (12/13), East Howvdi (13/14), Brough Stack (14/1), inland (15).

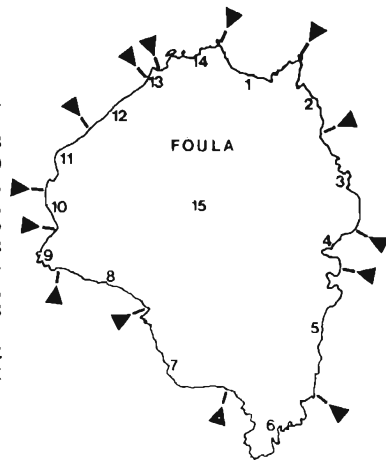


Table 1. Numbers of cliff nesting species in each coastal section on Foula in 1976
For census methods see text.

Area	Fulmar sites	Gannet nests	Shag nests/birds	Kittiwake nests	Guillemot birds	Razorbill birds	Black Guillemot nests	Puffin burrows/ birds
1.	306	0	28	0	0	0	70	4
2.	13	0	0	0	0	0	0	0
3.	1,079	0	72	86	10	83	0	180
4.	90	0	0	0	0	0	0	0
5.	1,669	0	554	203	671	1,217	0	1,460
6.	562	0	161	0	0	290	47	80
7.	1,570	0	1,040	425	1,550	1,650	0	36,700
8.	3,700	0	890	200	1,400	1,850	0	13,620
9.	910	0	30	550	17,300	500	0	1,560
10.	1,240	0	400	570	16,700	3,100	0	1,100
11.	11,260	3	0	1,016	14,700	100	0	11,650
12.	9,550	0	50	40	4,200	300	0	2,600
13.	3,980	0	0	1,300	1,675	180	0	400
14.	1,246	0	132	1,180	1,815	1,103	0	817
15.	1,380	0	0	0	0	0	0	0
Total	38,555	3	3,357	5,570	60,021	10,373	117	70,171
Estimated maximum % error	20%	0%	20%	10%	30%	50%	10%	40%

Razorbills nest in boulderfields below cliffs where access is difficult. Subjective estimates of the maximum probable errors (assessed from the small number of repeat counts and general knowledge of the area) are given below the total for each species. Numbers and count accuracy for inland nesting species are given in table 2.

Table 2. Numbers of inland nesting seabirds on Foula in 1976

	Number	Units	Estimated maximum % error
Red-throated Diver	11	nests	0%
Eider	115	females	5%
	133	males	5%
Arctic Skua	306	territories	5%
Great Skua	3,000	territories	5%
Common Gull	11	nests	0%
Lesser Black-backed Gull	1	nests	0%
Herring Gull	23	nests	5%
Great Black-backed Gull	22	nests	5%
Arctic Tern	5,650	incubating birds	25%

Red-throated Diver

The number of nesting pairs has increased from none between 1900 and the late 1930s (Venables & Venables 1955) to a stable population of 10-11 pairs. A general increase has been recorded elsewhere (Parslow 1973). The population change on Foula appears to be typical for the Northern Isles, although the nesting density on Foula is now exceptionally high (Merrie 1978). Most suitable lochans on the island are now occupied and lack of further nesting sites may be limiting numbers.

Fulmar

Although Cramp *et al.* (1974) suggest that occupied sites may be counted any time between late May and early August, there is a considerable decline in numbers of occupied sites over this period as a result of egg loss or departure of immature prospecting birds (Venables & Venables 1955). Nearly all counts of Fulmars on Foula have been made in early July so are directly comparable. This is probably the optimal period for counts as by then most birds remaining at sites will be breeders. The increase of the British population was estimated to be 7% per annum up to 1969 (Cramp *et al.* 1974), and Harris (1976) recorded a significant increase in Fulmar numbers in Shetland between 1969 and 1974. Mudge (1979) found that the rate of increase had slowed in Caithness, averaging 3% per annum between 1969 and 1977. Counts on Foula, the first island outside St Kilda to be colonized, show clear evidence of the seasonal decline in numbers of occupied sites and the increase in numbers since 1878, but vary too much to allow meaningful rates of increase to be computed (table 3).

Most Fulmar sites on Foula are on cliffs (74%) but 1,380 sites were inland (3%), some in boulderfields (2%) and many on grass slopes (21%). Birds in these areas often have difficulty

Table 3. Number of Fulmar occupied sites on Foula

Year	Date	Occupied sites	Source
1878	-	12	Raeburn (1888)
1879	-	20	Garrioch (1879)
1890	23 June	60	Barrington (1890)
1938	July	10,000	Venables & Venables (1955)
1959	15 July	9,000	Jackson (1959)
1960	12 July	8,000	Jackson (1966)
	7 August	4,000	Jackson (1966)
1965	10 July	11,000	Fabritius (1969)
1968	15 March	60,000	J. Holbourn (pers. comm.)
	10 July	20,000	J. Holbourn (pers. comm.)
1969	15 July	10,500	Mawby (1970)
1974	15 July	15,000	Furness (1976)
1976	25 June	38,555	This census

becoming airborne on calm days and are likely to become trapped in buildings, against walls or in ditches. Use of these sites suggests that optimal cliff nesting areas may be fully occupied. A few birds have recently begun to establish sites on Kittiwake or Shag nests by evicting the owners and trampling the nest. In such cases the Fulmar often displaces all birds from within spitting range.

Manx Shearwater

Recorded nesting on Foula in 1774 (Low 1879). There are no counts of nesting burrows as the extent of the breeding area is hard to define and no doubt many burrows are under piles of boulders. It has been suggested that the population is between 35 and 100 pairs. Islanders claim that numbers declined during the 1940s as a result of Puffins occupying shearwater burrows (Jackson 1966).

Storm Petrel

Up to 200 a night can be attracted to nets by tape recorder, but most of these are probably wandering immatures. From the proportions of retraps and unringed birds that regurgitated food, Mainwood (pers. comm.) estimated that 20% of Storm Petrels caught at Murnatugs (coastal section 7) in 1974 were breeding birds. A modified capture-recapture estimate suggested that 500 pairs breed in this area. As it is one of the dozen or so Storm Petrel colonies on the island this fits the theory that Foula may hold somewhere between 1,000 and 10,000 pairs of Storm Petrels.

Leach's Petrel

Islanders claim they knew the breeding locations of this species on Foula as early as 1908, but none were caught by ringers until 1957. Up to 1973 a further 92 were caught, but some of these were no doubt wandering nonbreeders from other colonies: two were subsequently retrapped at the colony on North Rona. In 1974 an adult was removed from a burrow containing a hatching egg (Mainwood 1975) and a further seven occupied burrows were located. The population is clearly small, perhaps around 50 pairs (suggested from numbers of retrapped ringed adults).

Gannet

Three nests were completed in 1976, the first year in which breeding was attempted. In 1980 a total of 13 completed nests could be counted and the first chicks were fledged (Furness 1981a).

Shag

Counts of 1,100 and 1,573 pairs of Shags in 1965 and 1969 (Fabritius 1969, Mawby 1970) clearly overlooked many of the large boulderfield colonies, as did my estimate of 2,500 pairs in 1974 (Furness 1976). J. Holbourn counted 3,000 nests in 1968 which, compared to the 3,357 estimated present in 1976, suggests that the population has not altered much in recent years. The vast majority of nests were located in boulderfields (94%) with only 178 (5%) on broad ledges and 43 (1%) on tops of stacks.

Eider

Numbers of males and females show great changes from year to year, suggesting variation in recruitment or move-

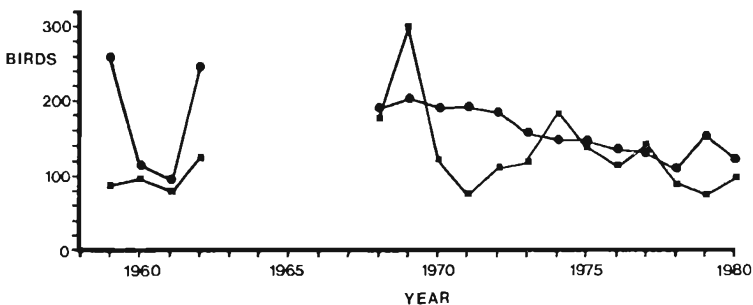


Fig. 2. Peak July counts of male and female adult Eiders on the sea and shore around Foula each year: circles = males, squares = females.

ments between different breeding sites or regular nonbreeding in Shetland (fig. 2). Reasons for this are unknown but it would appear that there has been a general decline in numbers at Foula since 1968, which may be a return to the lower population level recorded in the early 1960s.

Arctic Skua

Counts up to 1975 are given in Furness (1977b), where possible reasons for the growth of this colony were discussed. In 1976 the colony reached its highest number of occupied territories (306) and subsequently dropped to 261 territories in 1977, 253 in 1978, 271 in 1979 and 262 in 1980. In 1960 the colony occupied 3 km² giving a density of 57 territories/km², similar to that found in other British colonies (B. L. Furness 1980). In 1975 pressure from the expanding Great Skua colony had limited the Arctic Skuas to 1.8 km² and a density of 133/km², the highest recorded for an Arctic Skua population.

Great Skua

The population on Foula has been well documented since 1774. Details of counts up to 1976 are given in Furness (1977a). The colony increased at 7% per annum between 1900 and 1977, reaching a peak of 3,180 territories then declining slightly each year to 2,670 territories in 1980 (fig. 3). Although the

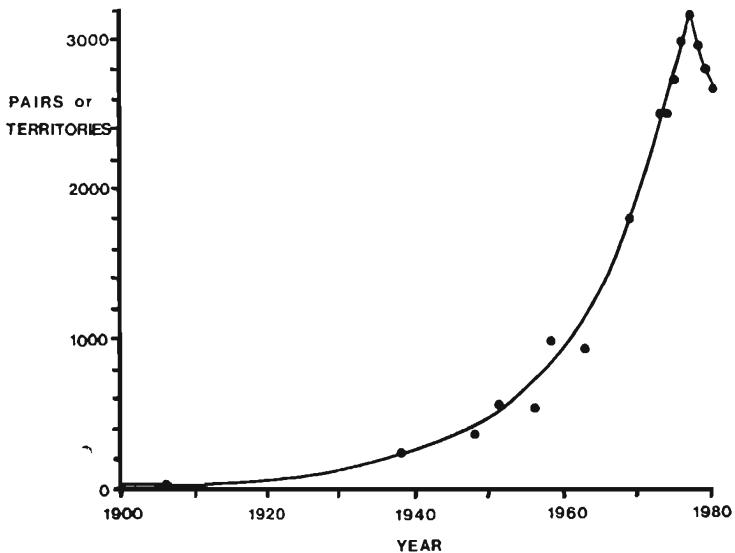


Fig. 3. Number of Great Skua territories 1900-1980.

national population continues to increase, the Foula colony is not the only one to have stopped increasing at present. Numbers have apparently remained stable on Noss, Fetlar, Bressay and Unst since 1974 (Furness 1977a, M. G. Richardson pers. comm.). The drop on Foula has taken place in most areas of the colony, but especially those most recently colonized where nesting density had become particularly high.

Common Gull

Not recorded nesting in 1890 and only one pair was found in 1948 (Barrington 1890, Pennie 1948) but since then numbers have increased to 10-12 pairs each year between 1975 and 1980.

Lesser Black-backed Gull

Recorded breeding in 1890 and 1948. Counts of nests have shown it to be the least numerous breeding gull: 9 pairs in 1969, 3 in 1973, 5 in 1974, 3 in 1975 and one pair nesting in 1976, 1977, 1978, 1979 and 1980.

Herring Gull

Also recorded nesting in 1890 and 1948. The highest number of nests (40) was recorded in 1960. Since then numbers have declined to 34 pairs in 1969, 25 in 1973 and 1974, 20 in 1977, 21 in 1978, 15 in 1979 and 5 in 1980. This is in contrast to the national pattern and may reflect inability to compete with the expanding Great Skua population at feeding sites such as fishing boats or sandeel *Ammodytes marinus* shoals, but there is little evidence to support this suggestion.

Great Black-backed Gull

Recorded nesting in 1890 and 1948. Numbers have been slowly increasing since the first count in 1960, when 15 pairs nested, but much more slowly than in many other parts of Shetland (Harris 1976). In the 20 years to 1980 numbers only increased to 35 pairs.

Kittiwake

Many colonies on Foula are not visible from the clifftops. Island based counts seriously underestimate numbers and for that reason counts for 1959, 1965 and 1969 have been ignored. Vetch (1822) recorded that Kittiwakes then nested in only one part of Foula. Now there are some 14 'breeding stations' (defined by Coulson 1963) so numbers appear to have increased as they have elsewhere (Cramp *et al.* 1974). Jackson (1966) estimated between 5,000 and 8,000 pairs in 1961 and J. Holbourn (pers. comm.) counted 5,429 nests in 1968, but one of the largest colonies was overlooked in 1974 (Harris 1976).

I recorded 5,570 occupied nests in 1976 so the colony appears to be much the same size as in 1961 and 1968. No complete count has been made since 1976 but from a single boat trip round the island in late June 1980 I got the impression that Kittiwake numbers were lower than in 1976 at most breeding stations. This may be supported by results of annual counts in early July at monitoring sites which show declines from 408 sites in 1973 to 347 in 1980 at Selchie Geo and 148 sites in 1975 to 109 in 1980 at Logat.

It is extremely unusual for Kittiwakes to nest on the ground, but on Foula several cliff colonies are less than 3 m off ground level and about 40 pairs nest on boulders at the foot of Nebbiefield, suggesting that better nesting sites higher up the cliffs (see Coulson 1963) are fully occupied.

Arctic Tern

Terns are well known for their habit of shifting colony location abruptly. On Foula Arctic Tern numbers have been recorded in many years. The population rose from 40-50 pairs in the first half of the century to between 200 and 300 pairs from 1956 to 1968. Then an irregular increase occurred to a peak of 6,000 pairs in 1975, subsequently decreasing irregularly (table 4).

Table 4. Numbers of pairs of Arctic Terns nesting on Foula

Year	Pairs	Year	Pairs	Year	Pairs	Year	Pairs
1906	50	1963	260	1972	1,100	1977	3,000
1948	40	1964	200	1973	748	1978	2,600
1956	250	1969	410	1974	1,800	1979	4,400
1960	200	1970	500	1975	6,000	1980	4,200
1961	300	1971	932	1976	5,650		

Sources: 1906—A. Holbourn (pers. comm.); 1948—Pennie (1948); 1956-71—Brathay; 1972-80—pers. obs.

The rapid increase began a year or two after the breakup of the vast colonies on Westray and Papa Westray in Orkney (Lloyd *et al.* 1975) and it seems probable that many of these birds moved to Shetland, where a number of colonies increased in size at this time (Robertson & Kinnear 1974, Marshall & Kinnear 1975, 1976). The decrease in numbers on Foula between 1976 and 1977 coincides with an increase on Papa Stour, the nearest Arctic Tern colony to Foula, from 1,000 pairs in 1974 (Harris 1976) to 3,000+ pairs in 1977 (Marshall, Okill & Sandison 1978). Movement of birds from Foula to Papa Stour is confirmed by a recovery of a dead Arctic Tern in August 1979 in the Papa Stour colony which had been ringed as a chick on Foula in 1968. Most Arctic Terns first nest as

four year olds (Coulson & Horobin 1976) so this bird should have been nesting in 1972, when the Papa Stour colony was rather small, but it is impossible to tell whether or not it nested on Foula before moving to Papa Stour.

In the last few years numbers of Arctic Terns in the main Orkney and Shetland colonies have fluctuated unpredictably, and breeding success has been very variable between colonies and between years. Unfortunately, we do not have data from earlier years to see whether this is typical or not. It seems likely that the differences are caused by local variations in the availability of food, particularly sandeels, but this has yet to be shown as the measurement of fish abundance on a local scale has not yet been possible.

In 1972 a small number of terns nested on rocky coast while over 90% nested on dry heath areas of short vegetation and small stones. In 1976 83% were nesting on dry heath areas, 8% on rocky coast, but about 500 pairs (9%) had moved into a hay field in an area formerly cultivated but now abandoned and ungrazed in summer. By 1980 most of the colonies on dry heath had been deserted but numbers in the hayfield had increased. Now 60% nest in the hayfield, 5% on rocky coast and 35% on dry heath. Disadvantages of the dry heath areas, which are more typical Arctic Tern nesting habitat, appear to be predation of chicks by sheep (presumably resulting from a mineral deficiency in the grazing) which has affected up to 10% of chicks in this area in some years, and human disturbance which causes chicks to run through the colony, combined with large numbers of Arctic Skuas nesting between the terns in this area.

Guillemot

Ignoring the counts of 6,500 birds in 1965 and 1,765 birds in 1969, which are clearly far too low, there are three recent counts: 30,000 birds in 1968 (J. Holbourn pers. comm.), 37,000 in 1974 (Harris 1976) and 60,021 in 1976. Guillemots have increased during the last decade and new ledges are occupied each year, but these three counts are probably not very accurate and cannot be taken to show a doubling of the population in eight years. In 1980 new colonies were found in six areas of boulderfield where none had been present in 1976 but one cave which contained 350 birds in 1976 held only 20 in 1980. Nevertheless this suggests that the increase is continuing.

In 1976 most birds were in caves (35%) with slightly fewer on cliff ledges (33%), a very few (2%) on large rock shelves, but a large number (30%) in boulderfields. Again there appears to be a shortage of optimal nesting sites as Guillemots are

very awkward in boulderfields and have considerable difficulty reaching the sea, particularly if disturbed and in a hurry.

Razorbill

Counts of Razorbill numbers on Foula are very inaccurate. No trend can be detected from the various estimates (table 5)

Table 5. Numbers of Razorbills counted on Foula

Year	Individuals	Source
1965	4,500	Fabritius (1969)
1968	3,000	J. Holbourn (pers. comm.)
1974	1,720	Harris (1976)
1974	5,000	Furness (1976)
1976	10,373	This census

and it is probably best to estimate the population size as likely to be between 5,000 and 15,000 birds. Only 198 (2%) of those counted in 1976 were on ledges; 1,268 (12%) were in cliff fissures, with the majority (86%) in boulderfields. A more detailed census of this species is required as the colony is certainly one of the largest in Britain.

Black Guillemot

Most Black Guillemots on Foula nest on Hiora Wick. This colony has been studied in a number of years and all nests located. In some years nests were marked at all colonies on the island. In addition, counts of all individuals visible on sea or shore have been made. The value of counts of individuals is doubtful owing to the large and unexplained differences found from day to day (from 21 to 151 individuals in July 1979).

Numbers probably did not vary much from 1962 when 90 nests were found to 1976 when 117 nests were found, but dropped rapidly in 1977 and further in 1978 and 1979. Only 28 nests were found in 1980. Oiling cannot be blamed for this change as the major oiling incidents in Shetland did not begin until December 1978, by which time the Foula population had already fallen considerably, and no ringed birds from Foula (and many are ringed) were found among the 727 found oiled between January and May 1979 (Heubeck & Richardson 1980). Presumably most Foula Black Guillemots were not around mainland Shetland at this time.

Puffin

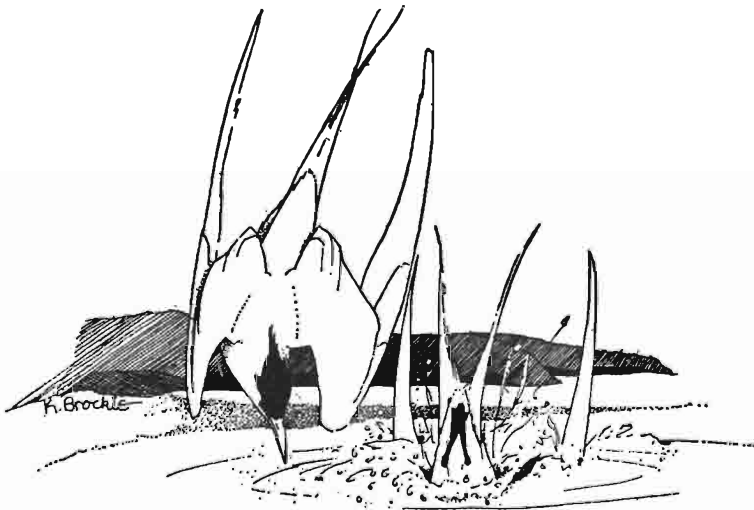
J. Holbourn estimated that 50,000 pairs of Puffins nest on Foula, while Brathay recorded the population as order 5 (10,000-99,999 pairs). In 1976 the total number of burrows was estimated at 70,171 but with a wide margin of error.

Puffins have undoubtedly increased in some boulderfields in recent years but the population may not necessarily be increasing. Many grassy slopes occupied by Puffins now have large numbers of Fulmars nesting on the surface and their influence on Puffins is uncertain. During the winter 1978/9 a rock fall on the Kame destroyed half the grass slope on the Little Kame, half way down the main cliff. An estimated 5,000 burrows will have been destroyed and soil depth is now insufficient for Puffins to resume nesting at present. Presumably these displaced birds will have moved into other areas. In 1976 most Puffins were nesting in grassy slopes (61%) with 26% in boulderfields and 13% in cliff fissures.

Discussion

Only three colonies in the British Isles contain more than 16 breeding species of seabird (not counting Red-throated Diver or seaduck). Of these, Westray (19 species) and Fetlar (18) have a wide variety of inshore birds (terns, gulls and Cormorant). Foula (18) is unusual in combining populations of oceanic species (petrels, shearwaters) and inshore ones (Arctic Tern, Common Gull, Arctic Skua).

An important feature of Foula that makes it highly suitable for large populations of Arctic Terns is the presence of tide races around South Ness and Strem Ness, very close to the main colonies. Most feeding is done in these tide races during maximum flow when presumably the disturbed water makes



ARCTIC TERNS

Keith Brockie

sandeels more readily available. Possibly even more valuable is the Shaalds reef, a few miles east of Foula. Here there is very shallow water and a strong tide race, but maximum flow occurs during high and low water at Foula owing to some anomaly of local currents. This means that terns can feed in their preferred disturbed water conditions at all times by making alternate use of coastal and reef races. Shags, auks and to a lesser extent Kittiwakes also use them and the high concentrations of feeding birds provide for kleptoparasitism by Arctic Skuas.

Table 6. Seabird populations on Foula which represent more than 2% of the Shetland population compared with those on St Kilda and the largest colony of each species in the British Isles

For population units see text.

	Foula population as % of		St Kilda 1973-7	Largest colony in British Isles 1969-79
	Foula 1976	Shetland population		
Fulmar	38,555	26%	44,000	44,000 - St Kilda
Manx Shearwater	ord 2-3	50%?	ord 3-4	120,000 - Rhum
Storm Petrel	ord 4	40%?	ord 4-5	20,000 - Inishtearaght
Leach's Petrel	ord 2	80%?	ord 4	ord 4 - St Kilda
Shag	3,357	31%	300	3,360 - Foula
Arctic Skua	306	20%	0	326 - Yell
Great Skua	3,000	54%	24	3,000 - Foula
Kittiwake	5,570	12%	6,000	53,000 - Westray
Arctic Tern	5,650	47%	0	8,500 - Papa Westray
Guillemot	60,021	40%	22,000	71,000 - Westray
Razorbill	10,373	53%	2,500	20,000+ - Horn Head
Black Guillemot	117	3%	10	342 - Auskerry
Puffin	70,171	28%	320,000	320,000 - St Kilda

Note Data from this census, Berry & Johnston (1980), Cramp *et al.* (1974), Goodier (1974, 1975), Harris & Murray (1978), Lea (no date), Sharrock (1976), Wormell (1976); ord 1 = 1-9, ord 2 = 10-99, ord 3 = 100-999, etc.

The Foula seabird populations are set in context in table 6. The Foula populations of Shags and Great Skuas are the largest discrete colonies in the British Isles. The numbers of Fulmars, Arctic Skuas and Guillemots are only slightly below those of the largest colonies of these species, while the Arctic Tern, Razorbill and Puffin colonies probably rank as third largest in the British Isles. Although small, the Leach's Petrel colony is one of only five in the British Isles, and the Kittiwake and Black Guillemot colonies are large by Shetland standards.

Lack of data makes it impossible to detect changes in population sizes of Manx Shearwaters, small petrels, Razorbills or Puffins. The Shag and Eider populations appear to be remaining at about the same level, although Eider numbers may

be declining slowly. Herring Gull and Lesser Black-backed Gull numbers have declined slowly and consistently and Black Guillemot numbers declined suddenly in 1977. But most species have been or are increasing. Red-throated Divers, Great Skuas, Arctic Skuas, Kittiwakes and Arctic Terns increased considerably but now appear to have reached an equilibrium or decreased slightly in the last few years. Fulmars, Common Gulls, Great Black-backed Gulls and Guillemots all seem to be increasing, while the Gannet has begun to colonize the island. Several species seem to have fully occupied their preferred nesting habitats and have to overspill into sites which appear to be suboptimal. It would make an interesting study to compare the performance of birds in these different habitats, but no such work has been done.

Red-throated Divers and both skua species nest at exceptionally high densities on Foula, while many of the colonies of the 'cliff nesting' species are readily accessible. Access to Foula is difficult and there is little accommodation on the island for visitors. It seems likely that lack of human interference on the island has been an important factor in allowing the seabirds to nest in areas that would not be occupied in other parts of Britain. The protective attitude of the island community has allowed skuas to nest beside peat banks, terns to nest in crofts and Fulmars to nest in gardens and on buildings.

As with the rest of Shetland, Foula seabirds are threatened by possibilities of oil pollution and changing fisheries. There is no evidence that the Great Skua population has influenced the numbers of any of the other species on the island. On Foula the Great Skuas feed largely by fishing on sandeels and scavenging discard whitefish from trawlers (Furness & Hislop in press). There remains a possibility that if these sources of food become unavailable the Great Skuas would turn to predation on seabirds. They could then have a great impact on all species (Furness 1981b). It would seem sensible to monitor Great Skua diets and seabird numbers on Foula in view of the various threats of oil, whitefish and sandeel fishing and increasing human access to the island.

Acknowledgments

I would particularly like to thank the Holbourn family for permission to work on Foula and for their advice, encouragement and help. I am grateful to Brathay Exploration Group for use of facilities on Foula, assistance with the seabird censuses and access to their accumulated data. Thanks to the many friends who have helped on Foula over the years. I am pleased to acknowledge the support of the Universities of Durham, Aberdeen and Glasgow, the Natural Environment Research Council, the Seabird Group, the SOC and the Nature Conservancy Council. Finally, I thank Dr J. C. Coulson and Professor G. M. Dunnet

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Summary

A census of Foula seabird populations in 1976 showed that the colonies of Shags and Great Skuas are the largest in the British Isles. Fulmar, Arctic Skua and Guillemot colonies rank second largest; Arctic Tern, Razorbill and Puffin probably third largest. Foula is one of the most diverse seabird communities in the British Isles, with Red-throated Diver, Eider and 18 species of seabird, including one of Britain's five known Leach's Petrel colonies. Numbers of breeding gulls are small; Herring Gull and Lesser Black-backed Gull populations are declining. Gannets recently colonized and Red-throated Diver, Fulmar, Great Skua, Arctic Skua, Common Gull, Great Black-backed Gull, Kittiwake, Arctic Tern and Guillemot numbers have increased during this century although several increases have now stopped, in some cases perhaps due to lack of further suitable nesting habitat. Threats of oil, whitefish and sandeel fisheries and increasing human access are discussed.

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RAZORBILLS

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Winter colony attendance by auks and the danger of oil pollution

W. R. P. BOURNE

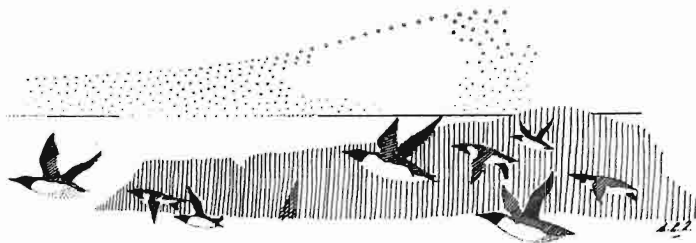
It may be useful to make some additional points in connection with the 'Earlier colony attendance by Guillemots and Razorbills' discussed by Taylor & Reid (1981). Attention first appears to have been directed to this by H. G. Alexander (1965) who reported in an introductory article for the first *Seabird Bulletin* which suggested topics for research that Guillemots in breeding plumage return to their colonies in Dorset by the first half of November, although birds continue to be seen at sea in winter plumage much longer. The following year Bill Phillips (*Seabird Bull.* 2: 65) also noticed that while many dark backed northern birds washed up in Sussex on 1st February were still in winter plumage, three paler backed southern birds were already in breeding dress.

The subject was then taken up by George Waterston in a radio programme, which elicited the records of birds seen on the Farnes (Northumberland) in November up to that date from Grace Hickling, while George had also seen them on St Abbs Head (Berwickshire) and Alastair Munro had seen them on Handa (Sutherland) in December. These observations are summarized at the end of a note by Waters (1967) reporting that during the 1961/2 winter neither Guillemots nor Razorbills were noticed ashore on St Kilda between early August and late March, nor Puffins between late August and mid April. Thus it appeared that while adult Guillemots in breeding dress were sometimes coming ashore at the more sheltered southern and eastern colonies as soon as they had completed the autumn moult, the birds might be leaving the most exposed northwesterly colony in the winter.

During a series of cruises around the Hebrides at all seasons in 1970-75 I was able to clarify the situation further (Bourne & Harris 1979). Before the start of the breeding season the attendance of the birds at the colonies is very erratic. The larger auks leave the open sea to move inshore and north to moult at the end of the breeding season in August, and do not reappear until about November, when numbers were seen moving south into the area around Cape Wrath (Sutherland), by which time they were starting to resume their breeding plumage. Thereafter they were regularly seen visiting the colonies on fine mornings, for example those on the Shiantis in January 1972, and then dispersing to feed in the centre of the Minch later in the day. Their appearance was however

greatly influenced by the weather, and they were liable to remain sheltering in the lee of the land if it deteriorated, as for example when large flocks built up off the sea-lochs along the east side of Lewis during a series of westerly gales in February 1971. The occurrence of southward movements past Islay towards the Irish Sea under such conditions (Verrall & Bourne in press) suggests that some may leave the area entirely, though they soon reappear if the weather improves (compare maps in Bourne 1972a and Bourne & Harris 1979).

Until recently I had only seen auks in summer plumage ashore around the north of Scotland. In 1978 there were 40 in winter plumage at the Bullers of Buchan (Aberdeenshire) on 13th October, 75 on the 18th, and 100 on 7th November, by which time a third were in summer plumage, in an area where their presence is erratic later but there are hundreds in the spring. Most have been seen in the morning though I once saw thousands at Fowlsheugh (Kincardineshire) on Christmas afternoon. They were settled in a compact group in the centre of the colony instead of dispersed around the ledges as in summer, and it seems questionable whether they were all local birds, or included winter visitors from elsewhere which also made for the nearest cliff on fine days. This would explain the occurrence of larger numbers in winter than in summer at some colonies, including those on Anglesey (Gwynedd) as well as the Isle of May, since these are sheltered areas which tend to attract many birds in the winter (Bourne 1972b). There is a need for more investigation of this phenomenon, perhaps by marking the birds, though it would need to be done cautiously since they are very shy at this season and there is a risk that potential breeders might be scared away from the area.



GUILLEMOTS *M. G. Richardson*

It is notable that the solitary past record of Guillemots ashore at Bempton (Humberside) in November 1870 quoted by Taylor & Reid (1981) occurred at a time when there was a flush of small fish offshore and the birds were building up

from the low population level that led to the passage of the Seabird Protection Act the year before to a maximum when over 100,000 eggs were said to be taken in a year at the end of the century. Most of the observers who first noticed their appearance in autumn in the 1960s thought that they were being overlooked, although Alastair Munro was told that they had not been seen on Handa before mid January in living memory. Possibly they are again profiting from the recent increase of small fish following over-fishing for the larger ones (see also Sherman *et al.* 1981) but they may also be benefiting from the recent series of mild winters, when a reduction of the number of dead birds found on beaches suggests that they have been doing unusually well and are likely to have stayed in home waters longer where they have had more free time to spend at the colonies.

It should be emphasized that this results in a real risk to the birds from oil pollution. Early in 1977 the authorities refused to take action when oil was reported near Flamborough Head (Humberside) because the official map failed to indicate any concentration of birds there at that season. By the time it was demonstrated that they were already present offshore and visiting the cliffs in the mornings one of the most serious birdkills of recent years had taken place, resulting in a measurable reduction in the largest colony of Guillemots in England (Bourne 1977, RSPB 1979). In view of this it was alarming to see recently that the British National Oil Corporation's *Oil Pollution Manual for the Moray Firth* still reported that the birds only begin to return in January to the largest colony on the mainland of Britain along the east coast of Caithness, where hundreds of thousands of birds breed within a few miles of the Beatrice oilfield. The plans for the control of pollution in this area, which is packed with birds throughout the year (Mudge 1979, Mudge & Allen 1980) do not seem satisfactory.

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Birdwatching in Galloway

DONALD WATSON

(Plate 31)

(Concluded from 11 : 193)

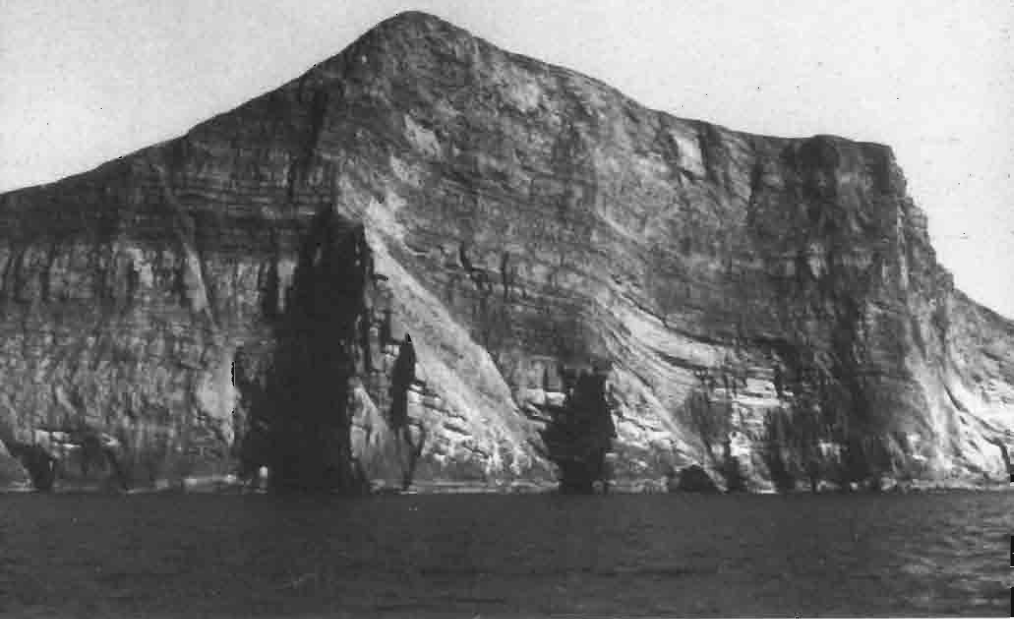
For most visitors Galloway begins when they cross the River Nith at Dumfries. The heathery massif of Criffel is skirted by rich farmland, with some magnificent old mixed woodland around New Abbey. An area of some 155 ha of peat bog and Scots Pine, next to Kirkconnell merse, is a National Nature Reserve. So this coastal strip, with its vast mud and sand flats, has a splendid variety of habitats. Wildfowl and waders move freely between the Dumfriesshire side and the Stewartry at least as far as Southwick. Thus, over 1,000 Pintail may be found on the shore near Carsethorn and often cross the estuary to feed near Caerlaverock, while as many as 100 Black-tailed Godwits are seen below Glencaple in April and more usually at Carsethorn in autumn. Whooper and Bewick's Swans move between Caerlaverock and Islesteps on the Stewartry side. From late November flocks of Pink-footed and Barnacle Geese feed increasingly on fields near Southernness. Stray Brent, Snow and Bean Goose may be found among them. After the shooting season Kirkconnell merse presents a fine spectacle of massed Pinkfeet and brilliant pairs of Shelduck.

Carsethorn can offer a teeming prospect of shorebirds, though the sheer number of Oystercatchers and Redshank—the latter mostly Icelandic birds—is the most striking feature. Scaup are fewer than formerly but can still be seen in hundreds off the mussel beds, often so close that the splendour of the drakes' glossy dark green heads is apparent. Seaward of the holiday village at Southernness (originally Salternes from salt-working) stands Galloway's oldest lighthouse. Purple Sandpipers feed on the rocks below while waders roosting in nearby Gillfoot Bay have included well over 2,000 Bar-tailed Godwits and almost 100 Grey Plover. Sand dunes

backing the long sweep of Mersehead sands are the haunt of Stonechats and wintering Short-eared Owls and a few Little Terns may still nest. In recent years at Southernness Surf Scoter, Black Redstart and Lapland Bunting have occurred, while Dotterel have been known to alight on the golf course in spring. West of Southwick the coastline becomes steep and wooded at the Heughs of Colvend, overlooking the Southwick burn snaking through the merse. The clifftop path from Port o' Warren passes near a fine colony of Cormorants. There are also Fulmars and a small group of Razorbills. Twites probably breed on the Gorse covered slopes, where Linnets abound.

The much indented coastline between Rockcliffe and the Dee is often neglected by birdwatchers, though only the tank range west of Abbey Burnfoot is inaccessible. Common Terns breed on Rough Island, warded by the National Trust for Scotland. As many as ten Greenshank stay all winter at Kippford. There is an almost Mediterranean atmosphere about the hillocky peninsular of Almorness with its thorny thickets down to the rocky shore and the green slopes of Heston Island beckoning beyond. In the 1950s there was a fine tern colony, including 75 pairs of Sandwich Terns, on the high part of the island, now thick with Herring Gulls. Auchencairn and Orchardton bays are good feeding grounds for waders and duck, especially Shelduck, some of which nest far inland. Sea-birds nesting at Balcary Point include Guillemots, Razorbills, Black Guillemots, Kittiwakes and Fulmars. The path from Balcary Bay climbs through lush woodland where early Chiffchaffs sing. Cormorant colonies fluctuate between Balcary and Orroland, further west. Behind the cliffs, the high farmland attracts up to 1,500 Pinkfeet in midwinter, while Heart Moss with its bog and willow scrub has an upland character with many nesting Curlew.

The Dee is the most varied of the smaller estuaries. Its tributary the Tarff has steep banks and trailing branches where Kingfishers perch unobtrusively. From Cumstoun Bridge Dippers and Grey Wagtails can be watched at close range, while just downstream the mudbanks attract Greenshanks, Spotted Redshanks and occasional Green Sandpipers. Further down the estuary the variety of waders is usually limited, but Dunlin and Knot are numerous in winter and sometimes thousands of Golden Plover mingle with Lapwings. There are also some hundreds of Wigeon and in summer the estuary is a gathering ground for Shelduck broods. Before the lighthouse on Little Ross Island became automatic many migrants were recorded (and often killed at the light). These included Yellow-browed Warbler, Siberian Chiffchaff and Grey Phalarope. Rats and large gulls have eliminated former colonies of Common and Sandwich Terns. Flowering plants, impressive rock



PLATES 28-30. Seabirds of Foula (p.237).

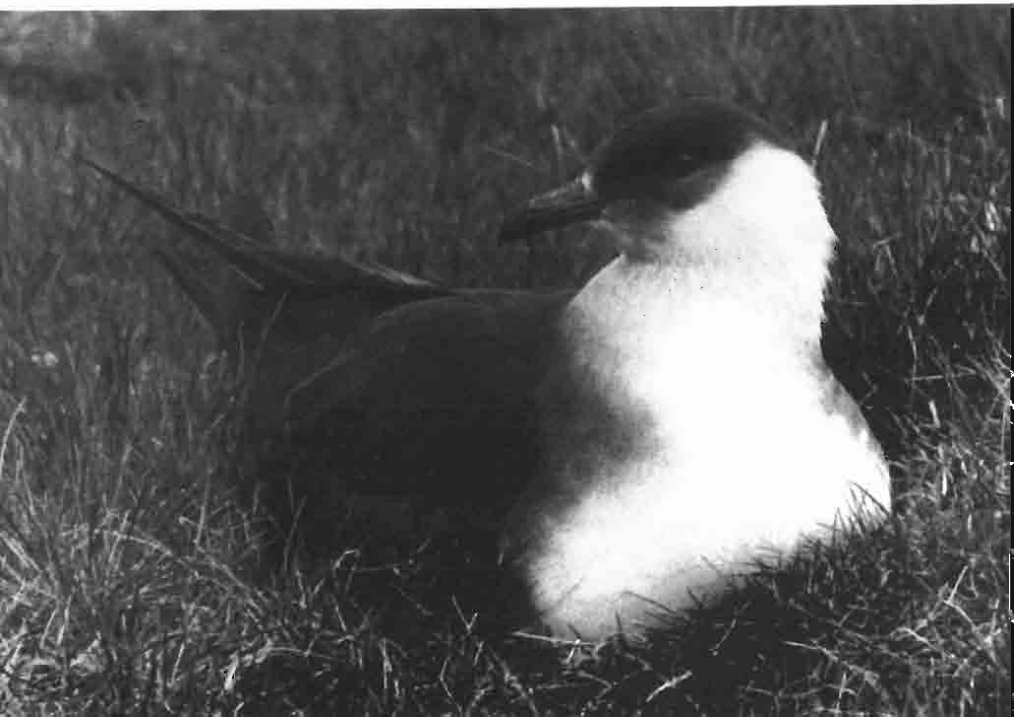
PLATE 28 (a) The immense cliffs of Foula, rising to 367m at the **Kame**.

S. R. D. da Prato

(b) Arctic Skua on nest.

R. T. Smith

Foula has the second largest colony of Arctic Skuas in the British Isles, and, owing to pressure from the expanding Great Skua colony, the highest density known.



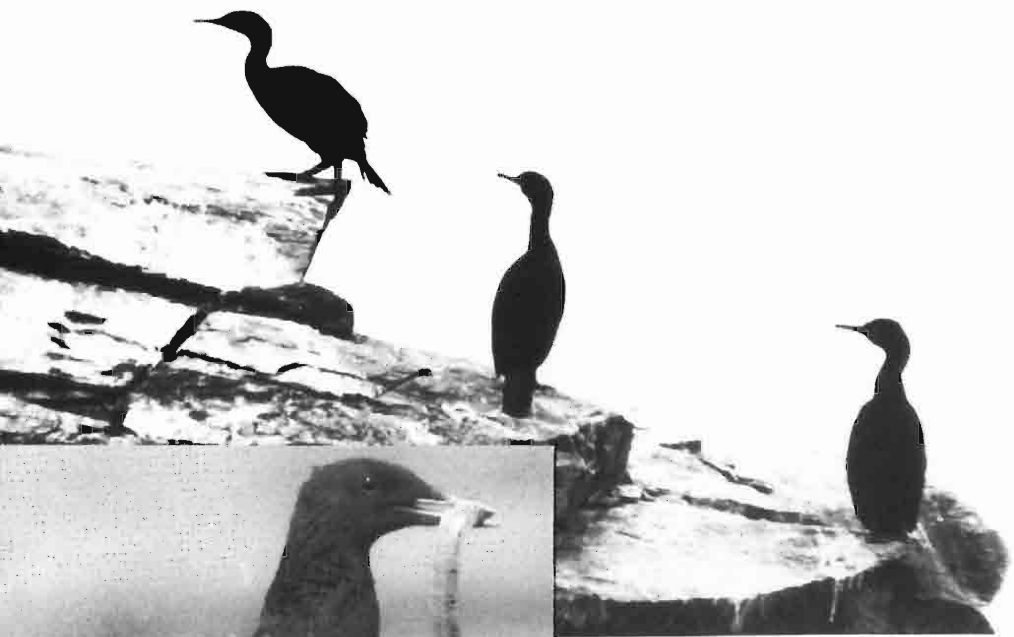


PLATE 29. Seabirds of Foula.

R. W. Furness

(a) Foula is the largest colony of Shags in the British Isles.

(b) Black Guillemot with Butterfish *Pholis gunnellus*.

(c) Foula is the largest and oldest Fulmar colony in the British Isles after St Kilda.

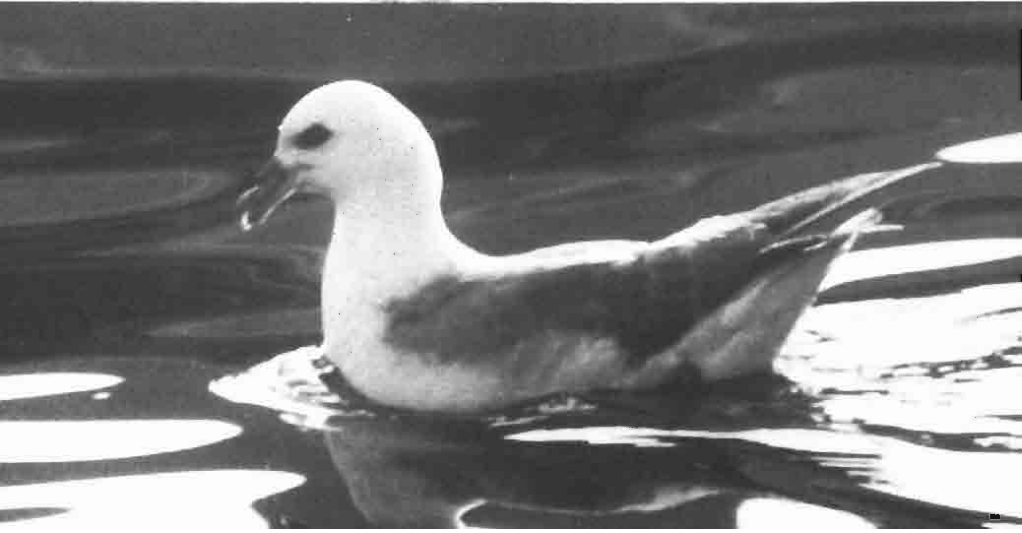




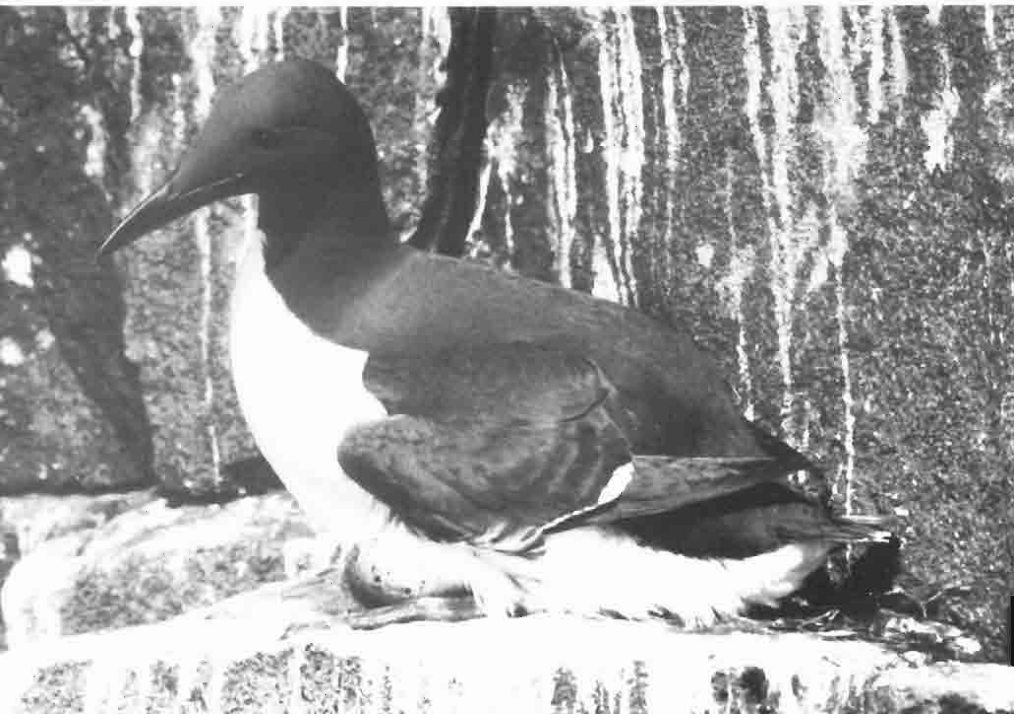
PLATE 30. Gullmots are increasing on Foula which probably has the second biggest colony in the British Isles.

(a) Many Gullmots nest among boulders on Foula.

M. P. Harris

(b) Gullmots settling on egg.

D. A. Smith



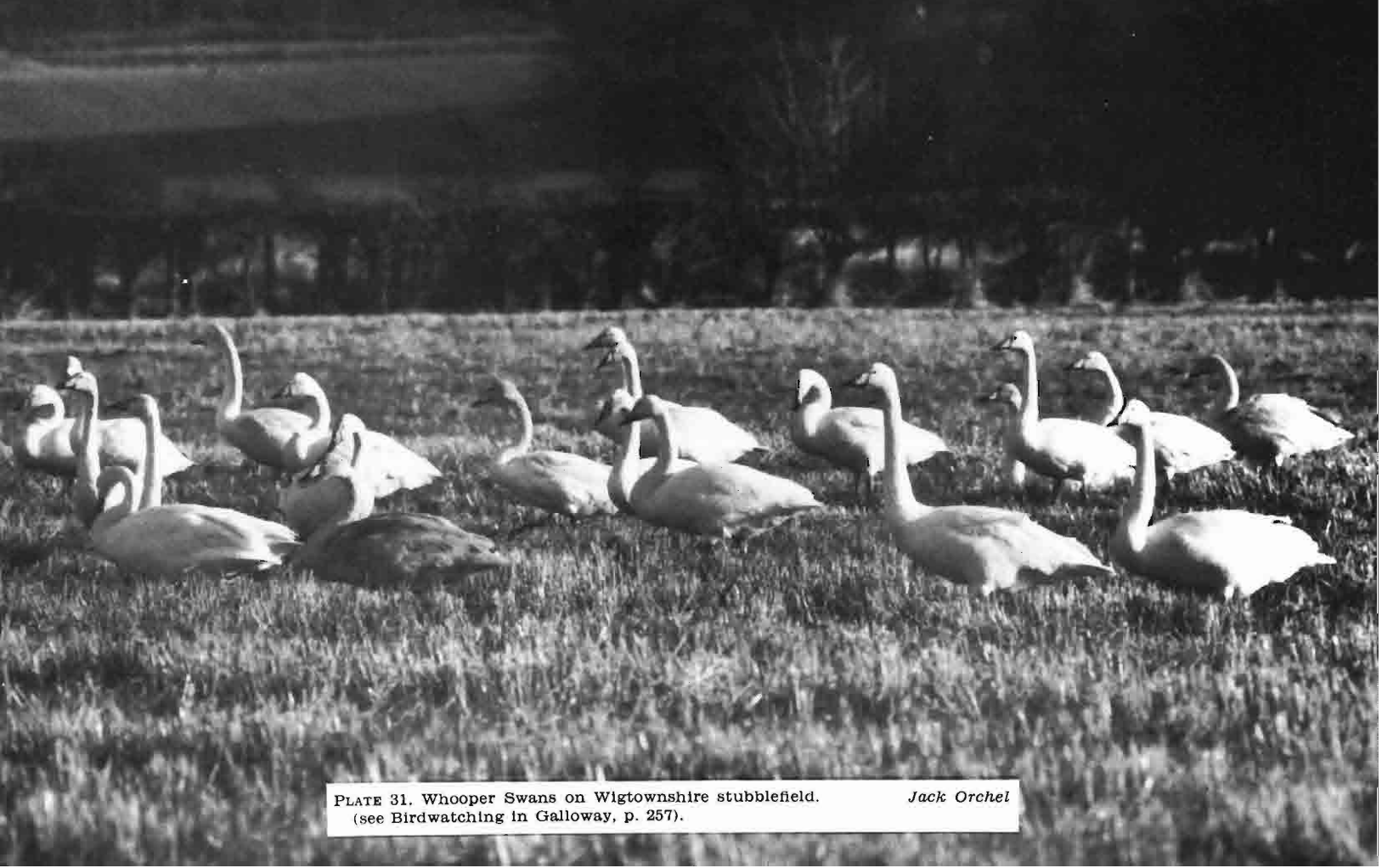


PLATE 31. Whooper Swans on Wigtownshire stubblefield.
(see *Birdwatching in Galloway*, p. 257).

Jack Orchel

formations and nesting seabirds combine to make Meikle Ross a memorable headland. Most of the cliff birds are of similar species to those at Balcary, but Shags are well established at the Ross.

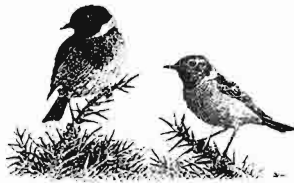
Much of the coastline between Kirkcudbright and Creetown is rocky, but sandy shores are populous in summer. In several places dense hardwood descends to the shore. Off Muncraig cliffs Common Scoter display in spring, while at Carsluith moulting scoter flocks in summer have numbered thousands. Spring is the best season to see divers, especially Red-throated, off this stretch of coast. Despite holiday huts and caravan parks, thickets of Blackthorn, Gorse and Hawthorn can be alive with Yellowhammers, Linnets, Whitethroats, Goldfinches and Stonechats. Yellow Wagtails are sometimes passage visitors to this coastline and it would be no great surprise to find them breeding again as they did quite widely long ago. Shore nesting birds have suffered from the human invasion but Common Terns still breed in Fleet Bay. On the Isles of Fleet gull colonies have recently included 100 pairs of Great Black-backs and over 200 pairs of Common Gulls. A small flock of moulting Canada Geese has been here in summer.

Where the Cree estuary broadens into Wigtown Bay the spaciousness of the Nith is repeated, but here the backcloth is Cairnsmore of Fleet, higher and more enticing than Criffel. The birds, too, bring echoes of the Nith, with more than 100 Whooper Swans, often joined by a few Bewick's, at Moss of Cree and over 2,000 Pinkfeet on Wigtown or Cree merse late in winter. There are substantial numbers of Wigeon and Pintail at times, but there have never been high counts of Grey Plover or Black-tailed Godwits. A move to control the greatly increased shooting in Wigtown Bay has been launched with the co-operation of local naturalists and wildfowlers.

In hard winters the coastal fields at Moss of Cree are an important refuge for birds fleeing snow covered areas. Even in mild winter conditions there are flocks of Lapwing, Golden Plover, Curlew, Fieldfares, Redwings, Skylarks and mixed finches on these fields. Twites and the occasional hard weather flock of Snow Buntings range on to the merse to feed. Peregrine, Merlin, Sparrowhawk and Hen Harrier all hunt the winter concentrations of birds.

If the vastness of Wigtown Bay can be intimidating, a good variety of waders, including Bar-tailed Godwits, can often be seen from the comfort of a car at Garlieston. Southward stretches Rigg Bay with its fringe of hardwood harbouring tits, Treecreepers, and in summer many warblers and finches. The bay is one of several places where Greenshanks winter and it can produce surprises like a flock of over 100 Snipe

resting on the seaweed among large numbers of Teal, with a few Pintail, in October 1980. Offshore Red-breasted Mergansers and Common Scoters are usual and Velvet Scoter and Brent Goose have been seen. At Slidery Point seabirds, including Black Guillemots, nest on a beautiful hidden cliff. Beyond Isle of Whithorn, cliff nesting birds are found again at Burrow Head. At Kidsdale big fields stretching to the high cliff edge once attracted a vagrant Little Bustard. West of Port William the density of breeding Stonechats above the pebble beach is the highest in Galloway.



STONECHATS
Donald Watson

Fields around Dunragit are visited by large flocks of Greylag Geese but the Greenland White-front flock more often feeds on rushy pastures beside West Freugh. Conifer plantations, tall Heather and willow scrub back the dunes at Torrs Warren where prohibition of public access has benefited many birds. On the way to the Mull of Galloway the east facing shore has long strands of sand and shingle particularly good for Ringed Plover, with a sprinkling of Arctic, Common and sometimes a few Little Terns nesting. In autumn waders at Sandhead, Drummore and Maryport Bays may include Grey Plover, Whimbrel, Sanderling, Curlew Sandpiper, Little Stint and Ruff. The latter have lately overwintered, chiefly inland. Off Dyemill, as many as 31 Great Northern Divers have been counted in December (Bert Dickson tells me that they not uncommonly land by mistake on the airfield runway at West Freugh). A short diversion from the coast road to visit the secluded Logan Gardens (open April-September) must be recommended.

Southward as far as the contrasting little bays of East and West Tarbet the route to the Mull of Galloway traverses an undulating landscape of cattle pasture and arable fields where Corn Buntings sing from telegraph wires. The road to the lighthouse climbs above magnificent cliffs on which many seabirds breed. In spring and early summer the headland is unsurpassed for colour, as the flowering of Thrift, Sea Campion, stoncrop and Thyme succeed the blue carpet of Spring Squill. This is the most important site in Galloway for Shags, Guillemots, Razorbills and Kittiwakes; there are also Fulmars, Cormorants and many Jackdaws and Rock/Feral Doves. Most of

these species have increased in recent decades. Puffins are an enigma here; a maximum count of 26 in July 1979 included four juveniles, but nest sites have not been seen. There is historical interest in J. B. Hough's visit in June 1912. He said that the whole colony of seabirds amounted to only 80-100 birds. These were mostly Razorbills and Guillemots, with a few Puffins and Black Guillemots, but no Kittiwakes, Cormorants, Shags or Fulmars! He saw a pair of Peregrines with two young exactly where they are still sometimes seen. Of all the seabirds Black Guillemots have perhaps kept the most stable population. Choughs are now only rare visitors. I have been told that they still bred below Cardrain well into the 1930s. Twites, Stonechats and Linnets nest on the Gorse and Bracken clad slopes.

Ever since John Bain recorded the first Red-breasted Flycatcher on the Scottish mainland at the lighthouse in 1922 the Mull has seemed a promising site for migration studies. Only rarely, however, have substantial numbers of warblers, flycatchers or Redstarts been seen by day, though passage of thrushes, larks, pipits, wagtails and Goldcrests can be impressive in September-October. Unusual sightings include Water Pipit in May, Cirl Bunting in August, Nightjar in October and Shorelark in November. The best cover for migrants is in the sheltered bushes of Auchie Glen, where Little and Long-eared Owls have occurred.

Some 9½ km east of the Mull the pinnacle of the Big Scare rock can be seen in Luce Bay. On a clear day its attendant cloud of Gannets can be made out. The colony now numbers well over 500 pairs, having increased steadily since its inception in 1939. Surprisingly this tiny barren rock retains large numbers of other nesting seabirds.

The long western coast from the Mull north to Corsewall Point invites exploration on foot. Kittiwakes nest at Port Mona, Fulmars in many places and Black Guillemots in the harbour wall at Portpatrick. The decline of the upland Ravens is to some extent reflected on coastal cliffs here. North of Killantringan Bay many Eider broods gather and terns breed. Corsewall Point has proved the best viewpoint for passing seabirds, which have included hundreds of Manx Shearwaters, with Sooty Shearwaters, Leach's Petrels and Sabine's Gull in September.

Finally, Loch Ryan attracts a great variety of sea and shore birds. It is unique in Galloway in having regular, but small, wintering populations of Black-necked and Slavonian Grebes (Red-necked are scarcer). Both Great Crested Grebes and Red-breasted Mergansers have exceeded 200. It is an important moulting and wintering area for Eider flocks which have in-

cluded a drake King Eider for five successive winters. Wig Bay is usually the best place to see the small grebes and the greatest variety of seaduck but large flocks of Wigeon, Scaup and waders feed remarkably close to the A77 road east of Stranraer. In October there is a good chance of a small flock of Brent Geese, comparative rarities on the Solway. Loch Ryan has so far escaped major industrial development. It is only too obvious that its rich birdlife, concentrated in such a small enclosed area, is highly vulnerable.

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SHORT-EARED OWLS
Donald Watson

Short Notes

Sparrowhawks and heavy prey

On 12th March 1981 a Sparrowhawk caught a domestic pigeon beside our house near Newtonmore (Inverness-shire) and carried the living but inactive pigeon with difficulty for c.3m over a level surface and then c.25m down a 30° slope to the foot of a 1.5m wall. When approached the hawk failed to carry the pigeon over the wall. The pigeon was killed and put in a balchattri trap and the hawk was caught eleven minutes later. It was a very large first year female, weight 340gm, crop part full, condition fair to good (assessed by feeling the breast), wing 238mm. The pigeon, which it seemed unable to carry upward or in level flight in still air, weighed 410gm.

Woodpigeons weigh c.500gm and are a major prey species of Sparrowhawks, which are usually assumed, in calculating food consumption, to carry them whole to the nest area (Newton 1973 *Brit. Birds* 66: 271-8 *et seq.*). This seems not to be well documented by observation. DNW has seen a female Sparrowhawk carry a young Capercaillie, which weighed

c.350gm, for over 1km to the nest but the vertical drop over this distance was more than 150m. Male Scottish Highland Peregrines, weighing c.730gm, seem rarely to carry prey weighing over 500 gm for more than 2km to the nest (Weir 1977 in Lindberg (ed.) *Rept. Peregrine Conf.* . . . Grimso Wildl. Res. Stn., Sweden) and prey weighing more than the Peregrine may be dismembered before being carried (Weir unpub.). The question is, how often do female Sparrowhawks dismember Woodpigeons before carrying to the nest? The implications are evident for (a) accuracy of food consumption studies, and (b) the proportion of the female Sparrowhawk's extensive home range from which Woodpigeons can be carried to the nest.

DOUGLAS N. and PENNY WEIR

The above note raises the issue of how much a female Sparrowhawk can carry and thus the availability of heavy prey for feeding young. Although hen Sparrowhawks frequently kill Woodpigeons it is obvious that they cannot carry even severely emaciated ones for any distance. On 11th March 1981 near Kirkton (Dumfriesshire) I watched a first year female Sparrowhawk attempting to carry a Woodpigeon from the centre of a field of winter wheat. She managed to drag it about 5m before abandoning the attempt and fed from the carcass *in situ*. After her meal she perched on it for c.20 minutes then fed again before flying off to perch in a nearby plantation. The carcass was subsequently scavenged by crows and disappeared overnight, presumably removed by a Fox or cat. Had this situation arisen in summer, none of this pigeon would have been available to nestling Sparrowhawks as they are never, to my knowledge, fed by regurgitation, only directly from items brought to the nest. However, Woodpigeons are fed to the young, as has been shown by observation from hides (Newton 1978 *J. Zool., Lond.* 184: 465-487) and these observations suggest that most, if not all, Woodpigeon carcasses are partially eaten before they are brought to the nest.

The greater the distance from the nest site a pigeon is killed, the greater the chance that the carcass will be scavenged before the Sparrowhawk has eaten and digested enough to enable her to carry it to the nest. Judging from the scattering of feathers dislodged during the kill and the plucked feathers close by where the kill had been dressed, many Woodpigeons fed to the young are killed quite close to the nest, and under these circumstances little, if any, will be lost to scavengers. However, when their young are large, female Sparrowhawks often hunt up to 4km from the nest and 8km has been recorded (Marquiss & Newton in prep.). At these distances large, heavy prey are inappropriate to the needs of parent Sparrow-

hawks and this raises the question as to whether such birds prefer smaller prey when they are outside the immediate nest vicinity.

MICK MARQUISS

Mediterranean Gull holding territory

On 12th April 1980 an adult Mediterranean Gull was found in a Scottish colony of Black-headed Gulls a few days after its disappearance from a nearby roost. The colony site is an island on a small hill loch where Black-headed Gulls breed amongst the rank Reed-grass *Phalaris arundinacea* which covers the whole island bar a few stunted Willows *Salix*.

The Mediterranean Gull had obtained a small territory near the edge of the colony, which indicated, along with its advertising calls occasionally distinguishable amidst the colony rabble, that it was a male. For the first few weeks of its stay it was harried frequently in the air by small parties of resident gulls; first summer birds were especially persistent in their attacks. Over the following weeks this intolerance abated and by mid May the alien was largely ignored. This increased suspicions that it might try to breed with a Black-headed Gull as has occurred elsewhere. At no time, however, was it seen to associate with any particular individual, except on 5th May when it mounted an apparently off-duty bird on the water. This had not been preceded by any obvious display and the Mediterranean Gull was driven off aggressively almost at once.

Observations throughout the period were unfortunately irregular and the possibility that hybrid eggs were laid as the result of such an opportunistic encounter cannot be discounted. The colony is plundered relentlessly throughout the summer by locals and any such eggs would almost certainly have been taken. The bird left the area unexpectedly around 30th May, having been present for about 50 days. It was not seen in 1981.

This is the first instance of a Mediterranean Gull holding territory in Scotland and follows a rise in the number of Scottish records from three before 1975 to the recent level of 3-4 annually. The main population of the species breeds in southeast Europe, wintering along Mediterranean coasts. Since 1950 small but increasing numbers have bred erratically in central Europe and on the southern slopes of the Baltic and North Seas, hybridizing frequently with Common and Black-headed Gulls. Pure pairs have nested five times in the UK between 1968 and 1979 and hybridization with female Black-headed Gulls has also occurred.

Given this steady range expansion the occurrence of a lone male summering in Scotland is perhaps not surprising, but it seems significant that the colony concerned constituted a marked habitat difference from the saltmarsh and other low lying coastal environments where western European and Baltic colonists breed, being sited over 20km inland at an altitude of over 200m on a predominantly oligotrophic loch.

JOHN J. SWEENEY

Treecreeper with only one foot

While mistnetting at a pool in a pinewood near Banchory (Kincardineshire) on 16th April 1981 I caught a Treecreeper with the lower part of the left tarso-metatarsus and the whole left foot missing, apart from one claw hanging from a dried-up tendon. The bird was otherwise apparently healthy and weighed 9gm. A second Treecreeper, trapped at the same time and suspected of being its mate, weighed 8gm. Upon release (unringed) the injured bird flew to the nearest pine tree and proceeded to climb up the trunk. Apart from a very slightly jerkier movement and somewhat crab-like ascent (at about 15° from the vertical) the bird appeared to be able to move and forage quite satisfactorily. As the wound was an old one, the bird had clearly been able to cope with the previous winter conditions despite its injury and the special demands of a Treecreeper's way of life.

ALAN G. KNOX

Obituary

WILLIAM BROTHERSTON, BL, SSC, NP

With the passing of Willie Brotherston on 18th July 1981 the club has lost one of its staunchest supporters. Save for the war years when he was in Persia, he practised in Edinburgh as a solicitor from 1935 until his retirement earlier this year. His unexpected death while out birdwatching in the Moorfoot Hills came as a shock to his many friends who would have wished him a few more years in the field.

Willie was a man whose first consideration was for other people and this applied to both his business dealings and his leisure activities. For the many years that he was associated with the Castle Trades Hotel in the Grassmarket he was always concerned for the well-being of the lodgers there. He also had a great concern for wildlife and the countryside.

Being a sole practitioner in his latter years he had little time for travel and holidays, but any free time he had would be put to maximum use. In the summer he and his wife, Helena, would stay in their cottage by the Heriot Water in the Moorfoot Hills, and it was in south Midlothian that he was able to do most of his birdwatching. Consequently he had considerable knowledge of the traditions and dialect of the upland agricultural community of the area. For most of his life he photographed from a hide and his pictures from the early 1930s are classics. In recent years he took a number of fine photographs of nesting moorland birds in the Moorfoots and a selection was depicted in the winter 1979 issue of *Scottish Birds* (10: pl. 29-31).

It would be safe to say that the species to which Willie devoted most of his attention was the Pink-footed Goose. Virtually every weekend from September to April, weather permitting, he would be out watching the geese at their haunts in the Lothians. He organized goose counts to cover all the known roosting sites in southeast Scotland, and with great tact and charm would persuade the most unsuspecting volunteer out into the field to do his or her stint. His work on Pink-footed and Greylag Geese has greatly contributed to our knowledge of their migration and wintering habits in southern Scotland. He published a masterly paper on this subject in the *Wildfowl Trust 15th Annual Report 1962-3* (1964, pp. 57-70). Though a non-shooter, Willie did valuable work as Scottish solicitor for the Wildfowlers' Association of Great Britain and Ireland, and in recognition of this was recently made a vice-president of the association.

In addition he was closely involved in the formative years of the Scottish Wildlife Trust, first as secretary of the Lothians branch and then as branch chairman from 1968 to 1972. During these years he did a great deal of work for the trust and was active behind the scenes, particularly in the creation of the reserves at Bawsinch (Duddingston) and Red Moss (Balerno). He was responsible for getting the detailed survey of the land use and habitat of the Lothians under way. As a regular attender at the monthly Wednesday evening discussion meetings of the SOC at Regent Terrace Willie was always ready to give advice and help, and would often take the initiative in introducing new ideas. He was a member of council from 1965 to 1970, and in 1979 his many years of work for the club were recognized when he was made an honorary member.

We extend our sympathy to his wife, Helena, and share with her the loss of a remarkable man.

J. H. BALLANTYNE

Reviews

Waders (New Naturalist 65) by W. G. Hale; Collins, London, 1980; 320 pages; 24 plain photo plates; many drawings; 73 diagrams & maps 22 x 15 cm; £9.50.

The author describes his book as a general and personal view of wading birds. Certainly the personal interest comes through in the emphasis on taxonomy and variation, especially in the Redshank, and on studies of the Ribble. As to the 'general', the chapters each cover an aspect of wader biology rather than a species or genus. This approach has allowed the author to incorporate wader studies from outwith Britain, notably from North America, although 255 references seem rather few. It is good to see so many photographs showing behaviour away from the nest.

As to content I found this difficult to evaluate. The book covers a great deal of ground but there is a lack of balance. The author is not afraid to tackle wide ranging subjects such as variation in relation to evolution, the effects of glaciation, carrying capacities of estuaries, and energy flows, but I wonder whether the general reader will appreciate how many assumptions have to be made in these areas. Not all ringers will agree that it is safe to assume a linear progression in the rate of moult for many waders. Wader roosts are given a whole chapter which may overemphasize their importance especially since it is claimed that the quality of roost sites can be 'an over-riding factor of more importance than the availability of food'.

The emphasis on roosts also appears in the references to wader counts and can give a misleading picture of which parts of an estuary are most important. The assumption that outwith the breeding season most waders are concentrated on a few estuaries in northwest Europe and that other types of coast and most of Africa hold relatively few is debateable. It has been known for some time that many of Scotland's open coasts hold important wader populations yet the index only gives four references to Purple Sandpiper (British wintering population at least 14,500)—the same number as Greater and Lesser Yellowlegs and less than pratincole, stilt, and four other American species.

Other work of Scottish interest on the feeding distribution and movements of wintering waders on the Forth and Clyde estuaries or breeding season censuses in the uplands does not feature. This is at least partly due to the timing of the book which really stops around 1977 and is in danger of being overtaken by events. Despite these criticisms the book is worth buying but I wonder whether the New Naturalist editors can realistically expect one author to cope with as wide ranging a book as this. Wader studies are a good example of co-operation in ornithology and a chance for fruitful joint authorship has sadly been lost here.

S. R. D. DA PRATO

Birds of Prey of the World by F. Weick & L. H. Brown; Hamburg, Verlag Paul Parey, 1980, published in UK by Collins; 159 pages; 40 colour plates; 164 drawings; 29 x 21 cm; £15.

Inspired by Peter Scott's *Coloured Key to the Wildfowl of the World*, this book should be in the library of anyone interest in the order Falconiformes. Every species and distinctive race is illustrated, no less than 1,144 specimens. For comparison all are painted in the one position, and males, females, and some immatures and unusual colour phases are shown. The text, a model of brevity giving measurements, field characters and distribution, is opposite the relevant illustration. There is an

introductory section containing identification keys, a review of the genera, and a bibliography.

The text appears in both English and German, and not all the supplementary remarks on the colour plates are reproduced in both languages. This is not as confusing as might first appear and one soon gets used to looking at the correct part of a page for the relevant information, or learns, for example, that 'hell' is the German for 'pale'! Even so, this practice of reducing costs by producing a multilanguage edition is of questionable value since many readers will object to having to pay for the other language text they have no need for.

The value of this book must lie in the quality of the illustrations. At first glance these give the impression of being overcrowded and perhaps a little sketchy, yet no important detail appears to have been missed, they are drawn to scale, and the colours are accurate albeit a trifle heavy. The line drawings are particularly neat. This book is essentially an identification aid and, although not a field guide, is well worth the sacrifice of a little of your baggage allowance if birdwatching abroad. It is just a great pity that illustrations of flight patterns were deliberately omitted, even if these are amply covered in other publications.

IAN H. J. LYSTER

The books reviewed above are available from the SOC Bird Bookshop

Also received

Nature Guide to Scotland by G. Fry; Usborne, London, 1981; 128 pages; many colour illustrations & photos; maps; 19 x 13 cm; £3.99 (hardback), £2.50 (softback).

Sandgrouse (Annual journal of The Ornithological Society of the Middle East); plain photos; drawings; diagrams; maps; 21 x 15 cm; each £5 (softback); No. 1 1980; 81 pages; No. 2 1981; 110 pages; from The Secretary, OSME, c/o The Lodge, Sandy, Beds., SG19 2DL.

The Wild Flower Key by F. Rose; Warne, London, 1981; 480 pages; c.1000 colour illustrations; drawings; map; 19 x 13 cm; £8.95 (hardback), £5.95 (softback).

Usborne Guide to Birds of Britain and Europe by Rob Hume; Usborne, London, 1981; 128 pages; many colour illustrations and drawings; 20 x 13 cm; £3.99 (hardback).

A Field Guide to the Bird Songs of Britain and Europe supplementary record 15 N° RFLP 5015 by S. Palmer and J. Boswall; Sveriges Riksradio, Stockholm, 1980; distributed by Conifer Records, Horton Road, West Drayton, Middlesex, UB7 8NP.

Voices of the Loon by W. Barklow; NAS-1001; National Audubon Society & North American Loon Fund. Long-playing record of Great Northern Diver repertoire; \$9 + \$2.50 postage from NALF, Main Street, Humiston Building, Meredith, New Hampshire 03253, USA.

Current literature Articles and reports on the status and distribution of birds in Scotland are listed here. Strictly biological studies such as ecology or behaviour are excluded and so are references from the widely read journals **British Birds**, **Bird Study**, **Ringing and Migration** and **Ibis**. Most items listed and many others are available for reference in the club library and we are grateful to the contributors. The library welcomes copies of work on any ornithological subject.

Edinburgh Ringing Group: Eight 1980. 60p (85p by post) from J. H. Ballantyne, 6 Mansfield Place, Edinburgh, EH3 6NB.

Caerlaverock Bird Report No. 2 - 1980. M. Wright (comp.) 1981. Nature Con-

- servancy Council, South West (Scotland) Region, The Castle, Loch Lomond Park, Balloch, Dunbartonshire, G83 8LX.
- The spring migration of Turnstones through Britain in 1979. P. N. Ferns 1981. *Wader Study Group Bulletin* 31: 36-40.
- A Guide to Birds and Birdwatching on the Uists*. Royal Artillery Range Natural History Society 1981. Royal Artillery Range Hebrides, Benbecula PA88 5LN.
- St Abbs Head Seabird Sample Counts, 3rd Year Results* - 1980. R. Weatherhead, C. O. Badenoch 1981. Nature Conservancy Council, South East Scotland Region, 12 Hope Terrace, Edinburgh, EH9 2AS.
- Fair Isle Bird Observatory Report for 1980*. Ed. J. Arnott 1981. £1.15 from FIBOT, 21 Regent Terrace, Edinburgh.
- Orkney Bird Report 1978-9*. Ed. D. Lea 1981. £1 from D. Lea, 6 Old Scapa Road, Kirkwall.
- Review of Sanda Storm Petrel movements. E. J. Maguire. *Copeland Bird Observatory Report for 1980*: 19-20.
- Hebridean Naturalist* No 5. J. A. Crummy (ed.) 1981. Includes 'Red-throated Divers... on Rhum' and 'A Bird census in Lews Castle woodlands'. £2 plus order charge from SOC Bird Bookshop or from editor (17 Tolsta Chaulais, Isle of Lewis).
- Ayrshire Bird Report 1980*. A. Hogg (ed.) 1981. £1 plus order charge from SOC Bird Bookshop or from editor.
- Perthshire Bird Report '80*. E. D. Cameron 1981. Perth Museum and Art Gallery, George Street, Perth. 80p post free.
- Angus and south Kincardine 1979 and 1980 bird report. N. K. Atkinson (1981). *Angus Wildlife Review 1979/80*. (50p). Museum and Art Gallery, Panmure Place, Montrose.

Notices

British Birds is again offering reduced subscriptions to SOC members. You can get it for only £13.50 instead of £18. Send the enclosed leaflet to Mrs E. Sharrock, British Birds (Circulation), Fountains, Park Lane, Blunham, Bedford, MK44 3NJ.

Suggestions for Speakers and Standards for Slides is the title of a useful illustrated pamphlet available for 40p from the Institute of Biology, 41 Queen's Gate, London, SW7 5HU.

Colour ringed Fulmars Fulmars will be colour ringed over the next few years at colonies on the Firths of Clyde and Forth. Sightings at or away from these areas will be very welcome, particularly over the winter months. Observations at Fulmar colonies should record whether birds are in flight or on land. B. Zonfrillo, 28 Brodie Road, Glasgow G21 3SB.

Whooper Swans ringed at Lake Myvatn (Iceland) in 1980 are carrying blue neck collars engraved with individual codes. Please send records to M. A. Brazil, Dept. Psychology, University of Stirling, FK9 4LA.

BTO/IWC Winter Atlas Project This autumn the British Trust for Ornithology and Irish Wildbird Conservancy launched a major project—the Winter Atlas. Fieldwork will start in mid November and continue until the end of February in each of the next three winters 1981/82 to 1983/84. The object is to produce, for each species, a map of its distribution in Britain and Ireland during the winter. The unit of distribution is the 10-km square of the respective National Grids, and observers are asked to record not only the presence of species in a square but also to provide counts. These will enable the maps to show, in addition to the whole distribution, where each species is commoner and where it is scarcer. For most species, especially the landbirds, detailed information on winter distribution is simply not available at present. Therefore the

map will become an essential reference for everyone wanting information on birds in winter, just as **The Atlas of Breeding Birds in Britain and Ireland** now is for breeding season studies. There is already information on the main concentrations of some of the waterbirds, yet even for these species we do not know the complete distributions, knowledge which is necessary for properly evaluating more detailed work, whether for conservation, scientific or other purposes. The results of ALL your birdwatching during the Atlas period—in this winter 14 November 1981 to 28 February 1982 inclusive—can be incorporated, although special timed visits of at least one hour will be especially valuable. Full details of how you can take part will be available from your local Regional Organiser. The list appears after p. 280. (Dr Peter Lack, BTO.)

The Scottish Ornithologists' Club

REPORT OF COUNCIL

For Year to 30 June 1981

Membership On 30 June 1981 the club had 2914 members, a net increase of 182. This encouraging increase was also reflected in the number of new members; 407 joined during the year, 75 more than last year, of whom 63 were juniors and 15 children nominated for family membership. 4 existing members took out life membership and 1 member was made an honorary member. 356 paid the reduced rate for pensioners. In the table family members are counted as two people; nominated children pay no subscription.

Year to 30 June	1976	1977	1978	1979	1980	1981
Honorary	4	4	1	1	5	6
Life	29	29	49	51	58	62
Ordinary	2406	2536	2572	2357	2387	2555
Junior	299	282	271	211	208	211
Nominated children	80	98	87	82	74	80
	<u>2818</u>	<u>2946</u>	<u>2980</u>	<u>2702</u>	<u>2732</u>	<u>2914</u>
	+302	+128	+34	-278	+30	+182

Covenants The revenue from covenanted subscriptions continues to increase and provides a substantial sum in the club's annual income. The number of covenants rose from 756 to 776 covering 938 members and council records its gratitude to those members for their help.

Deaths Council records with deep regret the death during the year of Leslie Brown; Major the Honourable Henry Douglas-Home; and Dr George Waterston, founder, first honorary secretary, President and Honorary President of the Club. Obituaries have appeared in *Scottish Birds*.

George Waterston Memorial Fund While a full account of George Waterston's life is given in his obituary, council considered there should also be a more lasting and positive memorial to him. Two suggestions were agreed: firstly that the SOC reference library be named the Waterston Library, and secondly that a George Waterston Memorial Fund be established. By 30 June 1981 over £3000 had been donated, and further sums have since been received; we are very grateful to the RSPB for publishing the Memorial Fund and to its members for their contributions. A decision has still to be made regarding the use to which the Fund will be put, but consideration is being given to three suggestions: first there

should be a periodic George Waterston Memorial Lecture, at intervals yet to be decided but possibly not more frequently than every three years; second, support should be given to the Waterston Library; and third, support should be given to projects dear to George's heart. Members will be advised when a firm decision has been reached, but in the meantime the Fund remains open and donations will be welcomed.

Finance Several factors account for the small deficit. The cost of printing the annual bird report, and the cost of travel to meetings and conferences were higher than expected, as was the cost of reprinting back numbers of the journal, though this last was offset by increased sales, which have already shown good results. Bookshop sales rose by 15% and showed an increase in overall surplus, although total sales did not reach the estimated figure. In anticipation of a further deficit next year, and in line with the forecast made by the retiring Treasurer at the last AGM, council has recommended an increase in subscription rates from July 1982. To have been able to hold rates for four years is a measure of the importance of the bookshop to the club's finances.

Branches The increase in total membership is reflected in a noticeable increase in the number attending meetings and excursions. A full programme of lectures was given at all thirteen branches, several of which arranged additional meetings to cater for the varying needs of their members.

Annual conference The 33rd annual conference and 44th annual general meeting of the club were once again held at the Marine Hotel, North Berwick. Over 300 members and guests attended another enjoyable weekend, and filled the hotel to capacity. An account appeared in *Scottish Birds* 11: 170.

Scottish Birds Four issues with 164 pages of text and plates were published on schedule during the year. Council thanks all who contributed to the journal, and in particular those who have acted as referees for papers submitted to the editor.

Scottish Bird Report The 1979 report was sent to members with the winter 1980 journal, and council acknowledges most gratefully the work of the editor, compilers and local recorders in producing it. Escalating costs forced council to take the decision that in future the report should be available only to members prepared to purchase a copy. This decision was not universally welcomed, but the relatively small number of copies ordered indicates the wisdom of council's decision to save on printing costs.

Birds in Scotland During the year arrangements were made for the club to support the production of a book on the status and distribution of Scottish birds, to provide an up-dated successor to Baxter and Rintoul's *The Birds of Scotland*. The book is being written by Valerie Thom and publication, by T & A D Poyser Ltd., is planned for 1985. Generous financial assistance towards this project has been received from the Baxter Trust, the Rintoul Trust, J. D. Hutchison's 1970 Charitable Trust (£200), the Late Lord Rootes Charity Trust (£200), BP Petroleum Development Limited (£1000), and Shell UK Limited (£1000). The club is greatly indebted to these organisations and especially to the Trustees of the Baxter and Rintoul Trusts who so generously transferred the entire monies held by these trusts to the SOC for this purpose. The sums received (including £6477 from the Baxter and Rintoul Trusts received shortly after the end of the financial year) have been lodged in a special account where they will accumulate interest until required. On publication of the book one third of the royalties due will be payable to the SOC.

Research and fieldwork Club members again helped other ornithological bodies with surveys, including the BTO's national Nightjar survey, the RSPB's beached bird survey, the Wildfowl Trust's goose and wildfowl

counts, and the BTO common bird census. It is expected that the pilot studies carried out in preparation for the BTO Winter Atlas, and the summer Wader Breeding Survey, will demonstrate the value of carrying out full surveys in the coming years.

Conservation The major public enquiry into the proposed development of skiing facilities in the Cairngorms started in May, but after two weeks was postponed until September. The outcome of this important enquiry will have a major effect on the future of wildlife in this most sensitive area. A decision has still to be made on the exact route to be taken by power lines from the Torness power station in East Lothian.

Endowment Fund 10 applications were received and council endorsed the recommendations of the research committee to award seven grants totalling £795. The following grants were made: £30 to Bruce Lynch towards costs of his Common Sandpiper study in Glen Clova; £75 to Graham Rebecca to study Merlin in the Grampian area; £40 to Steve Buckland for maps for a survey of sites of ornithological interest in NE Scotland being undertaken by the Aberdeen University Bird Club; £50 to Alistair Duncan towards costs of the Grampian Region Schools expedition to St Kilda and Rhum; £100 to Mike Nicholl and Keith Brockie for their studies of nestling Heron in Fife and Tayside; £250 to the Tay Ringing Group expedition to Iceland to study Redshank; and £250 to the Grampian and Tay Ringing Groups' joint expedition to Norway to study Purple Sandpipers, which will complement their winter studies of this species in Scotland. It is a condition of any grant that a short report about the project must be submitted within three months of its completion; if a grant has been awarded in support of a continuing project, those concerned are encouraged to submit an article about their work to *Scottish Birds*.

Legacy Miss Agnes Gunn, sister of Mr Peter Gunn, an honorary member who died in 1978, herself died in 1980 and the club received a one sixth share of the residue of their estate. Peter Gunn bequeathed all his ornithological books to the club and in addition he left a large sum of money for the Endowment fund. So far £2500 had been received; the balance would follow when the estate was finally wound up. The club, and in particular those who benefit through grants from the Endowment fund, have cause to be extremely grateful to Peter Gunn for remembering the SOC so generously.

Waterston Library Following the bequests by Peter Gunn and others, a number of duplicate copies of books were sold and the proceeds placed in a library fund. In addition to the purchase of new books, and of journals required to complete runs, an increased programme of binding was undertaken during the year. Greater use is being made of the library and the Council continues its policy of purchasing new reference books with an allocation from general funds.

Bookshop Sales reached £90,000, the volume of work handled again increased and mail order business continued to expand. The club has a world-wide reputation for the service its bookshop gives and great credit is due to the staff for the personal attention and help they give to customers.

Council acknowledges gratefully invitations to take books to the BTO annual conference at Swanwick; the Scottish Ringers' conference organised by the Tay Ringing Group in Dundee; and the British Ornithologists' Union's 1981 annual conference, held in Glasgow.

Scottish Centre The Scottish Centre for Ornithology and Bird Protection continues to be a focal point for visiting birdwatchers from home and abroad; postal enquiries too are received in large numbers. Meetings of the SOC council and its committees took place in the building as well as branch and informal group meetings. The Fair Isle Bird Observatory

Trust, Scottish Advisory Committee of the RSPB, and Isle of May Bird Observatory and Field Station Committee all held meetings in the Centre during the year.

Ever since the RSPB Scottish Office moved out of 21 Regent Terrace in 1968, two rooms in the basement have been leased to charitable organisations to help reduce the running costs of the building. However increasing bookshop sales, with a consequent expansion in SOC staff and need for more storage space for stock, meant that extra space was required. At the end of June 1981 these two rooms were therefore taken over for the Club's own use.

Club representation Council records its appreciation to three members for their continued service to the club. Bede Pounder is a member of the Duck Working Group of the International Wildfowl Research Bureau, while Frank Hamilton and Dr Derek Langslow serve on the British Section of the International Council for Bird Preservation.

Secretarial staff To help with the growing volume of secretarial and clerical work associated with the bookshop, two new staff members were welcomed during the year. In August 1980 Miss Helena Barul joined the full time staff; she is responsible for general typing and also assists with other work in the bookshop. Alasdair MacKay, a club member from Edinburgh, joined the part time staff in January 1981 and is responsible for clerical work concerning accounts.

Acknowledgments As the club grows numerically and in number of branches, more members become involved in its organisation. Council is aware of the time and trouble taken by these members to help others to enjoy their birdwatching, and records its appreciation to them all. Others, such as the compilers of the annual bird report, local recorders, and those who serve on branch and club committees and whose presence may not be so obvious, contribute to the strength and growth of the SOC and Council acknowledges their work with gratitude. Finally, the smooth-running of the SOC's affairs is in no small measure due to the efficiency and enthusiasm of the staff; Council records its sincere appreciation of the loyal way in which they serve the SOC.

For the Council,

VALERIE M. THOM, President.

Revenue account for the year ended 30 June 1981

INCOME	30/6/81	30/6/80
Subscriptions received for year	£12075	£11412
Income tax received on covenanted subscriptions	1730	1717
Dividends and interest received (gross)	942	1254
Surplus on bookshop (sales £90886)	22184	18582
Sale of "Scottish Birds"	1054	698
Sundry sales less sundry purchases	77	45
Donations	127	110
Raffle	595	—
V.A.T. recovered	89	—
Conference	—	126
	<u>£38873</u>	<u>£33944</u>

EXPENDITURE

Branch expenses including lectures	... ..	£1699	£1457
Travel expenses of council members and delegates to conferences	... ..	1026	673
Secretarial and editorial expenses	... ..	23750	19317
Office expenses	... ..	2598	2188
Scottish Centre for Ornithology and Bird Protection: Club's share of running expenses		2273	1828
Cost of books purchased by library, and binding	... ..	506	335
Cost of publishing "Scottish Birds" (less advertising revenue £1284)	... ..	4901	4597
Cost of publishing 1979 Scottish Bird Report (1)		1256	—
Expenses in production of 1979 SBR	£100		
Less contribution from "Scottish Birds" Appeal Fund	100		
		<u> </u>	
Cost of reprinting back numbers of "Scottish Birds"		801	—
Conference	... ..	134	—
Subscriptions paid	... ..	94	71
V.A.T. not reclaimable	... ..	69	142
		<u> </u>	<u> </u>
Excess of Expenditure over Income	... ..	£39108 (235)	£30608 3336
		<u> </u>	<u> </u>
		<u>£38873</u>	<u>£33944</u>

Note (1) The cost of publishing the 1978 SBR (£959) was added to the cost of publishing "Scottish Birds" for the year, from which was deducted both the advertising revenue and the 1979 raffle income (£1306 and £555 respectively).

Balance Sheet as at 30 June 1981

	30/6/81	30/6/80
GENERAL FUNDS OF THE CLUB		
Accumulated surplus from previous year	... .. £11342	£8006
Subtract deficit for year	... .. (235)	3336
	<u>11107</u>	<u>11342</u>
Life membership fund	... .. 4363	4013
"Scottish Birds" Appeal fund	... .. 1415	1515
Library fund	... .. 699	—
George Waterston Memorial fund	... .. 3077	—
	<u>£20661</u>	<u>£16870</u>

REPRESENTED BY

Cash in hand and at bank	...	...	...	£798	£1077
Cash in Dunfermline Building Society	...	...	...	6640	2628
Bookshop stock	...	...	...	18294	16050
Tie, badge, car sticker and notelet stock	...	...	...	683	486
Debts due to club	...	...	...	4560	4385
Due from Endowment fund	...	...	...	56	—
Investments at cost as below	...	...	...	2506	2506
				33537	27132
Less					
Subscriptions paid in advance	...	...	£25		46
Debts due by club	...	...	12851		10090
Due to Endowment fund	...	...	—		126
				12876	
Total net assets	...	...	...	£20661	£16870

Investments as at 30 June 1981

	Market value	At cost	At cost
Safeguard Industrial Investments Ltd.—			
875 Ord. shares of 25p each	£936	£508	£508
£2100—10% Treasury Stock 1983	1963	1997	1997
	£2899	£2506	£2506

Endowment Fund

(The free income of which is available for the advancement of ornithology)

Revenue account for the year ended 30 June 1981

INCOME		30/6/81	30/6/80
Interest and dividends received (gross)	...	£1010	£917
EXPENDITURE			
Grants as detailed in Report of Council	...	795	735
Excess of income for year	...	£215	£182

Balance Sheet as at 30 June 1981

Endowment Fund as at 30 June 1980	...	...	£3561	£3556
Add Donations	...	...	2500	5
			<u>6061</u>	<u>3561</u>
Accumulated revenue as at 30 June 1980	...	...	2243	2061
Excess of income for year	...	...	216	182
Grants refunded	...	...	240	—
Gain on redeemed stock	...	...	81	—
General No. 2 account: donations and interest	...	...	2556	—
			<u>11397</u>	<u>5804</u>
Less Decrease in cost value of investments	...	...	88	—
			<u>£11309</u>	<u>£5804</u>
Made up of :				
Investments at cost as below	...	...	£3063	£3151
Dunfermline Building Society :				
Capital account	...	...	2906	407
General No. 1 account	...	...	2940	2461
General No. 2 account	...	...	2556	—
Due by Club's general funds	...	...	—	125
			<u>11465</u>	<u>6144</u>
Less Grant allocated but not yet paid	...	£100	156	340
Due to Club's general funds	...	56	—	—
			<u>£11309</u>	<u>£5804</u>
Investments as at 30 June 1981				
		Market	At	At
		value	cost	cost
£1220—9½% Treasury Stock 1983	...	£1147	£1140	£1140
£352—British Printing Corporation 7½%				
Non Cumulative Preference shares £1	...	95	353	441
500 St Andrew Trust Ordinary 25p	...	800	570	570
1952 M & G Equity Investment for Charities	...	3328	1000	1000
		<u>£5370</u>	<u>£3063</u>	<u>£3151</u>

EDINBURGH, 14th September, 1981.—I have audited the foregoing revenue accounts for the year to 30 June 1981, and the balance sheets as at that date. I have accepted as correct subscriptions and other receipts shown as received in the books and the value placed on the bookshop stock. I certify that in my opinion the foregoing accounts are correctly stated and sufficiently vouched.

(Signed) ROBERT CAVEN,
Chartered Accountant.

COUNCIL AND OFFICIALS OF THE CLUB FOR SESSION 45

Hon. Presidents Sir Charles G. Connell WS, LL D, FRSE; Sir Arthur B. Duncan; W. J. Eggeling, CBE, B Sc, FRSE; Professor V. C. Wynne-Edwards CBE LL D, MA, D Sc, D Univ, FRS, FRSC, FRSE, F I Biol.

President Dr Ivan T. Draper.

Vice-President John M. S. Arnott.

Law Agent D. G. Andrew WS.

Council (elected at AGM) R. A. Broad, Dr D. M. Bryant, D. L. Clugston, Mrs H. Halliday, R. H. Hogg, T. Irving, Dr D. R. Langslow, M. B. Ross, B. J. Stewart, Dr I. R. Taylor. **Young members** (elected by Council) L. Steele, A. Williams.

Branch Representatives (elected by their Branch) B. J. Stewart (Aberdeen); R. H. Hogg (Ayr); M. B. Ross (Borders); R. T. Smith (Dumfries); Dr K. M. Watson (Dundee); P. R. G. Marriott (Edinburgh); Dr J. T. Knowler (Glasgow); R. H. Dennis (Inverness); Mrs H. Halliday (New Galloway); P. K. Kinnear (St Andrews); H. Robb (Stirling).

STAFF

Secretary, Treasurer and Business Editor Major A. D. Peirse-Duncombe.
Editor and Bookshop Manager D. J. Bates.

Membership Secretary Mrs R. D. Smillie.

Hon. Treasurer and Librarian W. G. Harper.

Bookshop and Clerical Mrs H. L. Harper, Mrs D. J. Ridley, Miss H. Barul, A. G. MacKay.

BRANCH OFFICE BEARERS

Aberdeen Chairman, S. M. D. Alexander; Vice-Chairman, L. Steele; Secretary, A. Duncan; Committee, D. J. Bain, S. T. Buckland, J. A. England, Miss M. C. Hartnoll.

Ayr Chairman, R. H. Hogg; Vice-Chairman, D. A. Smith; Secretary, B. C. Forrester; Committee, J. Burton, Dr R. Hissett, Mrs E. M. Hissett.

Borders Chairman and Secretary, M. B. Ross; Vice-Chairman, A. J. Smith; Committee, A. Buckham, T. D. Dobson, R. D. Murray, Mrs E. Ross.

Dumfries Chairman, Dr N. E. Armstrong; Vice-Chairman, Dr E. C. Fellows; Secretary, J. W. Barclay; Committee, W. Austin, Miss A. Mac Donald, R. T. Smith, R. M. Wright.

Dundee Chairman, B. M. Lynch; Vice-Chairman, B. Pounder; Secretary, Dr K. M. Watson; Committee, R. M. Corbett, Mrs J. A. R. Grant, Miss S. Laing, D. B. Thomson.

Edinburgh Chairman, P. W. G. Marriott; Vice-Chairman, W. G. Prest; Secretary, Miss J. A. Wilcox; Committee, Miss P. D. Anderson, G. F. Bell, Mrs L. M. Brown, Mrs E. Ferro.

Glasgow Chairman, Dr J. T. Knowler; Vice-Chairman, Dr I. T. Draper; Secretary, S. N. Denney; Committee, D. Carnduff, H. Galbraith, C. E. Palmar, W. S. Taylor.

Inverness Chairman, R. H. Dennis; Vice-Chairman, R. L. Swann; Secretary, Mrs S. E. A. Moore; Committee, R. A. Broad, J. Carruthers, D. B. McGinn.

New Galloway Chairman, Mrs H. S. C. Halliday; Vice-Chairman, Miss J. E. Howie; Secretary, Dr G. A. Fleming; Committee, Admiral Sir Nigel Henderson, R. K. Peace, R. E. S. Wass, Mrs J. Yeo.

St Andrews Chairman, P. K. Kinnear; Vice-Chairman, Dr R. W. Byrne;

- Secretary, Miss D. E. Rowling; Committee, K. Brockie, Mrs W. E. Mattingley, Lt Cdr E. F. B. Spragge, D. R. Stuart.
- Stirling** Chairman, H. Robb; Vice-Chairman, C. E. Barth; Secretary, A. B. Mitchell; Committee, W. R. Brackenridge, J. Gearing, R. L. Gooch, Miss M. H. Knox.
- Thurso** Chairman, Mrs P. M. Collett; Secretary, S. Laybourne.
- Wigtown** Chairman, Dr P. G. Hopkins; Secretary, G. Sheppard; Committee, J. H. Hollands, D. L. Irving, D. J. Mould, D. J. Rennie, G. Shaw.

COMMITTEES

- Management** Dr I. T. Draper (Chairman), D. G. Andrew, J. M. S. Arnott, D. L. Clugston.
- Library** D. L. Clugston (Chairman), Ritchie Seath (Hon. Librarian), Dr J. J. D. Greenwood, P. W. G. Marriott, Dr I. D. Pennie, Mrs M. I. Waterston.
- Editorial** Miss V. M. Thom (Chairman), J. M. S. Arnott, R. H. Dennis, Dr R. W. Furness, F. D. Hamilton, S. R. D. da Prato.
- Research** Dr I. R. Taylor (Chairman), A. W. Colling, R. H. Dennis, Dr J. J. D. Greenwood, Dr D. R. Langslow.

CLUB REPRESENTATION

- British Section, International Council for Bird Preservation** : F. D. Hamilton, Dr D. R. Langslow.
- International Wildfowl Research Bureau, Duck Working Group** : B. Pounder.

HONORARY MEMBERS

- Dr John Berry, Maxwell Hamilton, Dr Ian Pennie, Mrs Irene Waterston, Donald Watson.

NOTICES

DUMFRIES WEEKEND

Normal arrangements had been made to be at the County Hotel from 26-28 February 1982 but we have been told that the hotel is to close at the end of January. We are trying to make alternative arrangements and anyone who is interested is asked to contact the club secretary, either by post or telephone, after 17 January 1982 for further information.

STIRLING BRANCH SECRETARY

Please note that Mr A. B. Mitchell has moved. His new address is : The Barony, Airth, Stirlingshire FK2 8LS (tel. 034 483 331).

PROPOSAL TO FORM A NEW BRANCH

A proposal to form a new branch in the Kirkcaldy/Glenrothes area has been made by Mr Alan Carpenter, 9 Glenbervie Road, Kirkcaldy, Fife (tel. Kirkcaldy 69236). Initially it is hoped to hold some indoor meetings in the New Year followed by summer excursions. If the response is favourable an application will be made to the SOC Council to form a Kirkcaldy Branch of the club in time for a full series of lectures to be included in the 1982/83 winter lecture syllabus. Anyone who is interested should contact Mr Alan Carpenter for further information.

ARGYLL WEEKEND

The Stirling branch intend to repeat their annual visit to Argyll based at a country cottage near Ford. It will take place over the weekend 6-7 March 1982. Accommodation is limited and the charge will depend on the number attending. Anyone interested should contact the branch secretary, Sandy Mitchell, The Barony, Airth, Stirlingshire FK2 8LS (tel 034 483 331).

LOCAL RECORDER

Please note the following new Recorder to whom records for the 1981 *Scottish Bird Report* should be sent :

Aberdeen, North Kincardineshire Dr M. V. Bell, Institute of Marine Biochemistry, St Fittick's Road, Aberdeen.

Current Notes

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

The period July to September is covered here. During the summer the Hebrides attracted **Franklin's**, **Ring-billed** and **Ross's Gulls**. The first signs that migration had reversed direction came when summer plumaged arctic waders began to reappear. The more unusual waders were rather scarce with unexceptional numbers of **Little Stints** and low numbers of **Curlew Sandpipers**. There was a smattering of **Pectoral Sandpipers** in the Northern Isles. A **White-rumped Sandpiper**, a **Lesser Golden Plover**, 3 **Wilson's Phalaropes** and a **Great Snipe** were the best of the bunch. Sea passage was disappointing with low numbers of **Sooty Shearwaters**, though a few **Sabine's Gulls** and big shearwaters kept several observers happy. But then things started to happen. Aberlady made up for its recent dearth of goodies with a **Citrine Wagtail**, eating into Fair Isle's near monopoly. Not to be outdone, Out Skerries turned up **Black-eared Wheatear**, **Bonelli's** and **Booted Warblers** and together with the rest of Shetland at least 7 **Arctic Warblers**. It was during a series of massive falls in that area that Fair Isle put its stamp of authority on the autumn with **Red-flanked Bluetail**, **Roller** and two of Dr Pallas's best, his **grass-hopper warbler** and his **reed bunting**, the latter only the 2nd ever to reach Britain. The 1st was (guess where) Fair Isle too.

Cory's Shearwater Peterhead (Aber) Aug. **Great Shearwater** Peterhead Aug, Sep. **Manx Shearwater** Balearic *mauretanicus* Peterhead Aug. **Leach's Petrel** Fair Isle 20 Jul, 4 Troon (Ayr) 20 Sep. **Bean Goose** 3 Out Skerries (Shet) 30 Sep. **Pink-footed Goose** 21 Gladhouse (Midl) 8 Sep. **Brent Goose** 80 Barra (O. Heb) 15-19 Sep, 5 Aberlady (E. Loth) 20 Sep. **Ruddy Shelduck** L. Strathbeg (Aber) 4 Jul. **Honey Buzzard** Mid Yell (Shet) 9 Jul, Fair Isle 9-19 Jul, 11 Sep, 19 Sep, Barns Ness (E. Loth) 13 Sep, St Abbs (Ber) 21 Sep, St Ola (Ork) 22 Sep, Musselburgh (Midl) 28 Sep. **Marsh Harrier** Holm (Ork) 17-19 Sep, L. Kinnordy (Ang) Sep. **Osprey** Fair Isle 11 Sep, 19 Sep, Lewis (O. Heb) 27 Sep. **Hobby** St Andrews (Fife) 23 Aug, Aberlady 6 Sep, 10 Sep. **Quail** bred Fair Isle, Coltingham (Ber) Jul, Black Isle (Ross) Jul. **Dotterel** juv Barassie (Ayr) 23 Aug, Fair Isle 25 Sep, **Lesser Golden Plover** Aberlady 16-19 Sep. **Grey Plover** 352 Aberlady 27 Sep. **Little Stint** 13 Musselburgh 17 Sep. **White-rumped Sandpiper** Virkie (Shet) 25-30 Aug. **Pectoral Sandpiper** Tankerness (Ork) 26 Aug-2 Sep, Virkie 26 Aug, 3 L. Hillwell (Shet) 1 Sep, Lewis 1 Sep. **Curlew Sandpiper** 4 Barassie 10 Sep, 6 Musselburgh Sep. **Jack Snipe** Fair Isle 9 Aug, Aberlady 22 Aug. **Great Snipe** Fair Isle 22 Sep.

Wilson's Phalarope Birsay (Ork) 3 Sep, 2 L Kinnordy Sep.
Long-tailed Skua Fetlar (Shet) 16 Jul, 19 Jul, Barns Ness 27 Sep.
Mediterranean Gull Aberdeen Jul, Doonfoot (Ayr) Aug. **Franklin's Gull** Canna (I. Heb) 16 Jul died. **Little Gull** Stenness (Ork) 29 Aug, Out Skerries 7 Sep, 4 Stranraer (Wig) 13 Sep. **Sabine's Gull** Doonfoot Aug, Ayr 28 Sep. **Ring-billed Gull** Lochboisdale (O. Heb) 13 Aug. **Ross's Gull** St Kilda (O. Heb) Jul. **Black Tern** 11 Aberlady 16 Aug, 2 Balgray (Renf) 19 Sep, Out Skerries Sep.

Turtle Dove Levenwick (Shet) 5 Jul, Fetlar 7 Sep. **Swift** 160 Fair Isle 9 Jul. **Roller** Fair Isle 22 Sep. **Hoopoe** Harray (Ork) 28-29 Sep. **Wryneck** 2 Fetlar 30 Aug, 6 Fair Isle 11 Sep, Largs (Ayr) killed by cat 19 Sep. **Short-toed Lark** Fair Isle 19 Sep. **Richard's Pipit** Deerness (Ork) 12 Sep, Fair Isle 16 Sep, 21 Sep. **Yellow Wagtail** nested unsuccessfully Fair Isle. **Citrine Wagtail** Orkney Sep, Aberlady 14-16 Sep. **Bluethroat** S. Uist (O. Heb) 12 Sep, 3 Fair Isle 12 Sep. **Red-flanked Bluetail** 2 Fair Isle 9-30 Sep. **Black-eared Wheatear** Out Skerries Sep. **Pallas's Grasshopper Warbler** Fair Isle 21 Sep (4th Scottish record—all Fair Isle). **Booted Warbler** Out Skerries Sep. **Melodious Warbler** Sumburgh (Shet) 10 Sep. **Marsh Warbler** Fair Isle 11 Jul. **Barred Warbler** 8 Isle of May Aug-Sep, 5 Shetland 21 Aug-8 Sep, 3 Fair Isle 23 Aug, 4 on 2 Sep, Deerness 6 Sep, Kirkwall (Ork) 6 Sep. **Garden Warbler** 200 Fair Isle 11 Sep, 400 on 21 Sep. **Blackcap** 1,000 Fair Isle 21 Sep. **Greenish Warbler** Holm 26-27 Sep, Fair Isle 16 Sep. **Arctic Warbler** Fair Isle 22 Aug, Holm 15 Sep, 7 Shetland Sep. **Yellow-browed Warbler** 5 Shetland Sep, Dunure (Ayr) 12 Sep, 2 Fair Isle 16 Sep, St Ola 18 Sep. **Bonelli's Warbler** Out Skerries Sep. **Wood Warbler** Strand (Shet) 23 Aug, Whalsay (Shet) 26 Aug, St Abbs 2 Shet, St Ola 14 Sep. **Red-breasted Flycatcher** 2 Fair Isle 15 Sep. **Red-backed Shrike** 6 Fair Isle 11 Sep, 3 Copinsay (Ork) 13 Sep. **Scarlet Rosefinch** Out Skerries 8 Aug, 21-22 Aug, 2 Fetlar 21 Aug, 4 late Aug, one 2 Sep, Strand (Shet) 23 Aug, Sumburgh 23-25 Aug, Deerness 11 Sep, 2 Fair Isle 2 Sep, one 9 Sep, two 11 Sep, S. Ronaldsay (Ork) 13 Sep. **Lapland Bunting** Papa Westray (Ork) 30 Sep. **Ortolan Bunting** Fair Isle 11 Sep, 21 Sep, 2 Out Skerries Sep, Whalsay Sep. **Yellow-breasted Bunting** 2 Fair Isle 22-23 Sep, Tiree (I. Heb) 5 Sep, 2 Out Skerries Sep. **Pallas's Reed Bunting** Fair Isle 17 Sep.

Late News **Black Duck** Inverness 11 Oct, **Isabelline Shrike** Fair Isle early Oct. **Olive-backed Pipit** Fair Isle Oct.

PETE ELLIS



SCARLET ROSEFINCH
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Winter Atlas

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THE SCOTTISH ORNITHOLOGISTS' CLUB

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

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

There are no entry fees for Membership. The Annual subscription is £5, or £2 in the case of Members under twenty one years of age or Students under 25 who satisfy the Council of their status as such at the times at which their subscriptions fall due. The Life subscription is £100. Family Membership is available to married couples and their nominated children under 18 at an Annual subscriptions of £7.50, or a Life subscription of £150. *Scottish Birds* is issued free to Members but Family Members will receive one copy between them. Subscriptions are payable on 1st October annually.

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

Application for membership form, copy of the Club Constitution, and other literature are obtainable from the Club Secretary, Major A. D. Peirse-Duncombe, Scottish Centre for Ornithology and Bird Protection, 21 Regent Terrace, Edinburgh, EH7 5BT (tel. 031-556 6042).

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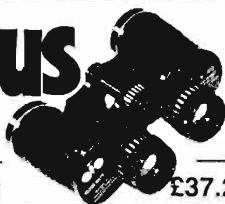
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